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Adding the Bubble Narrative to Underwater Cultural Heritage: An Understanding of Recreational Diver Interactions and Values

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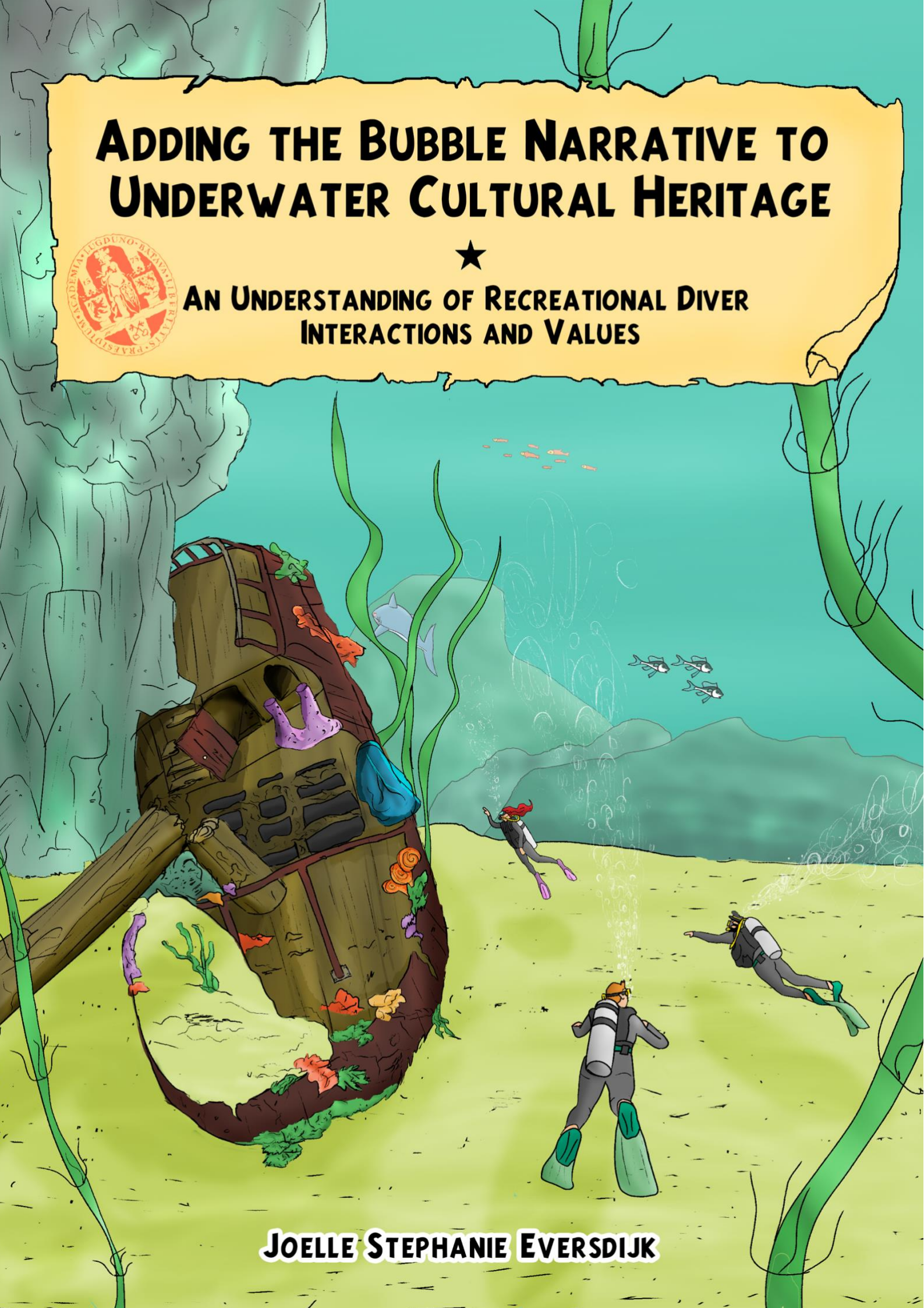

Joelle Stephanie Eversdijk

Adding the Bubble Narrative to Underwater Cultural Heritage: An Understanding of Recreational Diver Interactions and Values

Universiteit Leiden

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List of Abbreviations & Acronyms

AR	Augmented Reality
BCD	Buoyancy Control Device
'Big Six' Scuba Schools	PADI, SSI, CMAS, BSAC, NAUI, SDI
BSAC	British Sub-Aqua Club
CMAS	Confédération Mondiale des Activités Subaquatiques
CRM	Cultural Resource Management/ers
DAN	Divers Alert Network
DEMA	Diving Equipment and Marketing Association
EEZ	Exclusive Economic Zone
EMT	Extended Mind Thesis
EPFRN	European Public Finds Recording Network
ERRC Grid	Eliminate-Reduce-Raise-Create
EUF	European Underwater Federation
IDSSC	International Diving Safety Standards Commission
MET	Material Engagement Theory
MPA	Marine Protected Areas
MSP	Marine Spatial Planning
NAS	Nautical Archaeology Society
NAUI	National Association of Underwater Instructors
NGO	Non-Governmental Organisations
PADI	Professional Association of Diving Instructors
PUCHC	Protection of the Underwater Cultural Heritage Convention
RST	Recreation Specialisation Theory
Scuba	Self-Contained Underwater Breathing Apparatus
SDI	Scuba Diving International
SSI	Scuba Schools International
UCH	Underwater Cultural Heritage
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNCLOS	UN Convention on The Law of The Sea
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VR	Virtual Reality
WRSTC	World Recreational Scuba Training Council
WWII	World War 2

PART I: INTRODUCTION

A narrative, an anthology of stories, can influence the perception of a topic/subject. Until now, the narratives of Underwater Cultural Heritage (UCH) were mainly drafted, conveyed, and regulated by academic professionals. With an entangled history between academic professionals and recreational scuba divers, combined with the complexity of safeguarding the ocean, heritage management must shift the social narrative around what is considered a hindrance and move to seeing the potential opportunities. In other words, it is important to analyse whether the impact that recreational scuba divers bear on UCH, with respect to management, discovery, and awareness, can be considered crucial to the future and longevity of these sites. This research aims to assess to what extent these recreational scuba divers' intentions and motivations contribute positively or negatively to the narratives on UCH and whether the current education and legal paradigm supports this niche community engaging with UCH.

1.1 History of Maritime Archaeology – Current situation of UCH

The discipline of maritime archaeology, which aims to understand the interaction between humans and the bodies of water and the development of underwater archaeology, and the technical discipline of practising archaeology underwater, coincide with the blossoming of scuba diving (Ruppé & Barstad, 2002). Over a century ago, a handful of bold archaeologists began to use helmet diving methods or employed sponge divers to look at submerged ruins and wrecks. Although these methods worked, it was not until the end of WWII that significant developments in defying humans' ability to breathe underwater transpired. In June 1943, the father of oceanography, Jacques-Yves Cousteau, and WWII engineer, Emile Gagnan, created a new, fully autonomous diving equipment, the Aqualung (Taylor et al., 1966). This open-circuit, self-contained underwater breathing apparatus (scuba) made the sport more accessible to scientists and explorers, allowing them to work more efficiently. By the 1950s, recreational diving became a popular activity as it was more easily accessible to the public (Hutchinson, 1996). From this development, recreational divers would become more increasingly inclined to seek out different and more stimulating sites to meet their needs of a fulfilled and satisfied dive (Edney, 2018, p45).

Consequently, many early advances in underwater archaeology were made by avocational divers or professionals from other disciplines – military, photography, science, conservation, medicine, and engineering (UNESCO, 1987). Indeed, these pioneering stages of underwater archaeology were solidly controlled by scuba divers (Taylor et al., 1966). In 1959 anthropology professor John Goggin, already stated that "it is far easier to teach diving to an archaeologist than archaeology to a diver!" (Goggin, 1960, p350) - whereas during this time the collaboration between academics and recreational scuba divers was at its peak. It was not till the 1970s with the formation of the Scientific Commission with biologists, conservationists, geologists, archaeologists, and engineers, that underwater archaeology became an accepted academic discipline, where professionals along with diving enthusiasts applied their skill sets on UCH (UNESCO, 1987). However, as the field evolved, it went from divers who learned archaeology in a practical aspect to archaeologists who learned to scuba dive, to academics who devised this specialised sub-discipline of archaeology. The progression eventually pushed out the amateur knowledge and neglected their efforts due to academic arrogance, despite scuba divers having held the monopoly on UCH. Honor Frost, a pioneer in underwater archaeology, had always advocated for the value of a scuba diver's knowledge of UCH and urged collaboration. She believed, "if archaeologists were to collaborate with professional divers in evolving a standard excavation technique, and in training a generation of young archaeologists to carry on the work, the present problems would be solved. No pilot excavation on these lines has as yet been carried to completion" (Frost, 1969, pxii).

The present problems UCH sites face are erosion, climate change, dredging, construction, treasure hunting, looting, lack of outreach, and funding. Furthermore, the complex and technical challenges of working underwater, coupled with the difficulties in accessing and managing, contribute to the high cost of research in UCH; understanding areas of weakness will provide significant chances for growth in this discipline (Edney, 2018; Manders, 2015; Cohn, 2000). Currently, the value of UCH sites is becoming more clearly recognised for their importance internationally. However, the core community who interacts with UCH, recreational scuba divers, are routinely marginalised as stakeholders despite having the skills to access these submerged sites. This disconnect is due to professionals and governing bodies typically drafting a negative narrative of this community through legislation and research (Edney, 2018, p27).

Diving impact, however, does happen on UCH and can broadly encompass; anchoring and mooring damages, impairment to the site's integrity and stability, deliberate and unintentional encounters and expelled air bubbles from scuba diving units (Edney, 2018, p2). Nevertheless, these impacts are not restricted to recreational scuba divers but anyone interacting with UCH. If the goal is to ensure safe interactions with UCH, education must extend past the core community and encompass other stakeholders conducting anthropological activities in the ocean. These stakeholders, such as fisheries, off-shore activities (shipping, oil drilling, construction etc), encounter UCH less deliberately and intentionally but still impact the integrity of UCH. Therefore, this current negative is not entirely reflective of just the scuba community despite their intentional actions to venture to UCH. Regardless, training and education may minimise the adverse effects of the scuba community's interaction with UCH.

1.2 The Underwater Heritage Laws

Allowing fluid knowledge exchange in underwater heritage is of great significance, as it is a vital element in managing and preserving the unique UCH. Transparency between nations and disciplines creates better cooperation and innovative guidelines to preserve cultural heritage in submerged environments, by focusing on public accessibility and experience (Karlsson-Vinkhuyzen et al., 2017, p595). Rooted in salvage law, legal issues in this practice have concentrated on rights and ownership rather than the conservation and preservation of cultural heritage. However, as the field evolved, so did the laws and regulations. Current international law concerning UCH primarily comprises common law, international customary law, and United Nations (UN) treaties and conventions – who note it as a human right to access cultural heritage under the UN's Universal Declaration of Human Rights and, in this context, the Declaration lays the foundation for the 2005 FARO convention made by European Union (Donders, 2018; Council of Europe, 2005; Hutchinson, 1996). The Faro Convention references to human rights are not meant to create enforceable rights but rather to create a greater connection between human rights and cultural heritage by providing a more comprehensive standardised framework that endorses not only the collective rights of the people but also collective obligations for the EU States (Council of Europe, 2005). The flexible legal obligations and rights focus on heritage as a human right, not a property issue (Donders, 2018).

1.3 The Importance of Involving the Public

The value of public participation in heritage management, particularly in decisions concerning the distribution of public funds gained traction in the 1990s. Nearly three decades later this premise is still influencing heritage policy practices (May, 2019, p1). However, heritage management is only effective when education and accessibility of knowledge of the past are available to the masses. Public participation in heritage has a slightly different relationship to the present and the future, hence bringing heritage to life also requires a different relationship between the present and the future. Participation in cultural activities is primarily driven by subjective expectations since people do them primarily for themselves. The motive is for pleasure, and they tend to benefit from doing those activities for the sake of their well-being May, 2019). "Stakeholders need to be informed about the value of the local UCH and the potential for sustainable tourism development through responsible valorisation," (Manglis et al., 2021, p4709).

The heritage cycle (Figure 1) is a model that highlights the need to appreciate heritage, leading to a desire to protect it and promote further appreciation (Thurley, 2005, p3). Cultural heritage, however, is frequently not bound by national territory, let alone the open and accessible environment such as the ocean, where activities can go unregulated. With estimations of 3 million+ UCH sites across ocean floors, involving the public is of unquestionable importance - especially when working with a specific skill set (UNESCO, 2007,

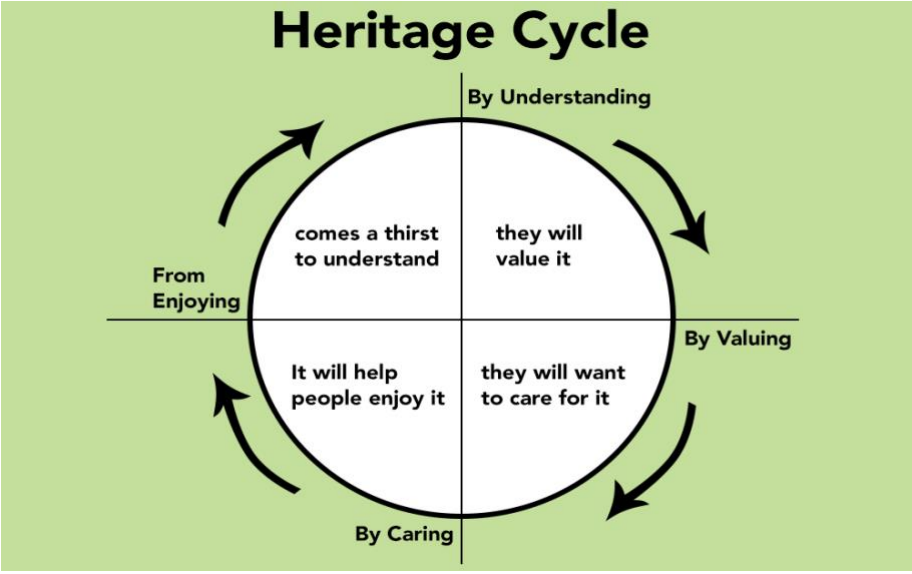

Figure 1 - The Heritage Cycle diagram shows the idea on how to make the past part of our future, by understanding, valuing, caring and enjoying heritage. (Culture in Development, 2010)

p4). However, because UCH sites are often 'out of sight, out of mind', it results in a lack of awareness and public appreciation to support this field (CMAS, 2018, p3). Without participation in heritage, people will be less concerned with its vulnerability. It is the responsibility of the archaeological community to engage its public and enlighten them about history through accessible and mainstream platforms. Therefore, greater efforts should be made in rectifying public misconceptions, addressing the unresolved conflict with treasure hunters and looters, and valuing scuba knowledge to safeguard and identify the values of UCH sites.

1.4 Heritage as Education

UNESCO has called for recognising the importance of the ocean in the trajectory of development; this notion has been implemented in the UN's Ocean Decade and has been addressed in the UN Sustainable Development Goal 14 (UN, 2021, paras4). The objective is to advocate for heritage as an experience to help entice patrons to connect to the world through international/local adventures or real/imaginary adventures (Antón et al., 2017, p2). Making connections relates to the heritage cycle as people become more aware of the rich and dynamic history, and are therefore, more willing to help instil better safeguarding measures (Pedersen, 2002, p94). Regarding UCH, this idea helps to make the scuba diving community more prominent in the Blue Tourism sector and focus on their contributing to the Blue Economy and Blue Growth as they are directly affiliated with the ocean and activities (Pérez-Reverte Mañas et al., 2021).

However, the issue within research literature is that recreational scuba divers are often seen as hindrances to UCH, and many studies have addressed the adverse side of their activities (Lotze et al., 2018; Edney, 2018; Thapa et al., 2006). This has resulted in a gap in the research in which the positive narrative and beneficial interactions of recreational scuba divers on UCH have been understudied. This thesis, therefore, will focus on the positive narrative of recreational scuba divers on UCH. The accessibility of these sites is often limited to this niche community, which has been essential to the widespread success of underwater archaeology, making it a valuable source of information. The scuba diving community is comparable to the metal detecting community, in the sense there is a long history of conflict between amateurs and professionals within their respective fields. To help bridge the shortfall in cooperation

between the metal detecting community and professionals, the European Public Finds Recording Network (EPFRN) was implemented as a transnational framework. Denmark, Finland, the United Kingdom, Flanders, and the Netherlands are among EPFRN's most progressive regions in conserving and making archaeological finds available for researchers and the public (EPFRN, 2018). They aim to educate amateur archaeologists on proper recording etiquette within a legal and liberal policy structure. EPFRN allows the finders to keep their findings but provides information transparency to academics and researchers (EPFRN, 2018). Compared to restrictive models, this cooperative approach appears to be more rewarding to both the public and professionals, less damaging to cultural heritage sites, more sustainable in economic and safeguarding terms, and hugely beneficial to archaeological research (Dobat et al., 2020, p14).

The EPFRN framework has been implemented to UCH but has seen less momentum within the recreational scuba diving community, but could potentially achieve similar results. Therefore, silencing scuba divers' voices has limited the potential for archaeological research, as reflected in the metal detecting community. The values placed on UCH within the scuba diving community provide the chance to understand the issues for implementing and managing less visible archaeological remains and bridge the gap in the relationship between recreational and research divers. Investigating divers' interactions with UCH sites provides a unique chance to explore the divers' narrative and widen the opportunity to engage with the public. Ultimately cultural heritage is for the community as it is a piece of collective history; therefore, it should be brought back to the community through accessible and meaningful experiences.

1.5 Aim and Objective

This thesis aims to explore recreational divers as the core community interacting with Underwater Cultural Heritage and in particular, aims to investigate whether and how they serve as a beneficial stakeholder group in UCH management. I will examine to what extent a niche community of recreational divers supports and benefits the longevity of UCH. If heritage is for the public, as the Faro Convention states for example, it therefore needs to be brought to the community in an experienceable way to instil meaningful interactions and values (Kharatishvili, 2021). Without public involvement, the trajectory of safeguarding UCH becomes a question of 'why' as access becomes limited to those with specific skill sets. Addressing the

scuba community, governing legal bodies and scuba schools' involvement and attitudes towards UCH can help simplify how UCH is portrayed.

The objective is to understand what aspects of recreational scuba diving appeal to and can attract more divers and non-divers to make emotional attachments to UCH through a sensory experience of UCH. By employing qualitative research and interpreting what scuba divers experience while diving, the results of this study are valuable because they can contribute to a narrative reflective of the recreational scuba diving community and its relation to UCH.

This is a heritage management thesis, but to fully encompass this dynamic topic, it would be fruitful to engage with investigate other disciplines to support the handling of UCH. Applied Archaeology at Leiden University has advocated for this multidisciplinary approach when addressing archaeology beyond academia's scopes by focusing on the social and environmental challenges faced. It is not by distinguishing, what is and is not applied archaeology but rather by; embracing every aspect when venturing into this multidisciplinary field; for “the future of applied archaeology requires the removal of academic vs. [cultural resources management (CRM)] dichotomies and fostering activist approaches within CRM” (Stottman, 2018, p463). Segregating areas of archaeology to academic, CRM, public archaeology, commercial archaeology, and landscape/coastal archaeology only limits the possibility for growth and appreciation for this diverse field. By this definition then incorporating anthropology, through experiences, feelings and thought, and aspects of business can only help better the understanding of this ever-evolving field.

1.6 Research Questions

The main research question of this thesis is:

1. To what extent do recreational divers' interactions on UCH positively add to the narrative, values and safeguarding of UCH?

To investigate this main question systematically, the thesis will ask the following sub-questions:

2. How can recreational divers' current interactions facilitate the preservation and protection of UCH?
    - How do recreational divers have and still interact with UCH? What negative impacts UCH exposed to?
3. How do recreational divers place value on UCH sites?
    - What is the theoretical aspect of value and how do they influence the experiences of UCH?
4. What protection framework is in place for UCH, and what attitude does it have towards the recreational scuba diver community?
    - How is UCH currently protected within a global and national perspective?
5. What is the noticeable difference between the scuba industry approaches toward teaching and safeguarding UCH to the recreational dive community?
    - How can the educational program enhance recreational scuba divers interactions and values of UCH while positioning them as stewards to safeguarding UCH?

1.7 Methodology

To answer the main research question two types of different approaches will be employed. Firstly desk-based research helped to formulate the technical aspects and emotional experiences around recreational scuba divers and UCH. Secondly ethnographic research was conducted to keep the cultural group of recreational divers at the forefront by understanding their perceptions of UCH and reinforce the emotions projected on scuba diving and UCH. This provides more depth and clarity to the topic. The ethnographic research is supplemented with a professional perspective questionnaire to cement the understanding using both a top-down and bottom-up approach.

Debating recreational scuba divers' positive influence on UCH can be done from multiple perspectives, and this thesis focuses on the anthropological viewpoint. In order to organise the thesis, it has been divided into six parts with subsequent sections as the main body of text, and a future direction section. Each part ends with a small summary summarising and highlighting how the data has been treated. The reason for using this set-up is to ensure that each point addressed to better contribute to the discussion, which will examine the data presented in parts II and III and will be compared with the ethnographic research material to keep track of the main arguments.

Part II and III will involve extensive literature analyses from desk-based research to establish a theoretical and anthropological aspect of the recreational diver's behaviour as well as reasons to dive. Parts II will specifically address UCH's negative impacts, such as recreational divers' interaction, climate change, fisheries, and offshore activities and methods to mitigate them. Parts III will look at the positive interactions with UCH through a whole sensory experience, values placement (sociological, economical, and linguistic), and law implementation by acknowledging UNESCO as the higher governing body, and the recreational dive education structure. Part IV will add the human touch of ethnography to help cultivate a better understanding of the transformative and emotional experience of scuba diving. The ethnographic accounts will give a bottom-up perspective of how recreational dive professionals interact, place values, understand the laws and give their opinions of their teaching organisation.

Part V, 'The Final Ascent,' is where the discussion will consider each part's summaries and link them back to the data presented in the sections to support the research questions. The ethnographic interviews and questionnaires will endorse the desk-based research and data presented while keeping the human influences at the forefront of the analysis. This section will finish with recommendations on how to enhance the safeguarding of UCH and the appreciation of living heritage. After discussing all the relevant information and formulating preliminary recommendations, Part VI, 'The Debrief,' drafts the overall conclusions for each research question. Addressing the limitations of this subjective study is then highlighted at the end, along with proposals for future investigations on this topic.

1.7.1 Desk-Based Research

The primary method here involves desk-based research using literature reviews from current published literature. The type of literature that has been assessed and used for this thesis is engagement theories, recreational theories, value theories, experiences theories, written laws and regulations, scuba school teachings and the business models for scuba and tourism. Although an extensive list of literature is used it is needed when combating very technical and emotionally altering experiences associated with scuba diving and cultural heritage. By integrating different theories, the hope is to assure that the reader has a thorough understanding of both aspects – especially if they are a non-diver or patron indifferent to heritage. If the goal of heritage is to be understandable, relatable, or accessible then this thesis cannot skim over the very notion of what scuba diving is, as it minimises the culture and therefore does touch upon the main driving words.

Moreover, both the scuba diving and the tourism industries are closely related, in as much that they are both heavily reliant on the demand for their services. Without considering the business models used by either sector, it brushes over this more practical aspect of the effective implementation of public participation in heritage site conservation. This is an era dedicated to the sustainability of resources, protection of the environment and the inclusivity of different cultures – all of which are addressed when talking about recreational scuba divers and UCH. Additionally, the acceleration of the development of new technologies has opened up interesting conversations on the emotional aspects linked to these activities.

There are limited studies on the positive narrative that recreational scuba divers bring when safeguarding the ocean's vibrant environment. Diving is one of the few sports that actively considers the environment, making it an interactive sport. Divers learn about the underwater world and are taught to take into consideration what they can do to preserve it. Most literature denotes the negative impacts of scuba diving, which often equates to diving on UCH. These issues can stem from boat moorings, expelled bubbles, unintentional interactions with reefs or wrecks, pollution and removal of artefacts or aquatic life (Edney, 2018, p2; Lotze et al., 2018; Thapa et al., 2006). Moreover, since the scuba industry is self- regulatory, only partial information regarding statistics of active scuba divers have been made available (Kieran, 2021b). Nonetheless, the desk-based research for this thesis highlighted the need to rectify

the current narrative of recreational scuba divers by showcasing them as an asset to UCH's longevity. Edney compiled an extensive table of examples of literature of research that is currently available about scuba divers and noted the themes of studies of recreational scuba divers - impacts; motivations; satisfaction & enjoyment experiences; behaviour (including environmentally responsible behaviour); recreation specialisation; Marine Protected Areas (MPA); and economic aspects (Edney, 2018, p41-44). She further noted the literature data collection methods either by demographics and/or dive experience & training and the research location.

1.7.2 Ethnographic Interviews

To further investigate this dynamic topic and support the desk-based research, ethnographic research was done including autoethnographic accounts in the form of interviews. Developed within the discipline of anthropology, ethnographic research is the central idea of knowing the world from the standpoint of its social relations by using participant observation and insider interpretations – in this case the scuba diver community relationship to UCH. It is a qualitative research method predicated on the diversity of culture (Zhang & Wildemut, 2009). Therefore, this method is most appropriate when talking to a specific community who, themselves, have displayed a type of culture, arguably a culture that is not as well represented. This is not a classic archaeological method, but the validity of ethnography research can help better understand the issues at hand while creating a rich detailed account of the movement, emotion, sentiments, mood, and tone on the subject (Stevenson, 2014). This type of research endeavours creates a more holistic account for these dynamic and interdisciplinary fields and to that end aligns with what "applied archaeology calls for, expanded training in policy analysis, techniques of collaboration and mediation, and ethnographic methods such as oral history" (Downum & Price, 1999, p227).

The justification for using anthropology, which is the comprehensive study of human beings and contemporary cultures, of the past and present, in comparative light, can help shift through the qualitative data to help produce coherent understandings of recreation scuba divers as a focus group (Bumbuc, 2016). Furthermore, heritage management is essentially a business. Heritage can be labelled as a capital asset that generates revenue, profits, and jobs (Rizzo and Throsby 2006). It therefore requires a basic knowledge of the principles of supply

and demand and the factors that influence its sustainability to help keep it relevant – for if heritage is not understandable, relatable, or accessible, how can it warrant the right to be preserved? While it is not a panacea to solve all existing problems, implementing a successful strategy for the future, should include coupling the diving industry, archaeologists, heritage managers and businesses, to design a model that meets the needs of the public without hindrance to the finite resource that is UCH

Postmodernism anthropology originating in the 1960s advocated for an individual's own perspective in writing and interpretation of other cultures. An anthropologist's background and experiences hence guide their interpretations (Mcgee & Warms, 2012). Therefore, thoroughly, and accurately describing culture is nearly impossible as it is prone to be biased, since everyone has different experiences and personal histories that shape them- this idea, then can be translated into how individuals view heritage. It is believed that all interpretations of culture or a culture's history are valid – there are no wrong answers, just conflicting or contrasting interpretations, therefore making objectivity impossible (Mcgee & Warms, 2012, p521). Therefore, ethnographic accounts are both critical and subjective because they do not always distinguish between the observer and an observed (Bumbuc, 2016). As a positioned 'subject', the ethnographer can therefore grasp certain human phenomena better than others due to their first-hand experiences. The criticism of postmodernism among anthropologists, concerns how postmodernism conducts its ethnography style, which is very immersive and intimate (Mcgee & Warms, 2012, p524). The reproach that postmodernist anthropologists do not follow a scientific model of study is contended. Postmodernists' rebuttal is that scientific evidence is may also limited (Mcgee & Warms, 2012, p523). Nevertheless, most feel that postmodernism has helped anthropologists be more sensitive to how knowledge is generated and interpreted in anthropology, while extending it into the field of archaeology and heritage management (Mcgee & Warms, 2012, p524).

Autoethnography is an approach "distinguishable by its explicitly self-referential mode of writing, whereby the divide between participant and observer is blurred and even ignored, and the text produced refers explicitly to the author" (Besio, 2009, p240). Born out of the branch of postmodernism anthropology in the 1980s which recognises the author not as an impartial, but rather that their background and experiences guide their interpretations (Mcgee & Warms,

2012). This method is to help produce meaningful, accessible, and personal relations to the topic and deepen the readers capacity to empathise on the subject. Therefore, my personal and academic background plays a relevant and cogent role in defining how the information is perceived within Part III.

My academic background to support this method extends from my bachelor's degree in Hawaii, where I majored in Anthropology and minored in History and Marine Science. The training in the USA for archaeologists requires students to pursue an anthropology degree, hence giving a different interdisciplinary perspective on archaeological and heritage interpretation. To justify the inclusion of autoethnographic accounts, it is supported by my personal background of 18 years of diving experience, and experience as a professional recreational diving instructor for Professional Association of Diving Instructors (PADI) for 10 years and completing over 3000 dives. Using this experience, I am better able to employ an emic (insider's) approach to describing recreational scuba diving communities, culture, and ideologies, while interpreting, analysing, and producing a 'thick description'. Coined in 1973 by anthropologist Clifford Geertz, he proposed that a "thick description is what anthropologists do when they break ethnographic information down, sorting through layers of significance to derive the meaning from the native's perspective. Geertz does not advocate that we get inside the heads of native informants but that anthropologists try to position themselves within the same cultural context as their informants" (Mcgee & Warms, 2012, p468).

A series of loosely structured one-on-one interviews were also conducted with recreational scuba diving professionals and questionnaires were answered by marine archaeologists to help create a preliminary outline and concepts of attitudes towards scuba diver interactions with UCH. The role of an interviewer is to create and build a rapport between the interviewees and listen to their stories with a sympathetic ear while displaying the willingness to understand their perspective (Zhang & Wildemut, 2009, p3). From an emic postmodernism perspective, this was simple, and allowed for fluid conversation regarding feelings and emotions of the scuba diving interactions with UCH. The primary objective of these interviews was to encourage dialogue about scuba diving, so their stories could be told. Instead of causing unnecessary bias, I established the topic as the recreational scuba diving community and talked about the characteristics of scuba diving. This format then allowed me to dive deeper into

certain feelings, experiences, and stories while still focusing on the main topic of UCH. I only had three pre-written questions to help guide the conversation and keep on track – these were:

1. How would you describe scuba diving to non-divers?
2. How would you describe wreck diving / how does it differ from reef diving?
3. Do you think the laws and scuba schools are doing enough for the scuba community and UCH?

Recreational scuba diving professionals were chosen because they interact with the underwater world more frequently and observe new divers' behaviours. They understand the recreational scuba diving community and culture as they are thoroughly a part of it. Moreover, recreational dive professionals are aware of the scuba schools' teachings and ethos, which reflects in their lessons. They are specialists in scuba diving and are the mediators between the corporate world, and hobbyists. Wanting to interview professionals from each Big Six Scuba School (PADI, SSI, CMAS, BSAC, NAUI, and SDI) provided a challenge, as communication to SDI and CMAS recreational scuba diving professionals was limited. Although the sample size only contains six participants who reached out a 'thick description' (as explained above) of their narrative can be constructed. The sample size is by no means a complete representation of the scuba diving community but rather should be understood more as case studies, instead of individuals who are the ultimate holders of certain chosen experiences (Crouch & McKenzie, 2006, p493).

Individuals within the recreational professional scuba community who did reach out to be a part of this study were:

- Ty, 39, NAUI/PADI instructor. Ty has been a scuba instructor for the last 15 years and has recently done his cross-over to become an NAUI instructor to be more versatile in the scuba industry. He is an active scuba diving instructor who conducts mainly open water courses weekly and is currently getting his MA in oceanography.
- Emma, 29, PADI instructor. Emma has been diving since she was 16; however, she has only been a PADI instructor for the last five years. As an active instructor, her primary responsibilities are to conduct open water courses and discover scuba diving

introduction classes. She is looking to do her crossover to SSI and has just started her intro to technical diving courses.

- Fiona, 35, SSI Instructor. Emma has been a professional recreational scuba instructor for the last ten years and is actively working as a dive shop manager and head instructor. As head instructor, her main duties fall to teaching Divemaster courses, and as a bonus, she gets the first pick of which other courses she would like to teach. Her first picks on courses are typically specialty courses such as wreck, deep, enriched air 'nitrox' and search & recovery -diving courses.
- Jack, 44, BSAC instructor/ Technical Diver. Jack has been a BSAC instructor for 15 years. Although an active instructor, he does not conduct that many courses. His immediate interest is in technical diving. Jack was my dive buddy on multiple technical caves and wreck dives and holds a wealth of information for proper skills and techniques one can only get through excessive experiences.
- John, 30, PADI Divemaster. John currently works as a travelling nurse; therefore, he is not an active dive professional, however, he is always affiliated with the local dive shop and still often works as the 'back-up' divemaster. He has been diving for 12 years and ensures that almost all his holidays involve some scuba diving.
- Rob, 24, SSI Divemaster. Rob has been a dive professional for a year and is an active divemaster. His current responsibilities are to lead certified recreational scuba divers around new dives sites, be an aid and assist on scuba course and oversees all scuba divers entering and exiting their dives. He is looking to become an instructor in the near future and is hopeful he can do some technical diving courses.

With a developing subject such as recreational divers on UCH, postmodernism allows for individual experiences to guide interpretations of the limited scientific data of the positive experiences of recreational divers on UCH and my personal training/background. The support of the desk-based research and ethnographic interviews blended the emotional aspects and quantifiable information available for recreational scuba divers and UCH. The interviewees consented to an online interview, where the quote, tones, attitudes, and gestures were noted. The interviews had no time-frame or natural end as they had myriad stories and experiences to share to contribute to the thick description of recreational divers on UCH. The original interviews are stored securely with the author to ensure privacy and data protection.

1.7.3 Professional Perspective Questionnaire

An exploratory qualitative questionnaire was sent to 12 professional maritime archaeologists interested in heritage management to support the ethnographic research and keep a more balanced perspective of recreational divers on UCH. Out of the 12 emails sent, seven maritime archaeologists/CRMs consented and responded (See Appendix A). The demographic for the questionnaire is not a complete representation of the professional community but they should be seen as spokespeople on this topic. Ultimately, everyone has a subjective influenced opinion, but it is essential to have room to discuss these narratives. Since emotions are hard to make quantifiable and scientific, cementing the ethnographic interview and desk-based research with perspectives from professionals in the field about this niche community is beneficial to the holistic impression on the topic.

A questionnaire is a collection of questions, each with a range of potential responses. It is also a format that allows the questions to be standardised and structured about the topic by using a selection of open and closed questions. The questionnaire allows the participants to respond based on their complete knowledge, feeling, and comprehension. Moreover, open-ended questions give more fluid and descriptive responses, promoting innovative ideas/solutions. The questionnaire comprises six questions with a seventh space marked as 'other remarks and opinions to give the participants the room to voice any additional information they felt was imperative to the topic. Keeping the questionnaire short but insightful is quintessential for the effectiveness of the response. The questionnaire was sent out via email as a Microsoft Word Document; this distribution method allows the participants to answer the question in their own time, giving more honest and thoughtful responses.

The questionnaire's goal is to obtain informative and empirical data on UCH management regarding the interactions of recreational scuba divers from a top-down approach. The respondents offered insights into human behaviour and its connection to UCH that academic analyses of the interactions, values, laws and education cannot fully encompass. The questionnaires will focus on the functioning of management and protection of protected cultural assets, illuminating contemporary preservation difficulties outside of a theoretical framework.

1.8 Thesis Dive Profile

The main goal of the research is to highlight the positive narrative of recreational scuba divers as part of the core community engaging with UCH. Moreover, it seeks to provide attainable recommendations for safeguarding UCH by encouraging collaboration and transparency between all stakeholders. The thesis is divided into four parts all subdivided sections.

Part II "Assessing the Scene" outlines the current situation regarding UCH, establishing a clear fundamental understanding of threats and challenges – natural and human. Section 2.1 addresses the characteristics of the environment surrounding UCH. Section 2.2 specifically highlights the main stakeholders who are interacting with UCH, from fisheries to marine spatial planning activities and the biggest problem the ocean faces, climate change. The section also does not shy away from the effect recreational scuba divers have on UCH. Understanding the negatives can only help with a balanced interpretation of the risk but also reinforce the positive narrative by providing a holistic impression of the challenges that UCH faces.

Part III "Wading In" is primarily focused on the desk-based research and is the main body of text to help answer the research and sub research questions. The main focus relies upon archaeological, anthropological and heritage management research/theories. Uncovering recreational divers' motivation to safeguard UCH is done through human cognition, influenced by imagination and reality – what is preserved and what is known.

Section 3.1 starts by exploring how scuba divers interact with UCH by using the material engagement theory (MET); it offers the necessary means for conceptualising action as thinking and thinking as action. This theory analyses how people engage with UCH and how this shapes cognition (Malafouris, 2018). Cognition happens in the brain as a mental action and process for obtaining knowledge and understanding about the world through thought, experience, and senses. It is one of the main factors distinguishing human beings from other creatures. Subsequently, cognition can alter how one interacts with their surroundings as it is an essential aspect of how one learns and expresses behaviour (Stern, 2017). Ultimately the primary focus is on how scuba divers' cognitive state underwater influences emotions and connections to UCH by becoming an extension of the external world; it establishes a baseline of divers' behaviour and attitude toward UCH (Malafouris, 2018).

Recognising the complexity of scuba diving, by understanding this unnatural phenomenon of breathing underwater is crucial when evaluating interactions with UCH sites as it shapes cognition by adding other stimulations to the body and our sense of knowing (Straughan, 2012). Thus, studying these connections is twofold. Firstly, it looks at the connection between an individual and scuba diving and how this alters thinking and interaction, and secondly, it looks at the connection between scuba divers and UCH. Using the recreational specialist theory (RST), multiple theories establish that individuals who specialise more in a recreational activities will be aware of the potential repercussions of their activities (Edney, 2018). This theory helps explain how interaction changes from recreational scuba divers to recreational wreck divers who seek the thrill of more complex diving, which establishes a positive feedback loop. However, as technology advances in AR/VR, Moore's law provides a platform to understand this strengthened trajectory of technologies - where interactions with UCH allow for alternative methods (Scarfe & Glennerster, 2015). Although this technology is still in the emerging stages, the potential should not be undervalued as a resource to connect people to UCH.

Section 3.2 focuses on how scuba divers value UCH sites. To establish this focus, clarifying how values are placed is essential. David Graeber's contribution to anthropological theories of value and Randall Mason's typology of heritage values is used as the framework to navigate the questions of value which subsequently are questions of morality and ethics. Values can be categorised into sociological, economical, and linguistic values (Graeber, 2001; Mason, 2002). The economic experience model will help account for heritage as an experience, thereby addressing sociological needs when evaluating values. This theory advocates that there needs to be a source of entertainment, education, escapism, and aesthetics, to fully capture a patron's participation and connection to the experience (Pine & Gilmore, 1998). The economic values are a classic Marxist viewpoint, which looks at the growth in capital. The process, therefore, evaluates different stakeholders' economic benefits to UCH. Finally, linguistic values address the language, perception, and symbolism created through emotions (Graeber, 2001; Mason, 2002). Nonetheless, values are still subjective to the beholder, and the concept of value is highly contested since it is difficult to define and measure objectively. Ultimately this paradox

questions the validity of the value-based conservation approach thereby favouring a bottom-up approach when addressing conservation and management methods to UCH.

Once there is a clear understanding of how values develop and what values the scuba diving community bestows on UCH sites, then the next phase is to understand the information accessible to the public, as this will directly influence the hierarchy of valuation of UCH. A necessary condition of the statute addresses the rights of public access.

Section 3.3 investigates the current laws, regulations, and frameworks and their effectiveness in safeguarding UCH. Maritime law has a rich history rooting back to ancient Egypt, Phoenicia, and Greece and in more recent history through the period of colonialism – these roots are still seen today. Therefore, it needs rectifying to embrace the multi-national character of the ocean. Policy creation is then often sabotaged when it intentionally creates ambiguity or gaps in legal norms, for it uses the law in ways that produce the appearance of law but do not function as the 'real' act of law (Barnhizer, 2016). The process occurs during development and implementation when these policies pertaining to international ocean governance are frequently undermined. Peer pressure, rewards, and punishments determine which laws will succeed (Friedman, 2016). In addition to addressing the legality of UCH, the ocean domain is guided by the UN Ocean Decade and the UN Sustainability Development Goal 14, which advocates for the Blue Economy as a desired way to generate Blue Growth via tourism.

Section 3.4 reconnoitres the current information taught to recreational divers through the 'Big Six' Scuba Schools, who issue the majority of scuba diving certifications on an annual biases (Kieran, 2021b). Education is a significant component of how and why UCH is protected or valued. The duty of teachers, policymakers, and regulators is to provide individuals with the means to identify and evaluate their values to make informed decisions (Sutrop, 2015). Understanding what recreational divers know can help address areas that need more attention to help bring awareness to UCH. Moreover, it places scuba schools in a more central position as stakeholders to help bridge the current disconnect between recreational divers and professionals.

Part IV “Adding a Wetter Touch” will be ethnographic research using autoethnographies, and interviews with support of the questionnaires from professionals. This section is structured similarly to Parts II and III by including the essential principles from the desk-based research to help support and unravel recreational dive professional stories related to each section - threats, interactions, values, law, and education. The objective is to use human data from personal experience to further build on these core themes to develop a comprehensive and authentic narrative of recreational scuba divers and UCH. It is challenging to measure emotions scientifically and analytically in human-based studies, but human data is necessary when discussing something as subjective as human interactions and values. Therefore, when interpreting personal accounts of UCH from recreational scuba divers, it is about "moving from idea to explanation, from data to story, and in many cases from confusion to meaning" (Madden, 2017, p149). It is about developing a vivid, in-depth narrative of these encounters.

Part V “The Final Ascent” completes the thesis and regroups the information examined in Parts II, III, and IV. The discussion allows the interweaving of both desk-based research and ethnographic accounts. Section 5.1 will divide the discussion into four sub-sections to answer each sub-research question. Tackling the interactions recreational divers have on UCH, the values they placed, what framework has been put in place for UCH with perspectives from the recreational dive community, and the outline of the scuba school education. Following the discussion, an ERRC Grid: Eliminate-Reduce-Raise-Create stipulated within the Blue Ocean Strategy (Kim & Mauborgne, 2015) to formulate preliminary recommendations in section 5.2 to assist in involving recreational diver management to apply to UCH safeguarding as living heritage.

Part VI, 'The Debrief,' will address the overall findings of this study in relation to the research questions and will formulate an overall conclusion of to what extent and how recreational divers' interactions on UCH can positively add to the narrative, values and safeguarding of UCH. Limitations to the study will be addressed in section 6.2, which also proposes directions for future studies on this topic.

PART II: ASSESSING THE SCENE

Recreational diver activities do not solely threaten UCH. Unsustainable and destructive fishing techniques, insensitive coastal development, a negligent attitude toward onshore and offshore environmental protections, and persistence in using the oceans as a solution for pollution have already significantly impacted the ocean's health and integrity of UCH sites (Appendix B). Climate change is exacerbating the situation by warming and acidifying the waters. Addressing the challenges UCH faces provides a deeper understanding of the multiple factors which are part of these sites' deterioration and therefore advocates for an increased field of supervisors in this vastly underregulated domain.

2.1 Characteristics of UCH

The waterlogged, anaerobic, and anoxic conditions of the underwater world provide ideal conditions to allow organic and inorganic materials to be well-preserved. It is one of the elements that characterise the rich archaeological information contained in UCH sites (Maarleveld, 2014). Additionally, to cultivate a unique environment where artefacts can be preserved, UCH goes through a life cycle, by eventually integrating and becoming a part of the environment and serving as artificial reefs. The structures of UCH provide a foundation for corals to grow on, and are magnets for fish, with plenty of hidden holes and crevasses to attach to. Organic and non-organic material influence the dispersal of microbial communities and their biogeographic patterns, resulting in the growth of coral communities in and around UCH. The microbial communities are bound to UCH and assist in the nitrogen, carbon, sulphur, and iron cycling within the UCH ecosystem. Once attached the microbials reproduce on the surface of UCH, to form a biofilm, which is a thin layer of slime that acts as a protective coat. The biofilm is an indication for other organisms that this is a suitable environment to grow and eventually this begins an ecological cascade by attracting more and varied species to take advantage of this new ecosystem (Moseley et al., 2022; Price et al., 2020).

2.2 Threats to UCH

UCH sites are non-renewable resources that encounter direct or indirect consequences of anthropological activities. The existing tribulations UCH sites face are erosion, climate change, dredging, construction, treasure hunting, looting, lack of outreach, and funding (Edney, 2018; Manders, 2015; Cohn, 2000). These impacts are not restricted to recreational scuba divers but any stakeholder - such as fisheries, shipping/transport and drilling/construction businesses- interacting with UCH or reefs.

2.2.1 Climate Change

The adverse impacts of climate change on the ocean include rising ocean temperatures, ocean acidification, deoxygenation, sea-level rise, the decrease in polar ice coverage, coastal erosion and extreme weather events. These factors also contribute to the endangerment of UCH.

Sea levels are rising and erode coastal areas, resulting in carbon loss in sediment and changing the dynamic of bays, shores, and estuaries. The accumulation of sediment caused by erosion can affect UCH, by exposing new sites, or the extra sediment deposited might harm the fragile sites. These rising sea levels and eroding coastlines correlate to increased surges and storms. The violent weather poses an immediate threat. Hurricanes can run directly over UCH, causing them to splinter, shift archaeological remains, remove their protective coatings, or, more catastrophic, destroy the entire site (Wright, 2016).

As ocean levels rise, so does the temperature and acidification of the ocean. Rising temperatures affect the ecological and chemical processes in the ocean. These processes lead to more rapid deterioration of UCH, via metal corrosion or shipworms (termites of the sea or *teredo navalis*) (Perez-Alvaro, 2016). Although small, shipworm can completely devour entire sites; unfortunately, they thrive in saltier and warmer environments—however, the demise of shipworms can come from ocean acidification due to their physiological makeup of calcium bicarbonate shells. Ocean acidification weakens corals and other benthic calcifiers attached to UCH. Ultimately this can impact the site's integrity, as coral and marine life can act as a protective physical barrier (Wright, 2016).

2.2.2 Fisheries

Technological advances that have occurred in the past 200 years have drastically altered how modern fishing vessels operate, allowing them to increase their fishing productivity. With large nets and vessels, they can catch more fish than ever, increasing their profits. Destructive fishing practices such as cyanide fishing, bottom trawling and dynamite fishing all have long-term, hazardous effects on coral reefs, marine life and UCH. Therefore, it is essential to curb these destructive practices. One way to do this would be to have governments worldwide implement laws banning the use of these destructive fishing techniques. However, this is not easy to enforce as the ocean is a massive place, coupled with the ambiguity or non-transparency of the field, leaving fisheries verging on being a self-regulated industry (Pauly & Palomares, 2019).

The commercial trawl fleet is to blame for the widespread destruction of marine ecosystems and an indiscriminate catch method which throws overboard up to a third of the catch. With mouths wide enough to fit thirteen 747 airliners, trawl nets scrape the ocean floor in wide strips. Researchers say that if all the strips were connected, the length would circle the earth over 500 times yearly (Pauly & Palomares, 2019). They also use techniques such as sonar, to pinpoint schools of fish, and bottom trawling, to capture great masses, while incidentally wreaking havoc on the seabed. UCH is directly affected and often forgotten about - if in the way of fisheries.

2.2.3 Off-Shore Activities

Off-shore activities relate to marine construction, and installation projects, such as salvage work, offshore wind farms, marine energy plants, oil rigs, ports, shipyards, shore protection works and military exercises, threaten the safeguarding of UCH, due to their intense and often destructive methods (Baker, 2004). Industrialisation of the ocean is one of the few areas where humans have yet to exploit as fully as on land. This comes with concerns not only for the environment but also how humans manage resources (Carey, 2015).

As stated in PUCHC in Article 1(b), "Pipelines and cables placed on the seabed shall not be considered as underwater cultural heritage" (UNESCO, 2007), but to have these devices constructed involves entering and disturbing the ocean. However, with the increased attention on Maritime Spatial Planning (MSP) to promote the Blue Growth strategy (i.e. the long term strategy to support sustainable growth in both the marine and maritime sectors as a whole)

more activities are taking place on the open seas. MSP efforts to perform UCH Impact Assessments prior to human interference have made way, but these activities can still be detrimental to UCH (Van Tilburg & Staniforth, 2021). Risk mitigation plans may not get properly implemented, notably due to construction projects companies trying to keep costs down. These risks may include possible indirect impacts such as oil contamination, water movement, sedimentation related to dredging activity, and spoil disposal, as well as the release of toxic materials and chemicals, and failing to stabilise the site. The assessment of any impact involves both (I) technological challenges — how to investigate sites, and (II) legal challenges — who should cover costs of investigation (Søreide & Jasinksi, 2000). With increased awareness of the importance of safeguarding UCH, more and more countries require marine archaeological studies to be carried out as part of any commercial project. However, even with legislation in place, compared to land-based activities, compliance may be more difficult to check.

2.2.4 Recreational Scuba Divers

The impact of recreational scuba diving on UCH cannot be ignored. There are five aspects of recreational diving that negatively impact UCH. These include anchoring and mooring damage caused by dive boats, artefact removal or adding objects, Deliberate encounters, Unintentional encounters, and expelled air bubbles from scuba diving units (Edney, 2018, p2; Appendix B1).

Firstly, anchoring and mooring damage is the most manageable negative impact to rectify; however, it undeniably produces significant damage to UCH. Damage occurs upon dropping anchors and chains directly onto wrecks, dragging anchors and chains across wrecks, or when the chain/anchor is used to assist in finding the site (Edney, 2018, p51). Additionally, boats attached to a mooring line provide tension and force on the mooring line, which can damage the integrity of UCH. Mooring also has been known to be placed directly on UCH (Edney, 2018, p51).

Impairment to the site's integrity and stability can be further categorised by artefact removal or adding of objects. The issues underwater encompass; the complete removal of an artefact to the surface, commonly known as looting; the removal to cluster objects to make for a better dive experience; the removal to conceal/hide artefacts to later show to divers; or the wafting

to discover/find an artefact but no attempt to redeposit it (Edney, 2018, p52-59). Artefact removal is destructive as it involves excavating the object out of its context, thereby creating an inaccurate or incomplete understanding of its histories. Adding artefacts to the memorialisation of a site, as often seen on terrestrial sites, can also create an inaccurate overview of the site (Edney, 2018, p57).

The public most often recognises deliberate encounters as detrimental to UCH. This includes contact on UCH by touching, kneeling, standing, holding or kicking. Attaching dive equipment to UCH (such as penetration lines, moorings, and tanks) can also be categorised as deliberate and therefore cause negative impacts on the site. Unintentional encounters such as accidental body contact by touching, kicking or poor buoyancy happen frequently and cause divers to take extra precautions during a dive. Additionally, divers must watch that the equipment does not touch UCH. This occurs through loose hoses dragging on UCH and poor buoyancy with tanks touching UCH.

Divers use a variety of equipment. One such piece of equipment is the open-circuit scuba unit. Open-circuit scuba units are the most common set up of scuba within the recreational dive community; this unit expels bubbles which increases the rate of corrosion on UCH (Edney, 2018, p64). These expelled air bubbles from scuba diving units impact UCH as bubbles can get trapped in UCH, furthering degradation (Edney, 2018, p2).

The motivations to dive on UCH are manifold. Recreational divers may enjoy diving an artificial reef, or they may revel in the history and beauty of an UCH site, or they may simply seek out other challenges (Edney, 2021). They consequently become a crucial part of the underwater environment, so to that end it will be fruitful to highlight the environmental and cultural effects on UCH when the recreational scuba diver plunges in. Regardless, training and education may greatly minimise the adverse effects of the scuba community's interaction with UCH.

Current research on scuba diver behaviour underwater on both reef dives and UCH dives provides a baseline to create a risk assessment for UCH and the recreational scuba diver participating in this specific activity.

2.3 Future Direction

Several strategies are now in use for the physical conservation of UCH sites. Many of these are designed primarily for usage in a given environment (Manders, 2011). The most sought protection, as addressed in the Protection of Underwater Cultural Heritage Convention (PUCHC) 2001, stipulates in situ protection as the most desirable (UNESCO, 2001, p2). There are six archetypal reasons to preserve in-situ:

1. "It preserves for the future
2. It has a well-developed legislative system to protect sites
3. The enormous number of newly discovered sites
4. It may be cost effective
5. There is usually a time gap between discovery and excavation
6. It allows for implementation of improved conservation methods in the future" (Manders, 2011, p9 – extensive elaboration p9-11)

However, to honour the PUCHC, there must be an intended reason and objective to advocate for the physical in situ preservation. Discovery of a complete UCH site, regardless of how appealing or extraordinary it is, CRM must decide with a variety of quandaries. Taking no action in physical intervention means it is only a matter of time before the site is lost or destroyed. Since in situ preservation necessitates long-term responsibility, the CRM must account for the site paradigm (Manders, 2011, p49). As addressed in section 2.2, physical, chemical, and biological processes contribute to the derogation of sites (Figure 2).

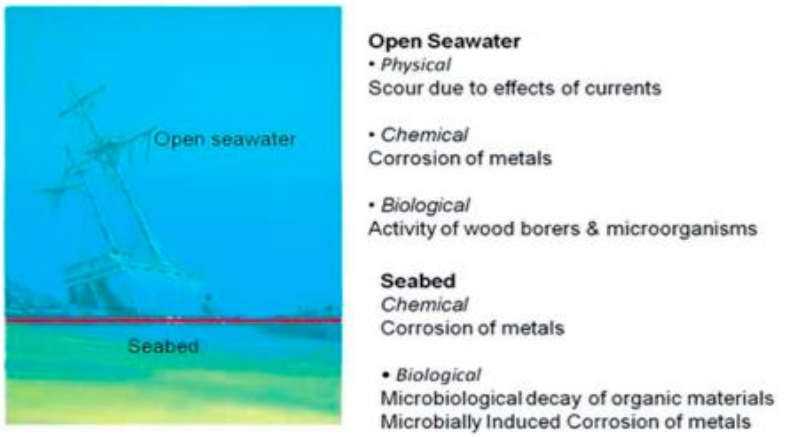

Figure 2 – Main deterioration agents found on UCH in open Oceans (Manders, 2011).

In-situ conservation should be a non-invasive method that enables the preservation of the authenticity of the shipwreck site. Ergo, it does not relocate objects from their original spot, which is critical in understanding the site's original context of information. Methods, such as

reburial and covering techniques, significantly slow the decay of archaeological artefacts, allowing for long-term maintenance and conservation. These techniques include sandbags, geotextiles, artificial seagrass, polypropylene debris nets, cages and sediment redeposition (backfilled) (Manders, 2011, pp. 26-37). The motivations for safeguarding a place frequently impact the tactics implemented at a site. If a location is being conserved for recreational purposes rather than scientific ones, it might not be ideal to seal it off from view completely.

Installation should be as straightforward and inexpensive as feasible. In situ conservation ranges from €35,000-€71,000 obviously local economies will differ these outputs (Manders, 2011, p43). While lifting UCH to be stored or placed into a museum can cost anywhere between €0.5million to €77million – the difference ranging from 11m ship found on land or 38m ship on the seabed (Manders, 2011, p45). Clearly the difference is extreme, where nearly 1100 ships can be protected in situ for the same cost as one extraction.

Personnel costs (professional divers and maritime archaeologists), ship hire and diving equipment, are the priciest matters when tasked with underwater archaeology, these are magnified when UCH is excavated, into curation. However, the expenses of the materials are often quite low. For example, a ribbed steel net with a 6mm diameter, with mesh size of 30cm x 30xm, accompanied by 80kg worth of weights to prevent it from moving, over a 200m^2 area approximately cost €8,000 to invest (Mesić, 2008, p96). Additional daily cost/budget for monitoring UCH via diving is €6,200, a ship rental with sonar/multibeam (no personal costs included) €3,000 or a ship rental with ROV facilities (no personal costs included) €15,000-€20,000 (Manders, 2011, p44). The ability to firstly create a baseline and secondly monitor any changes occurring on UCH is just as crucial as securing site integrity.

With the unprecedented cost already associated with diving, utilising the available resources at CRM disposal is essential. Recreational scuba divers are these assets. “The protection of the underwater cultural heritage is therefore not just something to strive for by an individual, by a single stakeholder group or even by one country alone, it is of concern for all of us” (Manders, 2011, p50).

2.4 Summary

Although there are threats and concerns surrounding UCH, the negatives have been, and will always be highlighted, considering that these are non-renewable and finite resources. UCH and reefs already face degradation due to direct and indirect anthropological activities. Without the current resources to reverse these effects, the ideal task is to monitor for significant influxes in the site's integrity and lessen the effects. Regardless of who or what is interacting with UCH, there will always be some form of degradation (Appendix B). With this shadowing, the future of UCH, focusing on the positive interactions, can only serve better to help safeguard UCH and its ties to the community.

Recreational scuba divers can serve as a platform for CRM and archaeologists to utilise in helping to monitor UCH. The risks UCH faces from recreational scuba diver interactions can be greatly minimised with proper training and education. By understanding how the scuba community positively interacts, UCH can become more understandable, relatable, or accessible to a broader audience. Scuba divers have the ability to plunge into the depths - allowing them to experience UCH serves the purpose of right of culture first-hand. Moreover, the threats of climate change and large-scale offshore activities can arguably be even more consequential to UCH. Targeting the minority of the issues – recreational scuba divers - will obviously help in safeguarding, but greater attention to the larger issues would be more fruitful.

PART III: WADING IN

Experiences ultimately alter how one preserves and understands the world. Scuba diving technology alters the human body's limitations, enabling humans to transcend the physical boundaries facilitating a different sensory experience – breathing underwater, becoming weightless, all redefining how one experiences the world. This niche community of scuba divers are therefore subjected to a different way of knowing, understanding, feeling, and acting. With this fact in mind, the familiarity of scuba divers' experience of the underwater world is vital to understanding how scuba divers interact with UCH.

3.1 Interactions

Current developments in the archaeology of mind are being driven by Material Engagement Theory (MET). "MET seeks to illuminate the emergence of human ways of thinking through the practical effects of the material world," (Iliopoulos, 2018, p39). It seeks to transform mind and matter through the demands of active externalism and enactivism. When looking at interactions with UCH, it is vital to understand the physical and cognitive demands scuba divers face when submerging themselves in this alien environment. These demands change the way one interacts with their surroundings. Using MET can help synthesise this interaction to understand the changes in cognition affecting how one interacts with UCH, subsequently prompting UCH values. MET further elaborates on the 4Es of cognition, emphasising that cognition is embodied, embedded, enactive and extended. Malafouris (2013) establishes a multifaceted collection of hypotheses to highlight the 4Es cognition:

- The Extended Mind Thesis attempts to explore the idea that the mind extends outside the brain, cognition, or even the body. External agents are then considered equal to biological cognition in EMT (Iliopoulos, 2018).
- The Enactive Signification Hypothesis investigates how embodied activities lead to enactive cognition. Instead of operating on the principles of symbolism, material signs enact and function according to the principle of participation. Material signs produce rather than merely represent preformed ideas or images as signifiers of the signified (Iliopoulos, 2018; Malafouris, 2018).
- The hypothesis of material agency is an extension of EMT, "which explores agency not as a human impact but as the emergent outcome of the activity," (Malafouris, 2019, p196). The emergent product of situated activity can bring about changes in the world

(Iliopoulos, 2018). Fundamentally an agency or agent means that all things can 'act' and influence each other. Thus, the diver and scuba unit are individual agents, as are the underwater environment and the heritage (Boivin, 2009).

3.1.1 Understanding the Ocean

"The ocean is life," wrote Jacques-Yves Cousteau in his Ocean World book series (Jacques Yves Cousteau, 1975, p3). The ocean has always been an integral part of the narrative of life on Earth, as it is an agent of cultural, material, and ecological means by which the ocean is constantly being influenced by humans, and humans are constantly being influenced by the ocean. The ocean's dynamics are crucial as humans are frequently surrounded and defined by the materiality of technology and the environment. Water has always been an instigator of development as it is essential for human life. It has provided trade routes, fuelled empires, and advanced technologies – boats, navigation, agriculture, purification – and has recently highlighted the consequences of anthropological activities such as climate change.

The parameters of land and water vary massively, and it would be ignorant not to address how the ocean plays a role for humans who spend the majority of their life on land as terrestrial creatures. Analysing the ocean must focus on the materiality it produces and understand it from the beholder's perspective acclimated to it as a condition for thought – the scuba diver. Cognition studies also need to consider the environment as a provider of external input sources for cognitive processing and an agent of cognitive processing (RayCraft, 2020). Otherwise, the development of values and understanding of the world will become static and remains anthropocentric if not mended. As anthropocentrism holds, humans are different from and superior to many other forms of nature. Human life has intrinsic value, while other entities (such as underwater culture, animals, plants, and mineral resources) can be exploited for human benefit.

The oceans are constructed via embodied forms of sensory knowledge because the ocean is a three-dimensional space in which one's senses are differently engaged. Weight becomes redundant, smell obsolete, movements slowed, hearing distorted, and hand signals replace verbal communication – a complete immersion into the surroundings. Observing the world's underwater areas entails an abstract activity of reconsidering the collective ‘land bias’ and

related anthropocentric preconceptions about nature/culture linkages (RayCraft, 2020). These assumptions require us to reteach how to comprehend the ocean's 'blue space'. Studies on the blue space unearthed health benefits, particularly mental health and psycho-social wellbeing (Mitchell & Popham, 2008; Kardan et al., 2015). So before even submerging into the ocean, the vast stretch of water already shapes the mind.

3.1.2 Person vs Scuba Diving

Understanding the relationship between a person and scuba diving is essential to understanding cognition. As described, the ocean already enacts to change how one understands the world. The desire to escape from land-based physical constraints and perceptions, the ocean as an active agent (ability to bring change) has brought about advances in scuba technology. Technology and scuba diving methods have developed from a military discipline to a recreational activity becoming safer, lighter, and more streamlined.

Scuba diving is a physical activity regardless of how slowly one moves through the water, and it is no secret that exercising is rewarding for mental health (Kovacs & Buzzacott, 2017). However, scuba diving can be a death sentence without proper training. Physiological changes to a scuba diver in the underwater environment have been well studied and are essential to how scuba divers interact and engage with their surroundings. Water is heavy, and the deeper a scuba diver goes, the more water is above them, creating pressure not found on land. The weight of the water compresses the gas a scuba diver breathes and moves at a higher density than usual within the body. The longer a scuba diver is below the surface breathing, the more nitrogen is gathered in the tissues and organs, becoming pressurised. Bolting to the surface can cause nitrogen bubbles to expand in the nervous system, in the brain and spinal cord, leading to stroke or permanent paralysis (Bosco et al., 2018). Additionally, if a diver holds their breath while ascending, nitrogen bubbles can become trapped in the lungs; bubbles expand and can rupture the tissues of the

Figure 3 - Scuba diving into the deep blue where senses are altered. Adjusting to the new alien environment (Eversdijk, 2016)

lungs. These catastrophic effects on the biological systems showcase that shooting up to the surface when there is a problem is simply not an option: a scuba diver must learn to deal with issues in this more unfamiliar environment through experiences and teaching (Stanley, 1995). These stressors that scuba divers deal with underwater, already force a different outlook on how to handle situations. Divers must be comfortable underwater, knowing that human error will result in a deadly outcome.

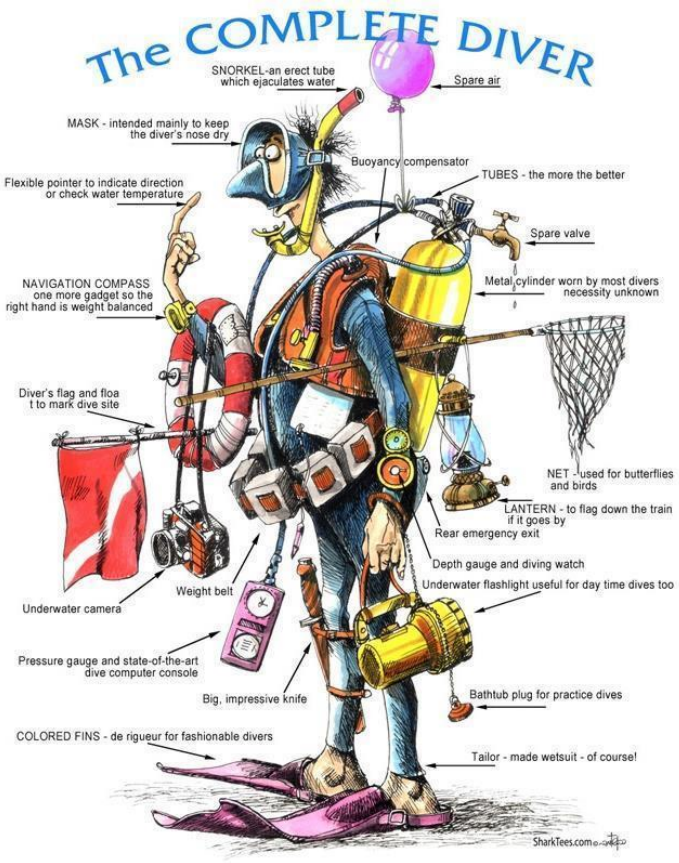

Figure 4 - The Complete Scuba Diver transformation into a Cyborg (Cohen, 2007).

Scuba diving allows for the momentary inhabitation of the aquatic environment by becoming aware of the surroundings through the sensory experience. While humans may never be able to become mermaids, Justin RayCraft, in his article "Seeing from Below: Scuba Diving and the Regressive Cyborg" (2020), argued that scuba divers are cyborgs (Raycraft, 2020). Although an absurd term to be using, scuba diving technology transcends humanity's biological limits, allowing these 'new bodies' to experience information while exploring the unique and previously unimagined settings of physical and mental possibilities (Figure 4) (Stevenson, 2007).

Divers can experience a distinct way of being in the underwater world by engaging in scuba diving. Accepting that scuba divers are cyborgs supports the EMT approach, which dictates that there is no separation between the mind, the body, and the environment because external objects are crucial in facilitating cognitive processes. Consequently, the mind is extended into the physical world – not bound by the restrictions of the human body, but rather blurring the lines of technology and nature (Iliopoulos, 2018).

The process of scuba diving becomes like a ritual, an innate way of knowing, thereby affecting the values of scuba divers (Raycraft, 2020). Before jumping into the ocean, a scuba diver and their buddy will start with a dive briefing, using specific language embedded in the scuba diving culture. Divers understand how the dive will proceed and will establish and confirm hand signals that relate to their dive. When communication is limited below, dive buddies must unquestionably understand each other in their hand signals and mannerisms[1]. The latter can only be taught to an extent; however, a genuine understanding of how divers interact is through embodied experiences. Embodied experiences are knowledge of an individual's lived realities regarding the physical and emotional aspects of engaging with scuba diving (Straughan, 2012). The emotions felt when scuba diving reveal this therapeutic and euphoric sense of wellbeing through sensory engagement. Emotions are a defining aspect of the human's perception of the world, for positive emotions correlate to positive experiences, and positive experiences transcribe positive interactions and values.

The physical aspect of embodied knowledge relates to scuba diving equipment. Tentacle-like extremities such as the depth gauge, gas gauge, two regulators, the BCD (buoyancy control device), wetsuit, fins, mask and tank become one with the divers. The experience of one's own body in the environment serves as the foundation for 'embodied action'. These embodied actions align with the enactivists significance theory, whereby the sensory and motor processes of scuba diving are associated with shaping perception and action (Read & Szokolszky, 2020).

Perception is seeing, hearing, or becoming aware of something through the senses. This is highlighted through breathing; typically done unconsciously, it now becomes a very conscious activity underwater. Most dive times are often restricted to the air consumption of a tank; divers must be aware of how heavy they are breathing and how deep they go. The compressed air at deeper depths limits the air and therefore the dive time. The active breathing process underwater encourages the same breathing techniques of meditation - controlled yet relaxed. Focusing on breathing allows one to become more conscious of oneself, more attentive, and

[1]Mannerisms understand can change due to circumstances. Taught changes in mannerisms come from visual cues such as increased breathing (heavy panting), glazes eyes and lack of locomotion

more peaceful, all contributing to better mental wellbeing (Straughan, 2012; Beneton et al., 2017).

The sound underwater is distorted. The underwater world is typically regarded as a silent world; however, an oxymoron, as sound travels four times faster in water than on land. When sound travels this fast, it is hard for humans to gauge the direction of the sound. Moreover, the sound of the bubble creates this constant rhythmic noise creating a sense of immersion (Helmreich, 2007). Water also distorts sight by making objects appear 33% bigger (34% bigger in salt water) and 25% closer (Spira, 1999, p43). Scuba divers must learn to adapt to their magnified surroundings, which takes time to adjust, as well as compensate for all the extra gear now attached to their bodies.

A diver's breathing influences how one feels – the perception - but it also plays a role in buoyancy control – the action. Divers can reach a condition of 'neutral buoyancy' that allows them to hover motionless in mid-water; this state of being is unique in the world, mimicking outer space gravity. In the same way that balancing on land helps maintain our place in space, controlling breath affects a diver's capacity to sustain buoyancy (Straughan, 2012). The inability to control breathing and hence buoyancy can aggravate a diver causing the situation to become stressful and adding to anxiety when navigating these new sensory experiences. Therefore, achieving neutral buoyancy is a skill that becomes fully learned when something is extrinsic and embodied knowledge (Leder, 1990). Moreover, the feeling of weightlessness that comes from achieving neutral buoyancy sends positive signals to the brain (Straughan, 2012).

The engagement with scuba diving equipment within the water environment deepens the understanding of cognition in an alien environment where emotions, perception and interactions emerge. Heat loss is 25-30 times quicker in water, and exposure to severe temperatures has been shown to affect cognition. (Khan et al., 2021; Tarlochan & Ramesh, 2005, p161). The function of wetsuits is to provide warmth to the diver. The wetsuit becomes a second skin to insulate the water by retaining it. However, wetsuits also protect divers from marine life and structures. Deciding which wetsuit to wear is then an embodied and embedded process of understanding what is best suited for that dive. Moreover, suiting up also becomes

part of the innate ritual of scuba diving. It is part of how a human transforms into their cyborg state.

To conclude, how a person interacts with scuba diving becomes a sensory experience of knowing. By blurring the lines between the human sense and technology, the experience underwater is new and engaging by altering the humans' typical sensory experiences. Our senses are intricately interconnected and provide a myriad of information about our immediate environment. We respond almost automatically to this sensory information by becoming more acutely aware of our surroundings as we become a part of it. Accordingly, for a diver this can trigger a feeling of pleasure or signify a warning as they become more accustomed to their cyborg form (Helmreich, 2007). However, this comes from experiences, which further shapes how scuba divers interact with their surroundings, knowing that human error can result in an untimely death. Research shows a greater sense of emotional and physical well-being by engaging all senses, which plays a vital role in creating positive memories (Fredrickson, 2001).

3.1.3 Scuba Diver vs UCH

Now that scuba divers have been defined within the context of underwater engagement and changes in cognition, the next layer to consider when addressing UCH is that scuba divers are interacting with submerged heritage. Heritage is a type of representation that can include, exclude, or exploit specific communities. Intangibles and tangibles are both types of cultural heritage. Tangible cultural heritage includes the material characteristics of heritage (e.g., monuments, archaeological sites, tools). Intangible includes expressions, "practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artefacts and cultural spaces associated therewith—that communities, groups and, in some cases, individuals recognize as part of their cultural heritage," (UNESCO 2003, p3). Historic places typically increase a sense of place and belonging, in turn, creating a positive impact on mental health (Power & Smyth, 2016).

The physical limitations of connecting with UCH already divide those able to interact – non-divers vs scuba divers vs wreck divers. Whereby the amount of experience gained influences the level of interaction. Non-divers' interaction with UCH is restricted, scuba divers'

interactions are limited, and wreck divers' interactions are more prominent. The degree to which a person engages with UCH highlights the conscious effort to make a connection to the site. Cultural heritage creates a positive experience by making these emotional connections (Gallou, 2022) and scuba diving subsequently also forms a positive experience- why, then, are these concepts mitigated when addressing the positive narrative of interactions on UCH?

Heritage is ultimately about the past and the present, from what it was before to how it is now. The interaction of material agents with human subjects demonstrates that the agency's powers, energy, and possibilities are not limited to their intention - UCH can transition to become a dive site, an artificial reef, a revenue stream for ecotourism and an instigator for international cooperation. Therefore, UCH can also be seen as an active agent, influencing its surroundings. These interactions influence behaviours and emotions impacting scuba divers' experiences. UCH sites meet the needs for the "cultural, natural, and physical experience and can offer more opportunities for people to learn local culture and history comprehensively," (Zhao et al., 2016, p12) but also help develop their self-identity as scuba divers.

As scuba divers become cyborgs, they already have different cognitive states of understanding and emotions (Raycraft, 2020). They interact with cultural heritage differently because of the transformative sensory ability of scuba diving. However, UCH must be reminded that the initial prognostication was never to end up at the bottom of the sea. Therefore, UCH's life histories reflect an evolution of change between culture and environment. UCH can be interacted with on varying levels depending on scuba diver experiences. The three basic categories are non-penetration, limited-penetration, and full-penetration.

- Non-penetration diving is the most basic and least dangerous sort of wreck diving. This form of wreck diving involves swimming around and over the site of the wreck rather than entering the wreck. Usually, this type of dive does not need extra equipment or training, as the diver has an unobstructed clearness to the surface. All the diver needs is to feel comfortable with their abilities and experience.
- Limited-penetration wreck diving allows a scuba diver to access particular areas of a wreck while remaining in the 'light zone' — places that are lit by ambient light and where the exits are always visible. Except for a few specific wreck diving-related accessories (dive light and full length wetsuit), this form of diving does encourage

continuing education for scuba divers. It requires divers to be more comfortable dealing with hazards at depth – entanglement, obstructed exits, and sharp edges – which comes from experiences.

- Full-penetration diving allows a scuba diver to go well beyond the "light zone", venturing deep into the interiors of the wreck. The further away the exit is for a diver, heightens the safety concerns. This form of diving requires technical dive training as it involves a more advanced understanding of navigation, equipment, and gases. As Greek lyrical poet Archilochus said in 650BC, "We do not rise to the level of our expectations; we fall to the level of our training," (Archilochus, 650BC). All a diver has during an emergency is their training and nerves. The unnatural phenomenon of being underwater is then heightened by the sensation of penetrating the enclosed spaces of UCH. Therefore, divers must learn how to control their emotions, the stress, the panic and fight the urge to transform back to their humanness when a problem arises.

Using EMT, a scuba diver's cognition is then situated in and distributed over the environment instead of being localised exclusively in the brain. Scuba divers do not obtain knowledge by just swimming in the ocean; they know because they are part of it. Considering the space, scuba divers have noted a change by which the area becomes 'haunted' (Straughan, 2012). When this happens, the disruption or dislocation of normalised ideas of materiality, embodiment, and space transforms.

This transformation is embedded in the language to which people are subjected to before embracing the cyborg-ness. Shipwrecks, lost cities, and other forms of UCH have been glamorised for centuries by literature, movies, and other forms of media. Homer (484–425 BC), in his epic poems, the Iliad and the Odyssey, references the ocean as the *Pontos Atrygetos* – 'the unharvestable sea'. The ocean has always been a dangerous enemy to men – claiming many lives, ships, and cities. Those unfortunate enough to meet the wrath of the ocean endure tales of survival and hardship. This perception of UCH thereby alludes to a sense of mystery and danger. Perception is the active investigation of one's surroundings, which builds patterns between one's emotions and sensory states within the underwater world (Bonnet et al., 2008). The enactive significance supported by scuba divers' perception and action then varies depending on which experience level is being addressed. However, all divers are taught never

to exceed their training or experiences. Therefore, the proficiency of a scuba diver is subjective to their hours spent underwater and from the embodied experiences they learn as a result.

Figure 5 - HTMS Sattakut WWII, Koh Tao, Thailand. Purposefully sunk wreck where interactions with the gun can be made, creating a very attractive site for new diver students (Eversdijk, 2013)

Knowing the environments and understanding the possible interactions through feeling and thinking, creates this emotional geography of UCH, and for scuba divers to make personal connections, meanings, and values with regards to UCH. These emotional geographies are cultivated through different degrees of competency. Emotions orient the individual to specific motivations and goals and prepare the scuba diver for forthcoming action. However, their awareness of the subjective emotional experience guides their behaviour (Bonnet et al., 2008). A scuba diver knows that the likelihood of being bitten by a shark on a wreck or finding a dead pirate body is a rare occurrence compared to the most common problem of running out of air, decompression sickness, getting entrapped or entangled.

For example, wreck divers know the rule of thirds – one-third of the air for decent, one-third for the ascent and safety reserved one-third is a safety reserve. (Sheck Exley, 1977). Air reserves are necessary for deeper and/or longer dives where the scuba diver must stay underwater to perform decompression stops before ascending to the surface safely. The deeper a diver goes, the more the air in the tank is compressed, coinciding with heightened emotions of excitement or fear, which can rapidly deplete a diver's air supply. The more intense the emotional state of a scuba diver, typically results in the heavier the individual's breathing becomes. Air consumption then poses obvious problems when descending within an underwater maze. However, through embodied experiences, wreck divers learn to control these emotions as they once did when first diving into the world of scuba, becoming at ease in these unnatural places.

Moreover, wreck divers get accustomed to these new challenges and hazards underwater. Penetration points differ from reef dives in which wreck divers develop an instinct for which holes are big enough to wiggle through and which should be avoided. A dangling hose or loose strap can become caught inside a wreck; automatically, wreck divers will fasten equipment tightly to their bodies. Avoidance of disturbing the silt is paramount for not limiting visibility further in light-restricted zones, and this is done by gently frog kicking or flutter kicking in appropriate areas. All these motions for wreck diving become almost second nature as it could result in entrapment or even death. Scuba divers may choose riskier dives, such as wreck diving, which facilitates the Hedonistic Loop, which creates a positive reaction. These experiences help push divers outside of their comfort zones, encouraging them to find new meaning in the world around them and seek further education (Bonnet et al., 2008). UCH provides this opportunity for divers looking for a new challenge. Nevertheless, not all UCH involves penetration diving, another critical aspect that needs changing with the public opinion on UCH.

In conclusion, interactions with UCH becomes a more emotional experience because of varying preconceived notions of the nature of UCH. The additional stress added by the hazards of engaging with UCH means divers must be comfortable with their new bodily form and rely purely on their training and experience to make the dive safely. This highlights that scuba divers interacting with UCH are very much aware of their surroundings and how the surroundings alter the way one scuba dives.

3.1.4 Future Directions

Through 'thought' scuba divers mentally transform the meanings, symbols and their surroundings into knowledge of understanding. Cognitive and emotional experiences, although different, still interact with the mental processes of how UCH is interacted with and subsequently valued. By becoming one with scuba diving, divers added a positive narrative because of the underwater physiological changes. Chasing riskier diving, such as wreck diving, promotes a positive experience feedback loop. Understanding that there is no disconnect between scuba divers and their environment allows this appreciation to move away from anthropocentric views of the world and embrace the fact that people, scuba divers, or cyborgs

are still connected to the ocean. More importantly, addressing scuba divers to have a different cognitive make-up while underwater adds another layer to this interaction by producing a positive experience.

With a very high attrition rate in scuba diving, there are more non-active divers than ever before (Kieran, 2021b). Looking further down the line means considering all possible future interactions with UCH. Three-dimensional (3D) models are widely utilised to assist oceanographers, marine scientists and engineers in understanding and capturing the underwater world – for example physical processes like turbulent mixing, circulations, and density stratification, affect the biological/ biochemical processes which can be observed in controlled settings. The ability to control these settings can be very beneficial to UCH. These 3D graphics hold the potential to dematerialise heritage itself so that it can be appreciated without the constraints imposed by distance or time, therefore allowing users to engage in an emotional learning experience (Bruno et al., 2016). Hence why recent efforts by technological innovations have made it possible for non-divers to access UCH through Virtual Reality (VR) or Augmented Reality (AR). This approach attempts to maximise the sense of being submerged underwater while trying to replicate as closely as possible the experience of scuba diving for the non-diver (Figure 6). Users of VR are immersed in a virtual world that mimics real life. The simulation involves a real-time computer model of a real-world scenario where a person interacts with the virtual environment, sometimes wearing glasses or helmets representing the scene and reproducing the sounds. However, VR will never be able to sustain or alleviate the physiological needs of our physical bodies as movement requires the use of controls that do

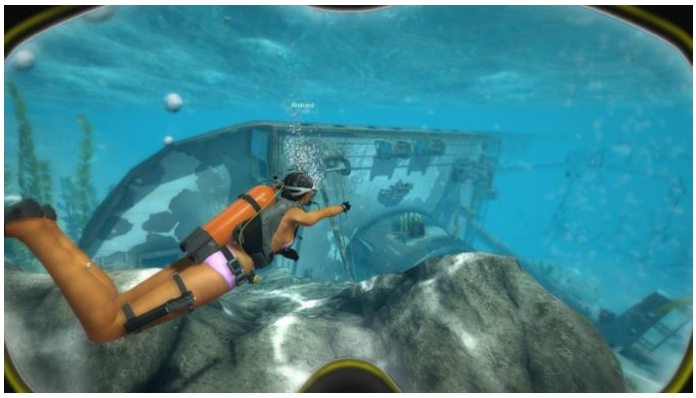

Figure 6 -Left screenshot from popular VR game "World of Diving" (Vertigo Games, B.V., 2017)

. Right VR equipment used to experience the scuba virtually in VR experience "Healthy Sea" (Healthy Seas (VR Experience), 2021)

not mimic the same movement or skill required by a scuba diver, not to harm themselves or the environment.

Consequently, there will always be a need for an element of actual reality within our lives to sustain ourselves (Nabiyouni et al., 2017). AR, conversely, is the idea that technology can change one's perception of the world around them. AR can be presented in many different forms; through fictitious writing online; or video projection; most commonly however, AR is delivered through the medium of VR, which requires specialised headsets to interact with the environment presented (Fan et al., 2022). Hence all AR is VR, but not all VR is AR. Nonetheless, VR and AR do not support the MET process as they are not a whole sensory experience whereby individuals become an extension of the environment but are limited to technology's confidence to simulate the underwater world.

Rather than substituting 'real' visitation, the VR/AR experience works as a complement to the education and skill needed when interacting with UCH. The VR/AR experience cannot replace the feelings and emotions associated with a 'real' visit. However, VR/AR ultimately has the potential to be an efficacious device to foster ecotourism behaviour and make UCH more accessible to the non-diver (Losada et al., 2020; Nabiyouni et al., 2017). Making UCH more attainable and within the realms of being real can encourage non-divers to seek certification to create a more emotional connection to the site. The future of virtual reality “spaces must develop more features and value additions to achieve tourist satisfaction in the future,” (Akhtar et al., 2021, p1).

Nevertheless, the recreational specialisation theory (RST) predicts that highly specialised recreationists would be more aware and supportive of management measures designed to minimise the environmental impacts of their activities (Edney, 2018). This theory is very relevant when addressing scuba divers, as scuba divers hold different levels of certifications, and most scuba diving organisations have a wreck speciality course (expanded in section 3.4). However, by implementing virtual reality spaces into the scuba diving industry, the reality is that scuba divers can achieve a higher level of awareness of their surroundings. This technology then can allow for improvements of divers' skills by witnessing the consequence of engaging

with UCH in a safe, non-destructive environment, hopefully mitigating impacts to UCH in the future when the scuba-diver interacts with UCH in real life.

It will still be several years before VR advancement, and by extension, all AR technologies create the same meaningful, immersive, deeply emotional, conscious sensory experience comparable to scuba diving. Moore's Law supports that technology will improve every two years and that the cost of technology is halved during that time; although the price is going down, the technology still improves (Scarfe & Glennerster, 2015). Therefore, while integrating technology into the scuba experience may not achieve the same sensory experience, it can at least pave the way to entice more individuals to interact with UCH in a non-detrimental way without affecting the site's integrity. As of now, VR/AR may not be in a position to substitute real-life experience. However, as technology improves, the boundaries of what is possible can be pushed; with the rate at which AR experiences have progressed, we may find a fully immersive experience available to us soon.

3.2 Values

The concept of value is heavily contested because of the difficulties in defining and measuring values since they are subjective to the individual. Professionals and heritage managers must assess cultural impact through management plans or forms to standardise the evaluations of archaeological significance and value. Through different management objectives, criteria are specifically designed to help examine all the factors when addressing safeguarding measures (Figure 7). A critical element in this regard is the magnitude of change to a site and the intrinsic archaeological value (Manders et al., 2021).

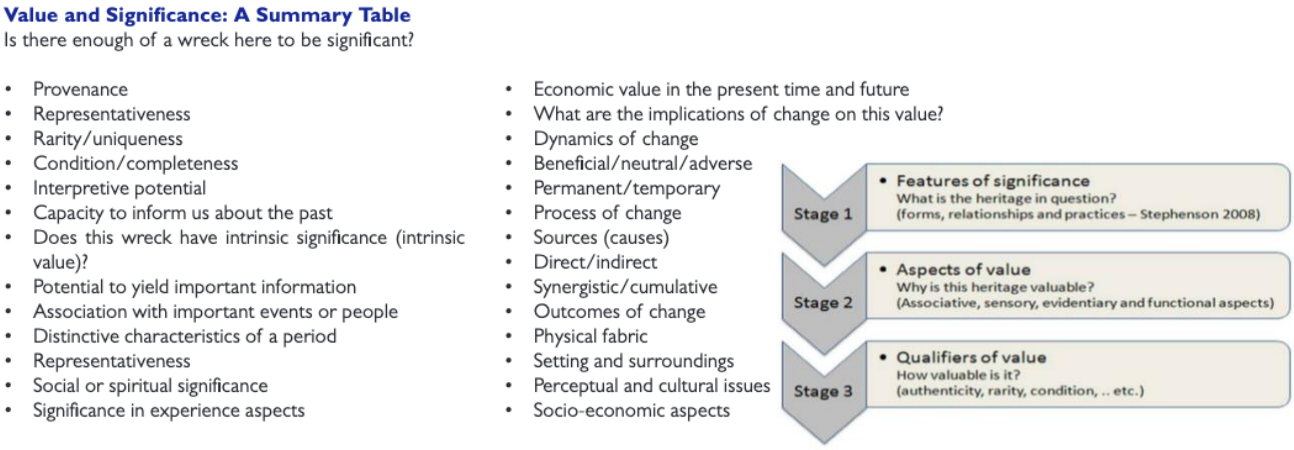

Figure 7 -- A summary and overview of criteria when addressing significance and value to UCH (Manders, et. al, 2021; Fredheim & Khalaf, 2016)

Values are internalised cognitive make-ups that drive choices by conjuring a meaning of fundamental core beliefs of ethics, a sense of priorities, and an inclination to produce meaning (Oyserman, 2015). The public bestows value upon any object differently than professionals; it is about how they encounter it, who interact with it, which gives it its meaning, for values transcend via specific experience. Moreover, values can influence cognition which is formally and informally instilled in people (Alexiou, 2019; Oyserman, 2015). These basic principles can be divided into sociological (entertainment, education, escapism, and aesthetics (Pine & Gilmore, 1998)), economic (Marxist viewpoint), and linguistic values (language, perception, and symbolism) (Graeber, 2001). The three categories reflect Mason's (2002) typology of heritage values.

As highlighted previously, interactions influence values and values influence interactions. “As a result, value creation is experiential and only proves possible with active participation…” (Antón et al., 2017, p4), with UCH. Scuba divers who submerge themselves in the water can create this active participation by engaging in a whole sensory experience. An experience is an

activity or event which holds value to an individual, which can be expressed through their interactions and engagement—ultimately emphasising the impressions caused by an event or activity (Bowsijk et al., 2007) – arguing that heritage is an experience as it requires an individual to process an event which can lead to forming values, belief, desire, or goals. Therefore, if past experiences remain positive, there is a higher chance of pursuing the activity or event again. However, the value can also be directly or indirectly experienced by people, meaning that the understanding of UCH "can be both lived and imaginary and is based on past, present, and imaginary future experiences," (Antón et al., 2017, p2). Imagination gives a preconceived conception of what UCH is by understanding its descriptions (Graeber, 2001). Thus, before a scuba diver is acquainted with being underwater or interacting with UCH, they must enter a new reality by transforming into a cyborg. There is no perfect reality (for the perfect dive conditions, experience, or interaction) as perfection is a fairy tale that resides only in one's imagination (Graeber, 2001). Consequently, then scuba divers will edit their preconceived perceptions and fill in the knowledge gaps with the sensory experience, thereby shaping their cognition.

3.2.1 Sociological Value

The experience economy model is built on the idea that people place value through their experiences (Figure 8) (Suntikul & Jachna, 2016). This model proposes that experiences can be active or passive, immersive or absorptive. Passive participation suggests that there is no influence over the experience, whereas active participation implies that an individual has a significant role in co-creating the experience. Absorbing an experience means being cognitively involved, whereas immersion means being physically involved (Pine & Gilmore, 1998). The realms of experience can be further categorised as entertainment (fun, enjoyment, and pleasure), education (learning, acquiring knowledge), escapism (losing oneself, deserting

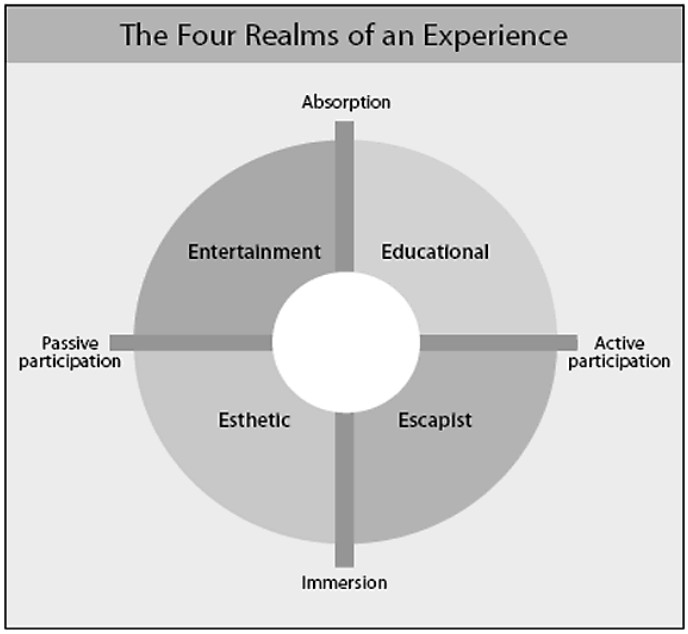

Figure 8 -The Four Realms of an Experience (Pine & Gilmore, 1998)

reality) and aesthetic (sensory perceptions) (Antón et al., 2017). Although initially used for business and economic models, it has been adopted in the heritage and museum sector to help create more emotional, memorable, and extraordinary experiences to lure people back and connect them to history. Thereby linking it to the principle of the heritage cycle.

Amusement, enjoyment, and having fun are all part of the entertainment. The outcome is then passively absorbing and receiving sensory impressions. Scuba divers experiencing UCH are primarily motivated to see history, cultural material, and marine life and enjoy the peace, tranquillity, and the added challenge of penetrating the wreck (Edney, 2018; Edney, 2021). As emphasised previously, scuba diving is a positive experience, as wreck diving, regardless of the 'haunting' narrative, is also seen as a positive experience. The peace and tranquillity felt underwater are also motivations to escape reality and disconnect from the terrestrial world.

By learning to scuba dive, a person makes a conscious, active choice to explore themselves in the underwater world. By learning to wreck dive, scuba divers subject themselves to more complex diving because they seek a challenge. Therefore, education and entertainment are not mutually exclusive, especially with scuba diving. Education, however, requires active participation as one absorbs experiences through their senses, translating them into knowledge (Antón et al., 2017). By engaging with UCH, academic historical knowledge is gained, as well as environmental/ecological knowledge – thus, how they interact (non-, limited-, full- penetration) describes the degree of knowledge gain. Since scuba diving is a sensory experience by being completely immersed in the underwater world, divers passively observe and enjoy the environment and physical atmospherics of a place that highlights aesthetic value (Alexiou, 2019). Collectively the sociological values placed by scuba divers on UCH overlap. The fact that scuba diving changes one’s perception and cognition by how one interacts with a site, means that distinguishing between these categories becomes increasingly complex since UCH is an agent with a lifecycle, and people learn through engagement (Deslauriers et al., 2019).

This statement holds especially true regarding wreck diving, which adds extra stress due to limiting the ability to reach the surface unobstructed and the physical structures that can heighten the likelihood of entrapment and entanglement. Scuba divers' awareness,

imagination, and curiosity drive them to look for more challenging activities underwater (Edney, 2021; Seaman & Depper, 2019).

Given that only 0.5% of the population can see a UCH in its natural habitat, the sociological values placed by non-divers are ultimately different as they lack the sensory experience that heightens emotions (Underwood, 2015, p125). Therefore, it has been argued that the experiences that scuba divers have with UCH are incomparable to those who have never entertained the idea of scuba diving.

> *"People think the marine environment is benign, but most sites are very dynamic: they can change from being completely covered to uncovered or washed away almost overnight." - David Gregory senior scientist working on the conservation of marine archaeological sites for the National Museum of Denmark and coordinator of SASMAP (Clayton, 2013, p1).*

However, those who spend their entire lives on land will have difficulty comprehending the scuba diver's immersive experience - as they cannot see, feel, touch, taste, or hear the difference as a cyborg transcends underwater. It then becomes challenging to make the public feel connected to UCH to the extent that they can understand the role UCH plays in our society; "we cannot value what we do not know," (van Tilburg, 2007, p194). Nor can UCH be subjected to one stakeholder's voice as it becomes a gamble of what values sought to be protected rather than allowing for reciprocity and collaboration where all values are accounted for by the different stakeholders (Manders, 2015).

The entertainment value for the non-diver then comes from artefacts placed in museums, what they have seen on TV, read in a book, or heard on podcasts/radio. Due to the air of mystery surrounding UCH and the legends it represents, it is highly valued by the general population as it stimulates the imagination. Being lost in one's imagination is a form of escapism as it is also a form of amusement. By visiting museums or watching TV, non-divers are subjected to passively learning something – understanding that real learning is an active process that requires people to want to engage in the topic. However, this calls for an in-depth understanding of what is taught to the public (elaborated in section 3.4). Finally, the aesthetics of UHC are minimised as not all senses are engaged or, to play devil's advocate, the sense of non-divers is not as unique. The experience of UCH is therefore not as encompassing, which means valuing UCH as a non-diver is limited. Moreover, salvaging, recovering sunken artefacts

and treasure hunters have continued to confuse public perceptions of UCH (Underwood, 2015, p12), skewing their view of how professionals and recreational divers interact with it. The perplexed judgements from the public stress the importance of teaching the heritage cycle more carefully when addressing UCH. Through meaningful experience, a more coherent appreciation of heritage can lead to more desire to protect and value sites.

3.2.2 Economic Value

Economic value is a classic Marxist approach to valuing a good or service that is tradable and priceable in existing markets. Mason (2002) highlighted the fact that there are market and non-market values but discloses the latter is another way of looking at socio-cultural values (Mason, 2002). Therefore, focusing on the economic market values for scuba divers and non-divers, the economic value then should help identify the forces responsible for economic and personal growth in capital.

Scuba diving is an expensive activity. It requires specialised training and equipment. The accessibility to learning to dive significantly hinders the diversity of a diver's community. International figures suggest the average entry-level scuba diver has an annual household income of $100,000–$150,000, and scuba divers with continuing education of $100,000–$249,000 - 70% earn above $100K per year, with 25% making more than $150K (Lemke et al., 2021; Kieranb, 2021). Moreover, scuba divers are generally well educated - High School (8.1%), Technical/Trade Qualification (19.7%), University degree (40%) and Postgraduate degree (32.2%) (Kieran, 2021d; Queiroz Neto et al., 2017) – and most come from Europe, USA, and Australia, with indications that 73.2% of are Caucasian (Lucrezia et al., 2018; Queiroz Neto et al., 2017). Additionally, the mean age of scuba divers is 36, with the majority being male divers (60-77%) (Lemke et al., 2021; Kierand, 2021; Hermoso et al., 2020; Queiroz Neto et al., 2017). Interestingly, wreck divers have a lower average age (63% aged 21–30) and a more significant margin of males participating (86%), but they still predominantly come from a high level of income households (Edney et al., 2021, p196) (Figure 9).

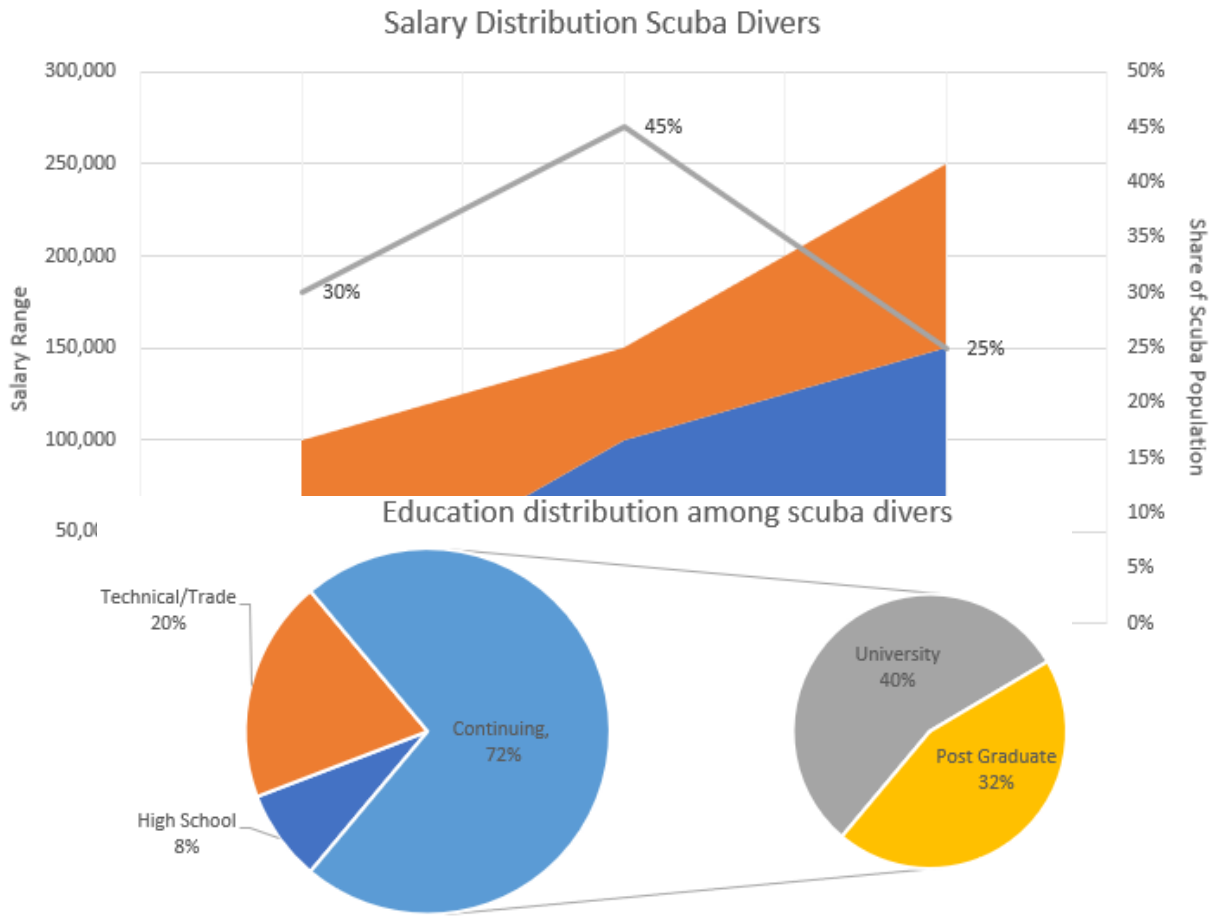

Figure 9 -Salary and Education distribution of scuba divers. 70% of the scuba population earns over 100K, including divers with no continuing education. However, continuing education at university and postgraduate is 72.2% of the scuba population So from that, it can be concluded that lower-level educated divers earn less than 100K. 30% makes less than 100K, 45% makes between 100K and 150K and 25% makes more than 150K (Eversdijk, 2022)

Although money is not the sole element influencing inclusion and participation, it is undeniably influential in today's scuba diving world. The economic value for scuba divers as a community is absent because they do not gain any monetary advantage by engaging with UCH. Reversely, scuba diving contributes substantially to local economies both in direct revenue as well as the livelihoods these revenues support. However, this is not to say that there is *no* personal economic value for scuba divers, as treasure hunters, looters, and salvagers benefit from selling material culture removed from UCH sites. Active professional divers (instructors, divemasters, and commercial divers) and dive shops also derive personal economic gains from UCH, as they provide a unique dive site to take their students too – students willing to pay to go on this dive. Nevertheless, economic benefits are not reaped by an active individual scuba diver.

Tourism is a crucial engine of global trade and a powerful instrument for poverty reduction, with cultural tourism contributing to 40% worldwide and 47% in developing countries (UNESCO, 2021, paras4). Therefore, scuba diving encourages travel and is an influential player in the ecotourism sector. Today it is a multi-billion-dollar enterprise, enticing millions of people globally to venture into the underwater world (Henderson, 2019). It is no surprise then that there is economic value to be held by other stakeholders. The most recent literature research suggests that the economic benefits and value of UCH can generate about €50,000-70,000 (Firth, 2015; Scott-Ireton & McKinnon, 2015; Beattie-Edwards, 2013; Crabbe & McClanahan, 2007)- although nearly ten years old, there is no updated data. As a result of these findings, it should be considered an asset in national and international policymaking. Additionally, as UCH goes through its lifecycle, it eventually becomes embedded into the ecosystem and acts as an artificial reef. With significant influences on economies – especially in developing nations – economic values reflect political values, whereby governments decide the fate of UCH (Mason, 2002). Natural and cultural heritage is associated with economic values in multiple countries - particularly non-market-oriented values - that can be used to assess projects, investments, and policies that affect natural and cultural heritage.

3.2.3 Linguistic Value

Linguistic or semantic values allude to a meaningful difference that highlights one agent as more important than the other within the same context - yet it exists in the eye of the beholder. People organise their experiences based on how they understand them rather than what they have to say about them—language functions as a means of communicating essential cultural concepts symbolically (Low, 2002, p32). The linguistic or semantic values structure is intangible and rarely defined outside of time and human activity. Language, like any abstract system of rules and meanings, exists independently of any particular act of speech (Graeber, 2001, p64). By extension law play a pivotal role in understanding the language used to define values (expanded in section 3.3). Therefore, signs have different meanings in different contexts, and everything depends on relations – created by experiences and emotions. It is about the perception of UCH and its symbolic meaning (Mason, 2002, p11).

If the linguistic values are subjective to the beholder through experience and emotions, then returning to the previous section 3.1 of interactions, it states that scuba divers have a more

emotional experience as they engage with heritage on a deeper level by being immersed in a whole sensory experience. The semantic values then are more connected to the physical concept of UCH and what they represent to the diver – a challenge, a dive site, or a historical site - rather than its perception. Nevertheless, what one might consider *unique, exciting* or *interesting*, other divers might not because of what emotions they experience while interacting with UCH. Evidently, this is not to say that non-divers have no emotional connection to UCH. Regardless of whether submerged or not, heritage sites are and can be, emblems of societal pride and identity. UCH encompasses historical knowledge loaded within a nation, which was pivotal to their economic growth or destruction – ships conquered oceans or saw their fate, submerged cities lost forever, submarines/planes corresponding to warfare, and so forth. The legacies they hold provided many societies with history, myths, legends, rituals, and religious backgrounds (Frigerio, 2013, p2). The emotional connection to these sites may not be as tangible as heritage on land due to accessibility of the site, but then emotions are not tangible or quantifiable.

Mason (2002) also highlighted three other values; *option value*, allowing for the possibility to access heritage; *bequest value*, wishing to safeguard heritage for future generations; and *existence values*, wanting heritage to be there for the sake of it. They represent "altruistic feelings associated with knowing that others may enjoy cultural heritage" (Mourato & Mazzanti, 2002, p51), as they are not observable and thus are symbolic.

3.2.4 Future Directions

The values of UCH are therefore embedded into the outside world as much as it is constructed inside our brains. If this holds true, it supports MET, which explains how things have become cognitive extensions of the human body (Malafouris, 2013). As a result, UCH's values are subjective to the individual, as everyone interprets experiences differently. Individuals create experiences by interacting and engaging in an event, denoting the fluid relationship between values and interactions. By using the systems of values, this concept then exposes how rooted it is in the notion of idealism, whereby there is this unrealistic belief that values will be universal and static. Striving to obtain a universal value then seems obsolete. It is more important to consider UCH sites in their dynamic and changing forms and reflect this into safeguarding methods.

However, it is not only humans who can produce values and have intentional interaction with UCH, as UCH is an active agent that affects its surroundings and has a life history which means their values will also change (Boyd, 2012). For example, a ship at birth is highly valued, as it provides economic gains, and sociological improvements by being able to experience this anthropological structure and linguistically values of understanding culture. As the ship sinks, it loses its original value, and new values are imposed. These new values for a shipwreck in their infancy are more pessimistic, as they are 'fresh' wounds for that generation who experienced the loss. However, as time lapses, new values are again placed on the maturing shipwrecks as it moves away from a remembered event to a historical one. New generations then place different values on the shipwreck. By wanting to connect and experience it, this poses an issue when UCH is hard to access. The matured shipwreck will integrate into the ecosystem throughout the years, acting as an artificial reef for marine wildlife. The integration into the ecosystem again instils new values, but these values become more dynamic. The symbiotic relationships created mean shifting away from this anthropocentric mindset of heritage conservation (Blumer, 1969).

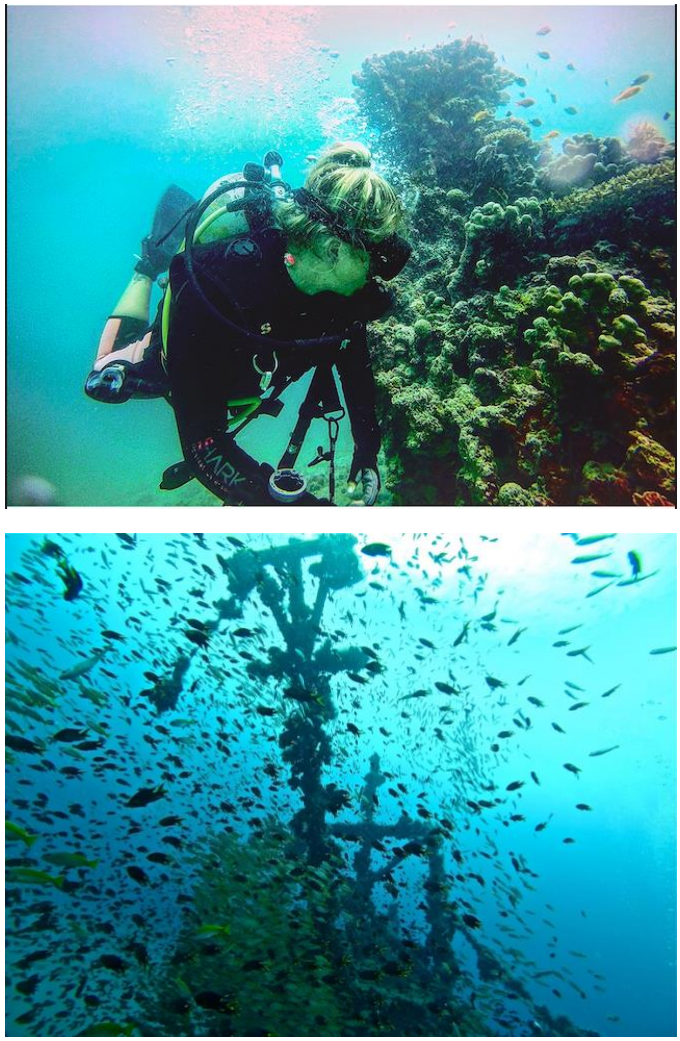

Figure 10 - Mature Shipwrecks being integrated into the marine environment. Top photo in taken in Nosy Be Madagascar. Bottom photo taken in Phuket, Thailand. Both very touristic places. (Eversdijk, 2014; Eversdijk, 2015)

Scuba divers and non-divers can create values through imagination, perceptions and interactions. However, the valuing systems in place are archaic. Currently, too many words and phrases dominate within the systems of value, but all are subjective to the beholder. Therefore, it is time to move away from 'how to value' and give way to 'how do we live with dynamic heritage'? If heritage values within a community help instil conservation efforts, the

scuba diving community lacks diversity, meaning the values are then pigeonholed. Not to say that all white males over 35 have the same cognitive make-up, but more to showcase a lack of feminist and indigenous knowledge and values to be gained from UCH.

Moreover, if placing values on national/local communities directly associated with UCH, heritage managers bypass the niche community actually interacting with the heritage (Alexiou, 2019). Using a system of values keeps humans at the forefront of conservation methods even though humans are not the centre of the world. Therefore, shifting to a more bottom-up approach while rectifying the interpretive laws and heightening education is integral to addressing these challenges. Ensuring that heritage is understood, relatable and accessible will create better values and interactions.

The interdisciplinary nature of this field is a product of the multiple and overlapping uses of UCH. Therefore, safeguarding UCH entails breaking the old paradigm that separates cultural and natural resource management by acknowledging the effects and overlapping characteristics of both sectors and implementing a holistic approach by incorporating this link into management techniques (Boyd, 2012). Conservation cannot be considered a neutral endeavour, especially when subjective values are being contested. The ethical and moral implications of conservation become apparent when values are assessed. Accordingly, one cannot avoid considering value as morality when considering value as a theory (Graeber, 2001). The dilemma is choosing between the knowledge of the past or knowledge of the future.

3.3 Laws and Regulations

UCH and the world are connected by the ocean as a shared heritage. A legal understanding of the oceans is at once one of the oldest and newest forms of international law; it is an exciting mixture of ancient seafaring practices and new regulations that have unfolded throughout history. The debate between politicians, merchants, and scholars regarding who should control and use the sea has raged since the ocean began to be used for trade and war (Burgess et al., 2018, p6). These debates drove questions ranging from salvage, ownership, access, security, and protection rights. Therefore, managing UCH is done through maritime law, domestic maritime law, international treaties, and international customary law.

Law alters society's physical structure, interpersonal relationships, organisations, and even individuals' capacity to engage in particular behaviours. Values inform and influence law in the same manner that law informs and affects values; there must be a dialectic between the two, regardless of whether the intention is to cultivate certain attitudes in ourselves or others consciously. The law is then a necessary mediator of human behaviour and has the potential to assist the authorities in embracing explicit values and putting those values into practice (Doremus, 2003, p234). Law can be seen as the extension linguistical values (section 3.2.3).

At its foundation, laws originated from values to inform and convey a rational and equal expectation of how things should be organised, exercised, and controlled. Laws are a part of culture and society - different cultures will have different laws. Ideally, the function of laws pertaining to UCH is not to be rigid, but to create harmony between preservation and stability while allowing for the flexibility to change or adapt laws for the future (Adeyeye, 2007, p148). One argument for cross-constitutional law is that culture produces law, and the law creates culture by being anchored in the morals and reason of its community. The acceptance or rejection of this model demonstrates the community's preferences and creates cooperative behaviour (Hernández-Truyol, 2004, p194). Therefore, laws that conflict with specific values will unlikely win the community's support and approval and thus are unlikely to become lived laws. By accepting that culture plays a role in defining laws, it allows there to be subjectivity in understanding the legitimacy of these laws, reflecting the social process that constitutes us as humans. This subjectivity highlights the ongoing evolution of knowledge, morals, and values within a said culture. Laws, therefore, are symbolic of culture and cannot be taught but only

interpreted as they gain meaning through interactions. Rewards and punishments, peer group pressures, and questions of morality will help shape which laws will succeed or fail (Friedman, 2016).

3.3.1 The Development of International Maritime Law

The Law of the Sea is an international legal framework for managing 71% of the earth's aquatic environment, closely connecting agreements governing war and peace. In 1609, Dutch jurist and philosopher Hugo Grotius drafted what is considered the principles of international legal principle regarding the oceans – Mare Liberum, Latin for the 'freedom of the high seas'. This doctrine expressed that every nation is free to travel to other countries and trade with them. According to continued developments regarding the sovereignty of the seas, notable advances developed after World War II with the establishment of the United Nations (UN). Significant steps in 1958, 1960 and 1973 spearheaded the UN Convention on the Law of the Sea (UNCLOS) of 1982 (Francioni, 2012). It reaffirmed the ideas set forth by the 'freedom of the high seas' doctrine and detailed aspects to help maintain order, productivity, and peaceful relations on the sea.

The main takeaways from UNCLOS state that a nation's territorial sea includes waters up to 12 nautical miles from shore, the contiguous zone may extend to 24 miles, and a nation's Exclusive Economic Zone (EEZ) may extend out 200 nautical miles (Figure 11). The continental shelf of a state may extend beyond its territorial waters, allowing that state sovereign rights to the natural, but not cultural, resources on that shelf. Finally, the seabed outside these limits, otherwise known as the high seas, which goes beyond the national jurisdiction, is called the Area. The UNCLOS Articles that deal specifically with UCH are articles 149 and 303. Even though only two articles are related to underwater cultural heritage, they provide

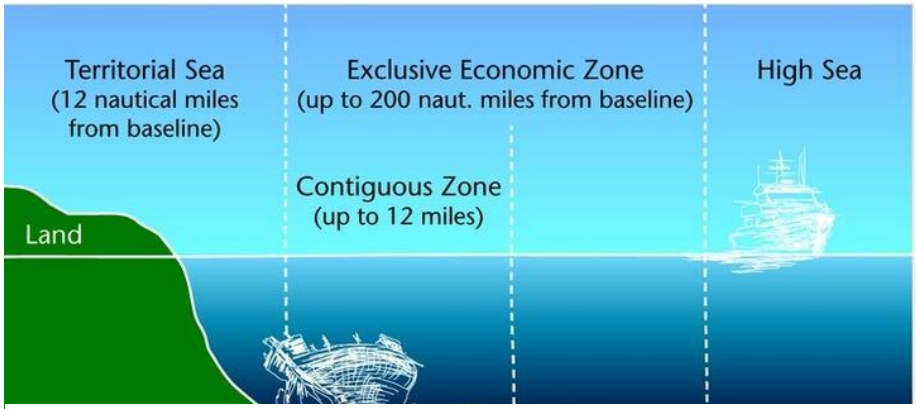

Figure 11 - UNCLOS establishes the boundaries of the various maritime zones based on a baseline, as well as the rights and duties of the States (IILSS-International institute for Law of the Sea Studies, 2021)

information on protecting underwater cultural heritage in the territorial waters, areas, and contiguous zone.

> Article 149 (Archaeological and historical objects) 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 or country of origin, or the State of cultural origin, or the State of historical and archaeological origin" (UN, 1982, p74).
>
> Article 303 (Archaeological and historical objects found at sea) addresses:
>
> 1. “States have the duty to protect objects of an archaeological and historical nature found at sea and shall cooperate for this purpose.
> 2. In order to control traffic in such objects, the coastal State may, in applying article 33, presume that their removal from the seabed in the zone referred to in that Article without its approval would result in an infringement within its territory or territorial sea of the laws and regulations referred to in that Article.
> 3. Nothing in this Article affects the rights of identifiable owners, the law of salvage or other rules of admiralty, or laws and practices with respect to cultural exchanges.
> 4. This Article is without prejudice to other international agreements and rules of international law regarding the protection of objects of an archaeological and historical nature,” (UN, 1982, p138).

These articles identified two key issues when addressing UCH. Firstly, the absence of functional conditions concerning UCH sites found in the waters between the outer edge of the contiguous zone until the start of the Area. The second is the ambiguity of the definition of UCH. In 1988, this subsequently led the International Law Association to draft and establish the Committee on Cultural Heritage Law on the protection of UCH, which was eventually adopted in 1994. Proven a success, in 1998, the United Nations Educational, Scientific and Cultural Organization (UNESCO) initiated negotiations for endorsing this framework. As a result, the Protection of the Underwater Cultural Heritage Convention (PUCHC) was adopted in 2001 and fully enforced in 2009. The convention deals with States' jurisdiction of UCH found within the EEZ and

Continental Shelf while expanding on the duties identified in Articles 149 and 303 of UNCLOS. Four fundamental principles materialised during the PUCHC:

1) “Obligation to Preserve Underwater Cultural Heritage: ….
2) In Situ Preservation as The Preferred Option: …
3) Non-Commercialisation of Underwater Cultural Heritage: …
4) Collaboration Among State: …”(UNESCO, 2001, p2)

71 UNESCO members have ratified the PUCHC, yet the other 124 members must still subscribe to these rules, without exceptions (Appendix C).

The UN recognises that social and economic development depends on the sustainable management of resources and understands the need to “strengthen efforts to protect and safeguard the world’s cultural and natural heritage,” (UNESCO & Hosagrahar, 2017, p1), while promoting local cultures. Furthermore, the UN Decade of Ocean Science and the coinciding UN 17 Sustainable Development Goals (2021–2030) acknowledge the need for more intervention in ocean legislation (UN, 2021). Ultimately providing a shared blueprint for peace and prosperity for humans and the planet, now and into the future.

By its very nature, UCH has a powerful historical or cultural link to a particular nation. However, its 'final' location in international waters could be distant from its origin. Therefore, the issue is of international concern - as seen in the shift for more regulation on UCH during the second half of the 20th century and the start of the 21st century. However, many domestic/national/regional laws have also recognised the need to safeguard UCH. The European Council made efforts through the Valletta and Faro Convention, while many countries have roots in marine Salvaging Laws and The Law of Finds (Kharatishvili, 2021).

Moreover, Article 7(2) of the PUCHC extends that all participating States must petition the Rules in the Annex to undertakings affiliated with UCH (UNESCO, 2001, p6). It has become the benchmark for UCH treatment even in non-contracting states. All nations must either adopt or ratify and certify that their domestic legislation involves UCH as defined by the PUCH (Derudder, 2019). Although UCH ordinances have become more systematic over the last couple of decades, there are still requirements for better recording/documentation, stakeholder collaboration, public education/outreach, and monitoring/preservation in

international and national frameworks. These best practices are found in the PUCHC Annex, derived from the International Council on Monuments and Sites (ICOMOS) charter of 1996.

The issues surrounding the security, management and longevity of UCH are complex. The main difficulties stem from the fact that the ocean is a vastly open, accessible, and unregulated environment. The high seas extend beyond the EEZ and cover almost 45% of the planet, cultivating the ideal setting for rampant illegal activities. With patchy regulation, little enforcement, inadequate funding, and insufficient staff, it is no wonder that the oceans and UCH are in a critical state (Barnhizer, 2016). The difficulties trickle down into identifying ownership of UCH for heritage protection and archaeological research. These rights are embedded in old customs because of differences in legislation and claims to jurisdiction within international/national/regional law allow for enigmatic interpretations. Nonetheless, an attempt to streamline this issue is in effect by governing international agreements.

Notably, within the country's national territorial waters, diving regulations do apply; nevertheless, they typically do not follow the same standards in international waters. The commercial/ scientific diving sector primarily operates in these regions and has clean governing regulations within their waters (Benjamin & MacKintosh, 2015, p1). The industry in international waters or within the recreational scuba diving sector then becomes largely self-regulated and enforced. If ambiguity arises within the legal context of recreational scuba divers and international waters, how can the general public make sense of what is right or wrong?

3.3.2 Which Pirates Dig Up the Treasure? -- Archaeologists

The interactions between Maritime Law and UCH give way to a plethora of contradictions. Maritime Law's rich history dates back centuries to ancient Egypt, Phoenicia, and Greece, creating the foundations to salvage laws. The traditional justification for the law of salvage came from the principles of unjust enrichment**.** There are three elements for salvage: 'marine peril', in which the salvors act to save a vessel; voluntary service; and success in the salvage operation (Varmer & Blanco, 2018). The law of salvage states that those who voluntarily act on behalf of another in an emergency are entitled to compensation. The 1989 International Convention on Salvage revamped the 1910 Brussels Convention, controlling the relationships between salvors and salvage – "in recent decades treasure salvage has been added as an

element of marine salvage under admiralty," (Scovazzi, 2003, p78) Interestingly Article 303 of UNCLOS states:

> "Nothing in this article affects the rights of identifiable owners, the law of salvage or other rules of admiralty, or laws and practices with respect to cultural exchanges," (UN, 1982, p138)

To clarify this means if there is conflict between UCH and the law of salvage and additional laws of admiralty, the latter laws will prevail (Peltokorpi, 2016, p53). This Article made it challenging to comprehend how countries could avoid severing salvage law from the UCH since it is an unmistakable example of a law providing economic incentives for the removal of UCH.

The intention of the law of salvage never meant applying it to UCH, as these sites are not actively in peril but already lost to the underwater world. However, salvage law now opens paradoxes concerning the safeguarding and management of UCH "for the benefit of mankind as a whole" (UN, 1982, p74). It questions the potentially lucrative venture for treasure hunters to discover and sell the riches of underwater treasures. Not all salvors do rigorous scientific investigation, preserve artefacts, and publish the findings; instead, most recovered artefacts are just sold or kept as souvenirs. Therefore, salvage law is an entirely inadequate legal system for dealing with UCH, for it recognises artefacts predominantly as an economic commodity and promotes their retrieval, irrespective of their significance or value as UCH. So, what is the difference between underwater archaeology and treasure hunting? The intentions, the individual's interactions and how different stakeholders value UCH.

Understanding the difference between underwater archaeology and treasure hunters means acknowledging interactions with UCH, regardless of the laws that have been put in place to safeguard them. However, according to the UNESCO Universal Declaration of Human Rights (UDHR), state that in:

"Article 27:

1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.

2. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author," (UN, 2015, p65).

UCH is the Cinderella of heritage safeguarding with respect to how community groups preserve it. It is a human right that communities related to the heritage should have access to the heritage (May, 2011). The undeserved neglect of UCH witnessed by communities because of convoluted laws means it breaches UDHR Article 27 (UN, 2015, p65). Questioning how PUCHC is addressing this right to the community of scuba divers. Written law and individual interpretation of the law are subjective and culturally dependent on who is practising. Therefore, if there is an acceptance that scuba divers have their own culture and are their own community, they should be allowed access to the site more freely. "Linking cultural rights to cultural heritage protection is appropriate, as cultural heritage conservation contributes to the sense of identity and promotes the enjoyment of other human rights," (Vadi, 2009, p903).

3.3.3 Working Under Pressure with the Buddy System

PUCHC's Article 2(10) calls for the development of "responsible non-intrusive access to observe or document in situ underwater cultural heritage shall be encouraged to create public awareness," (UNESCO, 2001, p4) and mandates State Parties to adopt Article 20 to "raise public awareness regarding the value and significance" of UCH (UNESCO, 2001, p11). However, to engage the public in the protection of UCH, a platform where the public can come into direct contact with the UCH by touch, smell, or sight is required. Bringing awareness of UCH to the general population will be a considerable challenge, as ultimately, not everyone has the right skill set to plunge into the underwater world. There are still many challenges to overcome in recognising the importance of forging a sense of cultural and physical ownership of UCH and directing effective implementation efforts of public participation in UCH conservation. Thereby creating a notion of responsibility to UCH and being involved in the safeguarding will effectively make the public become guardians of the past. To achieve this goal, heritage managers and archaeologists must look at substitute methods of outreach and engagement by creating replicas, underwater museums or forgoing PUCHC guidelines (Manders, 2008). Therefore, restricting access to the niche community who have the ability to experience UCH does not

help create value but rather minimises the attempts to generate cohesive appreciation for UCH.

Although the call for more transparency is needed, the current conflict with the law of salvage in Article 303 (3) (UN, 1982, p138) can be interpreted as an open invitation for treasure hunters to salvage UCH without any regard to the archaeological standards and practices. An extension of this notion is Article 19 PUCHC, which requires “each State Party undertakes to share information with other States Parties concerning underwater cultural heritage, including discovery of heritage, location of heritage, heritage excavated…” (UNESCO, 2001, p11). However, on the flip side, it allows for an open information platform to treasure hunters, which could in effect dissuade experts in the field from publishing their research accordingly. Amending the law of salvage and breaking away from its historical roots is needed to reflect current legislation and values. The concept then rests on transparency and fluidity between professional salvagers, recreational divers, archaeologists and CRM.

A way to achieve this is to apply the same standards within the professions. Archaeologists, recreational divers and salvagers should obtain an unambiguous competence-based qualification to allow them the right to access sites by learning proper and mindful excavation techniques while abiding by PUCHC. By bridging these standards, each group learns the benefits and values of each other's work. Moreover, it abides by PUCHC's Article 19 and Annex Rule 8, which stipulates the need for international cooperation (UNESCO, 2001, p11 & p17). Since most of the ocean is part of the international domain, this guideline should not restrict the activities of big international entities operating at sea. Subsequently, aligning stakeholders' intentions and breaking down these rigid barriers will bring a ‘louder’ voice to UCH at all levels. When trying to bridge the different stakeholders, with very diverse points of view, to the table, the ethical differences are pretty fundamental, to the point that important issues often cannot be dealt with adequately. It is, therefore, vital to keep an open and ongoing dialogue to ensure that no voices remain unheard, as words bring us together and silence separates us.

EPFRN provides the opportunity to evaluate the law of salvage in a way that allows for a positive interaction with non-professionals. The promotion of open-access information to concurrently preserve knowledge of the past provides heritage managers and archaeologists

a wealth of knowledge that extends far beyond just archaeology – by addressing the ethnographic narrative placed on interacting with heritage (Dobat et al., 2020).

Since UCH can be fragile, using approaches such as *open access days* can generate hype and interest within local and international dive communities because the dive now becomes a 'limited edition dive'. More importantly, this idea restricts the number of divers to the site to minimise impact. Equally, engaging scuba schools to take a more active role in monitoring and recording sites can help alleviate the professional need to check up on sites. Volunteer services within the recreational dive community have been instrumental in discoveries and monitoring of UCH. UNESCO has partnered with 16 accrediting non-governmental organisations (NGOs) who activities are related to the PUCHC.

The Nautical Archaeology Society (NAS) is one of the affiliated NGOs associated with UNESCO. They currently run the 'Adopt a Wreck' program, where scuba schools volunteer to actively participate in the safeguarding of UCH. Currently, the program only has 120 wrecks adopted worldwide (NAS, n.d.). As an accredited NGO listed by UNESCO (along with 15 other maritime archaeology organisations), the drive to push this program could yield positive outcomes, as it is presently the only program in existence (UNESCO, 2020). NAS's role in public access to UCH should be reviewed more extensively as a vital component of study when looking at the issue of public access to UCH. NAS's Adopt a Wreck program has unquestionably offered significant contributions to the research and documentation of UCH while fully complying with UNESCO standards (NAS, n.d.). With this program, it seems that NAS has successfully implemented a way to preserve history while simultaneously boosting divers' passion for diving with purpose.

Additional non-profit organisations, clubs, groups, and dive teams have become citizen scientists by contributing to the discoveries and monitoring's of UCH. Florida Public Archaeology Network (USA), Diving with a Purpose (global), National Association of Black Scuba Divers (global), Badewanne (Finland), The Underwater Adventure Seekers (USA), GfS Rostock (Germany), and Gathering Information via Recreational and Technical (GRIT- global), are a few making strides to assist CRM and maritime archaeologist in the scientific process (Viduka, 2020; Appendix A; Q3).

3.3.4 Future Directions

Rewards and punishments, peer group pressure, and questions of morality are crucial to determining the success of implemented laws (Friedman, 2016). They are often undermined both during their development and implementation. Policy creations are sabotaged in the intentional creation of ambiguity or a gap in forming legal norms, which employs legislation to produce the illusion of law but not 'true' law (Barnhizer, 2016, p3). In most cases, undermining the efficacy of laws occurs through underfunding and limited staffing, which is necessary for effective implementation. While legislation may seem to impose significant obligations on regulated entities, it may also construct a system where staffing and financial resources are grossly inadequate for monitoring, researching, and implementation. By failing to support the core costs of implementation, the system's components cannot function properly – access, research, training, monitoring, and conservation are all aspects of this process (Barnhizer, 2016, p2; Adeyeye, 2007).

Archaeologists, treasure hunters, scuba divers, fisheries, construction and transport sectors are among the (active or passive) present users of UCH. These stakeholders encompass an extensive global community whose values differ. The perceived values between these different stakeholders have caused tension in the management of UCH, for many user groups see these various attributed values as competing and, at times, mutually incompatible (Friedman, 2016; Adeyeye, 2007). As rational, unitary players, States make decisions that are in their best interests, which can be influenced by the peer pressure of States and stakeholders (Barnhizer, 2016, p6-7). However, "the mutual accountability among States joining international agreements, such as the peer-to-peer facilitation of compliance as set out in the PA [Paris Agreement], are contested and remain ambiguous," (Karlsson-Vinkhuyzen et al., 2017, p594), as there is "…no specific allocation of discrete responsibilities among parties for achieving that goal," (Karlsson-Vinkhuyzen et al., 2017, p595), for safeguarding heritage.

Peer pressure from conflicting industries can influence national governments (Friedman, 2016). Moreso, UCH and scuba divers' roles in creating values are highly underrepresented among the listed stakeholders. The actions and ethos of stakeholders can make or break the sustainability goals set by the UN and international treaties (Howard, 2018, p3). Industry stakeholders are also well positioned to drive and direct scientific and technological innovation

rather than waiting for innovation from scientists or government intervention. The ambiguity and conflicting narrative presented in PUCHC need to be addressed to streamline stakeholder interpretation. The ocean is a commodity that hosts many social-cultural and economic values/benefits.

Another issue lies in the fact that there is no enforceable framework to manage UCH matters in international waters (Forrest, 2002). Individuals are left to their own devices in interactions with UCH, despite having to abide by the protocols of the flag state which the vessel sails under. Penalties to comply with PUCHC are then left unenforceable, as no third-party representatives are overlooking their activities. However, criminalising interactions with UCH deprives the opportunity to utilise the information gained from these illegal activities as patrons will shy away in fear of facing the consequences. Mutually, not having a reward system whereby stakeholders can submit information (even anonymously) regarding potential UCH creates a barrier of knowledge.

UCH is a gift to humanity, and the public has a right to learn from it and appreciate it. The message from the PUCHC is clear: no public access should be allowed if the integrity and maintenance of the concerned UCH is in jeopardy. Conversely, people still need to engage with UCH to create emotional ties and values. Additionally, PUCHC is essentially just a skeleton or framework and therefore not self-executing/enforceable. These factors hinder the ability to implement PUCHC to its full extent. Harmonisation across States and State-cooperation are needed to rectify the disconnect between keeping legislation streamlined and allowing for State freedom (Siehr, 2012, p367). This notion is crucial in developing countries that practise customary law (traditional/indigenous law).

Unsurprisingly, international law was created from the unique issues generated by colonial encounters between different communities (Jones, 2016, p25). Therefore, it can be argued that maritime and international laws are rooted in this Eurocentric mindset. Hence the future of the ocean, aquatic life and UCH depends on stakeholders' realisation that "the only way to beat the competition is to stop trying to beat the competition" (Chan Kim. & Mauborgne, 2005, p4). Competition between countries was a serious endeavour in the 15th century and the consequences of this era are still seen today. If this former mindset was destructive, how would

it be applicable now? With the UN Ocean Decade (2021-2030), the world and its stakeholders have finally come to recognise the importance of the ocean as a finite commodity (UN, 2021). Therefore, UNESCO's strategy to present heritage as a tourist attraction is an attractive way to stir emotions and instil values in heritage sites. Making UCH more accessible will ultimately ensure its longevity and survival - as described in PUCHC Annex Rule 6 and 8 (UNESCO, 2001, p17; Pérez-Reverte Mañas et al., 2021).

The UN Ocean Decade and the UN Sustainable Development Goal 14 address the need for eco-friendly Blue Tourism and highlights the Blue Economy as a desirable means to achieve sustainable Blue Growth (Oceanographic Commission UNESCO, 2021). However, the law of salvage and the PUCHC challenges the UN's trajectory to achieve their mission by leaving interpretive space for the States to rectify them. Moreover, the UN's lack of portraying UCH as an agent to the aquatic environment hinders the encompassing narrative that UCH projects. Within The UN Ocean Decade and the UN Sustainable Development Goal, UCH is not defined and, at best, mentioned as 'culture' (Oceanographic Commission UNESCO, 2021). Why is the UN attempting to separate UCH and ecosystems as different agents when in reality, they are entangled? Or why is UCH not highlighted to have value to the ecosystems? Scuba divers do not distinguish between anthropologic structures and the environment when submerged in the blue space. Breaking the idea that nature and humans are two separate categories moves away from this Anthropo-Euro-centric mindset.

As an internationally recognised governing body being clear with intentions is paramount to the clarity of goals. If the goal is to prevent complete access to UCH, then it should explicitly state so. However, if access is to be granted, allowing scuba diver interaction, then the reference should be made to methods implemented into Marine Protected Areas (MPA) legislation. The International Union for Conservation of Nature (IUCN) defines MPAs as "a clearly defined geographical space, recognised, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN, 2012, p9). Fortunately, MPAs have been receiving increasing attention from international policymakers looking to implement legislation for marine conservation and sustainable use (Appendix A2; Q4a).

3.4 Education

Education is inherently ethical since it establishes a foundation for understanding the world and oneself (Higgins & Jo, 2016). Values are virtues that individuals pick up from their circumstances, such as the setting and environment they interact with. Hence, learning can be done formally through schooling or informally by experiences powering MET – where obtaining knowledge comes from the physical and mental world. Therefore, authority figures such as teachers play a unique role by educating responsibility and cultivating cultural values in life. However, authority figures are not unbiased and will virtually always communicate values to their students (Barni et al., 2018, p4). The role of teachers, policymakers and regulators, then, is to encourage people to become aware of core values and provide them with the tools to reflect on them and make informed decisions (Sutrop, 2015, p196). To such a degree, education without strong character is like a ship without a captain.

3.4.1 Scuba Schools

Dive instructors and dive guides are teachers and role models for proper diving etiquette, and they must lead by example. They play a significant role in scuba divers' behaviour, as they emulate the actions of instructors and guides (Barni et al., 2018; Edney, 2018). Scuba divers would benefit from the inclusion of UCH knowledge in recreational courses, as it would help cultivate a better understanding of the importance, values, and laws relating to the protection and safeguarding of UCH, as well as highlight divers' implicit impact on it. Ignorance of laws and management controls can lead to non-compliance with UCH. The most effective way of decreasing inadvertent interactions is by educating. Subsequently, teaching and training can reduce accidental and intentional interaction with UCH, thus improving divers' abilities and tactics (Edney, 2018).

Scuba certification is intended to assist enthusiast divers with the necessary training and information to dive safely and conscientiously. Diver certifications are granted by a variety of organisations across the world. Nonetheless, there is no unified certification or regulatory body for recreational scuba diving. There are around 50 licensing scuba diving organisations globally. Each has a somewhat different philosophy, teaching techniques, and certification level systems, but they all teach the same general principles at the novice level. The ‘Big Six Scuba Schools’ are PADI (Professional Association of Diving Instructors), SSI (Scuba Schools International), CMAS (Confédération Mondiale des Activités Subaquatiques), BSAC (British

Sub-Aqua Club), NAUI (The National Association of Underwater Instructors) and SDI (Scuba Diving International). The Big Six represent the majority of stakeholders issuing scuba diving certificates annually. Notably, PADI is estimated to issue around 70% of all dive certificates (Kieran, 2021b, p75). Since the dive industry is self-regulated and decentralised, calculating the number of active recreational divers is problematic; estimates range from 3 to 28 million (Edney, 2018, p36).

According to DEMA (the Diving Equipment and Marketing Association), looking at the socio-demographic profile of divers, the largest segment is beginner divers with Open Water Certification (or equivalent). Scuba diving statistically has a high dropout rate of 70% (Gilliam, 2014b, paras15). Most scuba organisations do not require their instructors to educate new scuba divers on how to value or interact with shipwrecks and UCH with proficiency and awareness. Emphasis is mainly on teaching new divers the fundamentals of diving, dealing with issues underwater and heeding attention to the marine environment, such as interpreting waves and currents and interacting with marine life while preventing damage to coral reefs (Scott-Ireton, 2008). Current drives in advocating marine conservation have engaged the general public; nearly 70% of people understand that anthropological activities threaten the marine ecosystem, while 45% say the threat is considerable or very high (Lotze et al., 2018, p16). Moreover, ocean literacy is a rising worldwide education movement aiming at better understanding and contextualising human relationships with the sea by adding a positive narrative to evoke a sense of wonder and fascination, thereby making an emotional connection (Jefferson et al., 2021).

So, most people jumping in to become scuba divers will likely be aware of the need for marine conservation. The point is stressed further as baby divers are educated right from the start that they are just privileged guests to the underwater world, and that respecting the ocean is a large part of being a responsible diver. Every diver has heard the mantra ‘take nothing but photos, leave nothing but bubbles’ at some point. In fact, divers are encouraged to leave the underwater environment in an even better condition than when they found it; for example, by picking up debris and discarded fishing lines. Although we are tactile creatures by nature, every diver has been taught never to touch anything underwater or collect any marine souvenirs. It is best to admire this spectacular underwater world without causing any harm or disturbance.

Nevertheless, the idea that UCH is not a part of the marine environment even in its infancy is absurd. There is little effort to engage scuba divers in anthropological history submerged underwater. However, UCH eventually becomes a part of the ecosystem as it transitions through its life history. UCH is an influencing agent, as are scuba divers in the alien world. By utilising this movement in marine conservation and ocean literacy, UCH could reap the same level of acknowledgement. Studies on UCH can advance understanding of ocean literacy and climate change by bringing awareness to a variety of societal issues, including the changing circumstances of marine ecosystems (Brito et al., 2018; Scott-Ireton, 2008).

According to the RST, highly specialised recreationists will be more aware of the possible repercussions of their activity. They will be more supportive of management efforts to reduce these impacts (Thapa et al., 2006, p602). As specialisation rises, scuba divers (like wreck divers) pay more attention to environmental concerns and place a higher value on safeguarding the aquatic ecosystem. It reflects the scuba diver's desire to maintain a high-quality dive experience (Edney, 2018, p20; Thapa et al., 2005, p55). Continuing education courses such as advanced open water divers and specialised wreck diving courses are the perfect platform to let scuba divers indulge in the magnificent world of UCH. Limiting scuba divers to only 'wreck' diving minimises the other dynamic aspects of UCH – sunken cities and drowned cultural landscapes. RST is reflective in the wreck divers demographic, with 65.1% holding certifications higher than Advanced Open Water Diver, 33.1% holding leadership certifications (divemaster, instructor, or master instructor), and 23.8% holding technical diving certifications as their highest level of dive certification. Just 4.4% were certified at the beginner level (Open Water) (Figure 12) (Edney et al., 2021, p199).

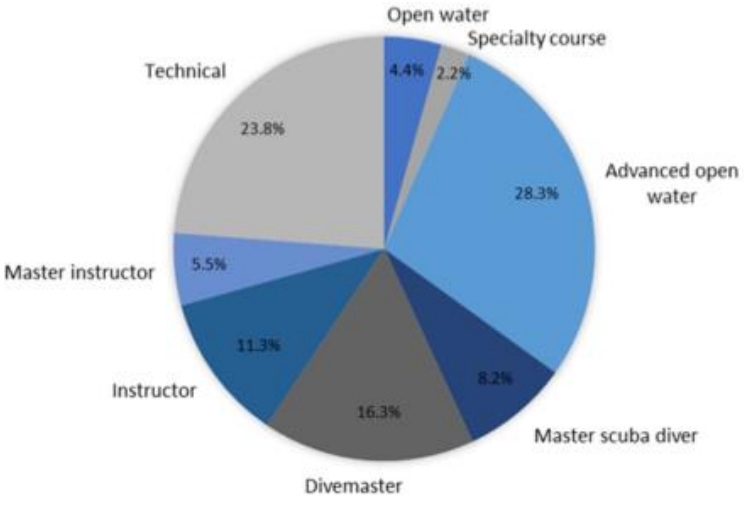

Figure 12 - Demographic of Wreck Diver by certification level (Edney, et. al 2021).

3.4.1.1 PADI

PADI, established in 1966, is one of the oldest and largest recognised diving organisations today. PADI open water and continuing education recommended divers abide by local legislation while advising divers to *presume a wreck is protected when in doubt* (PADI, 2015). Wreck diver speciality takes shipwreck laws further by defining salvage law and the Antiquity protection laws within USA context. Moreover, the rescue course highlights two schools of thought when addressing the removal of artefacts underwater by noting the contradiction in salvage law. By addressing the removal of artefacts, PADI indicates the importance of artefacts in context for an underwater archaeologist. PADI does not mention UNESCO's efforts to streamline the safeguarding of UCH. The focus was on hazards (entanglement, entrapment, running out of air), documentation (researching and mapping) and dive techniques (navigations, penetration, fin kicks etc.). However, there was no mention of the procedures to be taken if a diver locates a new UCH site (PADI, 2005).

3.4.1.2 SSI

Founded in 1970 SSI framework did not explicitly provide knowledge of local shipwreck protection regulations but did allude to a large international governing body – failing to mention UNESCO. They encourage scuba divers to abide by local legislation, focusing on Australia. Their main message is to take only photos and leave only bubbles, thereby advocating for minimal disturbance when diving along or when penetrating the wreck. SSI, eLearning, mentions that artefact removal reflects this message further by stating, "No country allows collection of artefacts for strictly personal use or collection" (DiveSSI, n.d., paras 20). Through written text and a video, there is more effort to define historical shipwrecks by their value and importance in safeguarding them. Like the majority of other organisations, most learning is directed to proper wreck diving techniques and hazards. However, in comparison, they emphasise more on pre-dive research.

3.4.1.3 CMAS

CMAS is the first international scuba diving organisation founded in 1959 by Capt. Jacques Yves Cousteau, the founding president. Unlike PADI or SSI, CMAS has two different recreational wreck divers levels and recently launched a UCH Discovery Course in 2018. The wreck diving course consists of similar teaching to non-penetration and penetration wreck dives, as well as

mapping, documenting and researching the wreck. The UCH Discovery Course's goals were to introduce divers to various UCH characteristics, raise awareness about the protection of UCH, and enhance divers' personal experiences by increasing their literacy in UCH (CMAS, 2018; CMAS, 2012). CMAS is a recognised partner of PUCHP and is directly involved with meeting with UNESCO. Therefore they go to great effort to define UCH within their website. Currently, the tab is filed under 'UW Environment', thereby placing UCH in the backdrop of the marine environment. Within this section, there is a direct link to UNESCO's website, and their 'news' section highlights UNESCO's latest publications on UCH management. They also have a link to the Nautical Archaeological Society (NAS), whose objective has been to protect, record and research vulnerable UCH for the benefit of all since 1972, whilst maintaining the highest ethical standards (NAS, 1972).

3.4.1.4 BSAC

The BSAC has been active since 1953 as a recreational diving club, but it did not start as a training centre until 1960, when it launched its first course for instructors. BSAC has the most compressive wreck dive training, separated into three courses (wreck diver, wreck appreciation and advanced wreck diver). In these courses, students learn extensively about navigation techniques, penetration dexterities, equipment, documents (mapping), and hazards and are one of the few to teach overhead rescue skills. More notably, after full completion of the wreck appreciation course, it entitles BSAC divers to membership to NAS and contributes to Part III of NAS's own training program. BSAC highlights local UK laws but does not mention UNESCO as the higher governing body creating laws for States to rectify regarding UCH (BSAC, n.d.).

3.4.1.5 NAUI

Founded in 1959, NAUI offers a flexible approach to diving instruction, allowing instructors to teach in any way they see fit, as long as NAUI standards and principles are followed. Currently, on their website, NAUI has continued education courses for Wreck Diving (external) and is one of the few to have a dedicated Underwater Archaeologist course (NAUI, 2018). However, course information is limited, hence, the extent of what is taught is subjective and hard to gauge in a literature review.

3.4.1.6 SDI

SDI is a newer diving organisation created in 1998; it is the sister school to TDI (Technical Diving International), which focuses on technical diving to provide a less technical alternative. SDI Wreck Diver is suitable for people who want to research, map, and penetrate wrecks and are keen to explore underwater history. There is more emphasis on heritage values and recreational values when diving on shipwrecks. However, SDI materials could do more to facilitate compliance with UCH conservation (NAUI, n.d.).

	PADI	SSI	CMAS	BSAC	NAUI	SDI
NAS	NO	NO	YES	YES	NO *	NO
UNESCO	NO	NO	YES	NO	NO *	NO
Define UCH	NO	YES	YES	YES	YES	YES

Figure 13 - Scuba schools who acknowledge higher governing bodies (To the instructor's discretion) (Eversdijk, 2022)*

3.4.2 UNESCO & NAS guidelines

UNESCO's PUCHC has become the flagship and central guideline for international resource management. Fully adopted in 2009, UNESCO published the Code of Ethics for Diving on Submerged Archaeological Sites, with 15 rules headlined (Maarleveld et al., 2013; UNESCO, 2010). As an international governing body, the fact that only one scuba school, CMAS, highlights UNESCO'S importance shows a lack of vision on the relevance of UCH to divers. Scuba organisations are unmistakably stakeholders in the longevity of UCH, and the health of the ocean. Ultimately scuba schools' goals should not be far from UNESCO's mission to achieve their 10 goals of the Ocean Decade and align them with Goal 17 for the UN's Sustainable Development Goals in Agenda 2030 - Goal 14: Life Below Water (UN, 2018) – nor are they vastly different from the Code of Ethics for Diving on Submerged Archaeological Sites.

The scuba diving industry is self-regulated, mainly because it has done an excellent job of being proactive in safety and uniform standards. EUF (European Underwater Federation), WRSTC (World Recreational Scuba Training Council), IDSSC (International Diving Safety Standards Commission), and DAN (Divers Alert Network), are private operations that have linked together to form a global system of standards for safety, training, and diving operations. DAN was founded in 1980 and is the largest scuba diving insurance organisation for recreational to professional levels of scuba diving. It has a strong interest in promoting safe diving as an insurance provider and is, therefore, the custodian for dive safety information. Currently, DAN

annually records 1000 diving-related injuries, with over 10% being fatal (Denoble, 2019, p12-21). The success of the scuba diving industry is pillared on these ideas of international cooperation and a free market structure, which was prompted by a collective need to make scuba diving look safe and desirable.

However, because UNESCO treaties are made in compliance with its specific requirements by State Parties, international organisations such as scuba schools are amazingly unregulated as private entities manage them. The government does not impose any licenses or training requirements on divers or instructors. Manufacturing and testing of SCUBA equipment are not governed by any regulations – besides tanks as they are pressurised. Overall, there is no government oversight of recreational scuba diving, and the law does not care if an individual has a certificate or not. The few exceptions to this statement are Argentina, Australia, Canada, Denmark, Israel, Sicily, Maldives, and Malta – more countries regulate only on the professional levels such as scientific or commercial diving qualifications (Benjamin & MacKintosh, 2015). This is not to say that governments need to intervene more with this multi-billion-dollar industry, but it does highlight the need for ALL stakeholders to adopt PUCHC. Especially since the PUCHC are guidelines rectified by the 193 Members and 11 Associate Members, it seems remarkable to not require international self-regulated bodies to abide by international standards. If policies are not fully adopted, students should, at a minimum, be made aware of a larger international body dedicated to safeguarding the oceans' future - as UNESCO advocates for UCH as well as marine conservation and Blue Growth. UNESCO has written 15 easy guidelines in order to facilitate a streamlined directive for scuba schools to teach and students to follow (Appendix D) (UNESCO, 2010).

Since 1972 NAS's mission has been to "research, record and protect our threatened underwater and coastal heritage for the benefit of everyone" (NAS, 1972, p1). The volunteer-run archaeological dive club is affiliated with BSAC. However, NAS guidelines refer to training through CMAS standards; for example, "to participate in an underwater archaeology project as an unpaid diver, a diving qualification equivalent to at least CMAS 2 Star (BSAC Sports Diver, PADI Rescue Diver) is required" (Green, 2009, p12). Their relations to BSAC allow for credit transfer between organisations, which is ideal for streamlining standards. However, the high requirements presented by NAS mean the majority of scuba divers will not fit the criteria for

participating in underwater archaeology. Nonetheless, that does not mean they should be exempted from learning about UCH. In the 272 pages of "Archaeology Underwater – The NAS Guide to Principles and Practice" NAS has extensively highlighted the value of underwater archaeology for archaeologists, the public, and future generations (Green, 2009). Moreover, NAS has nine eLearning courses suitable for both divers and non-divers interested in heritage, conservation and preservation, diving with a purpose or learning more about the waterscapes and regularly host in-person training directed to 'skills learning'.

3.4.3 Future Directions

With issues of investment of money and time, the scuba diving industry sees a high dropout rate. Before scuba divers continue their education, it is paramount to instil the importance of UCH early within training to cover a larger demographic (Kieran, 2021a). For scuba divers to have a more wholesome understanding of UCH, there needs to be more effort to engage them in UCH for the moment they start creating bubbles. More importantly, addressing different values earlier in dive training allows the scuba industry to make different emotional connections to the student. "The top four motivations for wreck diving were: seeing historically significant shipwrecks, marine life and artefacts, and enjoying the peace and tranquillity of the underwater environment" (Edney, 2018, p168). Meaning one diver may value aquatic life, and another may find history more appealing. However, the point is not to be restrictive in allowing a *baby diver* to cultivate their values.

Making UCH information readily available is a simple step in advocating for UCH. Scuba schools are educators of proper etiquette with the underwater world, and it is, therefore, their responsibility to relay all relevant information and not silence or limit what contributes to students' learning development (Kolb et al., 2014). Highlighting UNESCO's role as the captain who guides international law streamlines the curriculum in a global context, as it is deemed that the UNESCO guidelines are (to date) the pinnacle of perfection. In that case, teaching these guidelines or referring to UNESCO seems the most logical approach rather than briefly mentioning one or two national laws – especially when students may not dive in the mentioned countries.

Although NAS attempts to bridge the gap between professional and recreational divers' requirements, the disconnect between recreational divers and UCH still largely remains. The extensive outline of underwater archaeology articulated by NAS is too much for entry-level diving courses. UCH is also only weakly defined within training manuals of the 'Big Six' in the entry-level courses. However, it only marginally improves when looking at more specialised levels of certification. There needs to be an in-between approach, where beginner divers are educated about UCH and are also given the tools to acquire more information. Facilitating learning about UCH supports the heritage cycle that dictates that heritage must be understood, valued, cared for, and enjoyed to be relevant. In continued diving curricula, scuba schools address wreck diving as a very singular activity, whereas in reality, wrecks are only one portion conveying UCH. Therefore, encompassing the wide variety of anthropological structures underwater within the context of wreck diving allows different connections to be made to the site, for one diver may value shipwrecks differently than submerged cities or even different eras of UCH. If people do not know, they ultimately cannot value it (Mason, 2002).

Beginner-level diving courses take the time to educate divers on proper interactions with marine animals and plants while shamelessly pushing advertising continuing education courses directed at marine conservation. Similarly, disclosing UCH would give a platform where scuba divers are coerced into confronting the ethical issues regarding conservation methods. Most scuba schools' business models are based on consumerism; however, the current trend shows that the scuba industry is forever competing but is not growing (Kieran, 2021a). This is because the scuba industry has difficulty retaining certified divers along with the high costs affiliated with scuba equipment and training. The Blue Ocean Strategy is a concept based on creating a new uncontested market space that makes competition irrelevant by offering new and unique value to consumers. At the same time, it works to reduce costs, subsequently allowing scuba diving to become more accessible (Kieran, 2021b).

3.5 Summary

To finish off PART III, the desk-based research provides the opportunity to start addressing the main research question 'How do recreational divers' interactions on UCH positively add to the narrative, values and safeguarding of UCH?'

The longevity of UCH rests on imparting the values of these sites to the public, both instilled by passive and active learning – via interactions/engagement and education/laws. The challenges of safeguarding UCH face are extensive due to the vast open oceans, where enforcing and upholding legal frameworks become problematic. For individuals to appreciate and value UCH, scuba diving gives first-hand sensory experience whereby the cyborg state influences their emotional connection to the site (Raycraft, 2020). The experience of being underwater is new and engaging since it blurs the lines between human vs technology and nature vs culture. Being a part of the surroundings allows an individual to become more attuned to the environment/situation as their senses become intricately connected and extended to the physical world. Technological advances in VR and AR have provided a platform to engage non-divers in the magical underwater world, however, it is yet to match the sentiments and emotions involved compared with a 'real' visit. (Losada et al., 2020; Nabiyouni et al., 2017).

UNESCO advocates heritage as a form of tourism and tourism as a form of conservation, both in terms of justification for safeguarding and economic stability (Pedersen, 2002, p3). Allowing people to experience heritage provides a platform to make emotional connections and educate heritage values - utilising the idea of the Heritage Cycle (Thurley, 2005). Scuba divers' values have a critical role to play within the Blue Tourism and ecotourism sector; mutually, scuba divers' values can reflect the values and trajectory of the Blue Tourism industry (Manglis, 2019, p3). Despite the scuba diving industry propelling ecotourism in developing nations and contributing to the Blue Economy and Growth, recreational scuba divers are often forgotten as stakeholders to UCH. By utilising ocean resources sustainably, a 'Blue Economy' promotes job creation, economic growth, and social inclusion, as well as improves ocean ecosystems' health (Henderson, 2019, p6). Although abstract, this contributes to the positive narrative of UCH, as it extends beyond the underwater world and recreational scuba diver to help facilitate Bule Economy.

By virtue of their ability to plunge into the ocean's depths, this niche category of scuba divers is unquestionably the core community interacting with UCH. The lifecycle of UCH changes the narrative, making scuba divers a key component when analysing these narratives. Moreover, these narratives are essential to presenting 'living heritage'. A living heritage approach emphasises the core community's relationship (bottom-up) with the site by continuously defining a site's authenticity- living heritage emphasises people (intangible) (Poulios, 2014). The diving community is now recognised as a core stakeholder by living heritage, and effectively places them in a leading role in the conservation management effort. "The core community does not simply participate in the process but is actively empowered: it has the ability to set the agenda, take decisions and retain control over the entire process," (Poulios, 2014, p23). Regardless of how distinct pasts are created, interacting with heritage is always a present-oriented action, attributing to the subjective values instilled by individuals on UCH.

In contrast to a values-based approach, authenticity is primarily expressed by the past and the tangible composition of a site. The site is protected as an enduring legacy to past generations for present and future benefit (Poulios, 2010). Values-based decision-making has become the most often used paradigm in numerous historic regions across the world. However, a few issues arise from "a value-based approach, which is argued to remain rooted within a nineteenth-century western conservation paradigm," (McClelland, 2018, p4). Thereby placing values on the tangible aspect of heritage rather than the intangible, which results in side-lining stakeholders. The value-based approach typically reduces things to economic value (McClelland, 2018). The question of sovereignty over safeguarding accountability exists regardless of utilising the living heritage scheme (Osman & Farahat, 2021). However, the emotional phenomenon that is experienced when scuba diving cannot be replicated, making UCH a unique site. It attracts specific people, thereby keeping heritage relevant not only to professionals but also to other communities. The ritual of transforming into a cyborg and the embedded knowledge serves as a platform to refrain from being anthropocentric and to understand this entangled and dynamic world.

While ultimately, the most challenging aspect to tackle is the changing, or conflicting, values placed on heritage by different stakeholders/individuals. This becomes even more evident when we look at the lifecycle of UCH – where does nature begin and culture end, or when do

we accept that humans are an extension of the environment we interact with? The subjectiveness of values is unequivocally hard to define. The objective should be to move past a value-based approach and focus on the present and continuity aspects of heritage, thus creating sustainable tourism through the Blue Economy, monitoring the effects of the ocean, all a while making history and heritage a topic that is understandable, relatable, and accessible for the recreational dive community and non-divers (Osman & Farahat, 2021). The relevancy of safeguarding UCH rests with the community interacting with it, so efforts to help cultivate those emotional experiences is desirable. However, the emotional transformation recreational scuba divers undergo when diving is heightened when diving on UCH. To such a degree it offers a way for researchers and recreational divers to bridge the gap in understanding how to effectively implement and manage less visible archaeological remains.

Consequently, the protection of UCH for scientific/archaeological reasons can differ from that of dive tourism; hence cohesive cooperation between these two sectors must become more fluid (Manders, 2015). Yet, with declining numbers of scuba divers and the increasing number of non-active divers, the UCH sector and scuba diving industry need to look at making more meaningful experiences by revamping the current structure in place (Kieran, 2021a; Gilliam, 2014a). This translates into more transparency, communication, and responsibility between stakeholders.

PART IV: ADDING THE WETTER TOUCH

Part IV: Adding the Wetter Touch will be structured in the same way as Part II and Part III, by pulling in the central ideas that make up each subsequent section. The goal is to embed the human data of personal experience to help expand on these central ideas to create a holistic and authentic account of recreational scuba divers and UCH.

Before addressing the main research question, "How do recreational divers' interactions on UCH positively add to the narrative, values and safeguarding of UCH?" I would like to extend the study beyond the confinements of desk-based research. Throughout the thesis, the ideas to support the positive narrative become a question of emotions and experiences, culture vs nature and the generalisation of scuba diving practices on UCH. Overall, it is about recreational divers being provided with a platform to help cultivate a comprehensive and layered understanding of UCH. To support this perspective, personal emotions and experiences will be provided from six interviews. These interviews are by no means a reflection of the entire scuba diving community but should be understood more as case studies to help identify areas where UCH interactions and values can be improved.

Heritage is often seen as a cultural process that has a social impact on how the cultural meanings of heritage are redefined and experienced by the public - these experiences change from person to person. Therefore, when interpreting personal accounts of UCH from recreational scuba divers, it is about "moving from idea to explanation, from data to story, and in many cases from confusion to meaning" (Madden, 2017, p149). It is about creating a colourful in-depth narrative of these experiences. By pulling what has been discussed in Part II and III, the ethnographies attempt to bring this subject to life. The difficulty with human-based studies is measuring emotions scientifically and analytically; however, when talking about human interactions and values, human data is needed. Understandably this makes the interpretations subjective as life experiences will vary; nonetheless, this is not necessarily a drawback, as it offers the opportunity to further our consideration of human behaviour and ideologies. To expand on this, it is about understanding not only human behaviour underwater it is now about cyborg behaviour, where alterations of the physiological and cognitive mindset set forth a new perspective and meaning of being underwater.

4.1 The Negatives

In Part II "Assessing the Scene" pinpointed the major threats and risks to UCH. The section extended beyond the direct and intentional interaction made by recreational divers and zoomed out onto the other dangers to longevity of UCH, from climate change, fisheries, and MSP. It illustrated how, regardless of the interactions scuba divers make on UCH, there are always overlying threats that go beyond an individual's impact. Questioning if the biggest threat to UCH is in fact recreational diver, and whether it would be wiser to focus on the more immediate threats at hand instead.

Climate change is notably one of the biggest threats the ocean itself faces. Recreational scuba divers bear witness to the effects of rising sea levels, warming oceans, ocean acidification and erosion. It is just a fact that marine life is dying. The oceans are getting emptier by the day. This is not only due to climate change but the illegal and unregulated fishery activities (Pauly & Palomares, 2019). Their destructive methods are no secret but are sorely unsustainable. Recreational scuba divers witness first-hand what impact these damages have on the environment. Every interviewee I spoke to, had a story to share about this, unsurprisingly they all displayed emotions of sadness or helplessness.

> *"I have been going to Kealakekua Bay [Captain Cook's Bay] since I was small. There is such a noticeable difference to the abundance of marine life. Specifically in the last couple of years, I have seen so much coral bleaching – it's actually really sad, because it just is not the same anymore."*
> *-- Ty, 39, NAUI/PADI instructor*

> *"Dynamite fishing. I just didn't think it was practised but it's terrifying. There you are, underwater, and BOOM, it goes off. It sounds like gunshots underwater, and you're not exactly sure where it is coming from. It is also never just one blast, they are consecutive blasts that destroy the habitat indiscriminately. The sad truth about all this is that the low cost and easy accessibility of explosives to fishery industries makes it hard for some countries to regulate it, and if they try it's a literal death wish" [dive area: Cebu, Philippines]]*
> *-- Fiona, 35, SSI Instructor*

> *"Fishing debris [fishing lines, nets, traps, etc] is disgusting, it is everywhere. I think the number one thing I use my knife for, is cutting it off marine life. It is also what I tell every dive student to do if they see any – as a general rule of thumb."*
> *-- John, 30, PADI Divemaster*

When looking at these narratives of other anthropological activities in the ocean, recreational scuba divers were very much aware of these negative impacts, so I asked them what they thought could be done to mitigate these impacts.

*"I don't know, that is literally what half my classes are about *laughs* [MA Oceanography]. I don't think there is a clear answer, unless there is a drastic reform on how we address climate change and more directly the fishing industry. But of course this means we need to find a way to ACTUALLY regulate the oceans, which I don't think will be possible in my lifetime, but hey, anything we can do to slow down the process is progress."*
-- Ty, 39, NAUI/PADI instructor

"Is there even a way? I'm not sure. Have you seen Seaspiracy on Netflix? Well, I think they did a decent job showing that illegal fishing activities are not just about the methods they use, but also about the human rights issues involved. People are literally being kidnapped and government employees who are tasked with fishing counts are murdered out at sea. It is absolutely wild; it sounds like cowboys and outlaws in the wild west, except it's 2022 and on the ocean."
-- Fiona, 35, SSI Instructor

"Just stop all fishing activities…" - John
"yes but how? How do you know it's actually stopped"? - Joelle
"I don't have an answer, but I think it would have to be drastic"
-- John, 30, PADI Divemaster

As active participants in the ocean world, addressing the concerns for climate change and offshore activities was a dooming question. Interestingly, when asked for ideas to mitigate recreational divers' impacts on UCH or reefs, the answers were seemingly more achievable, and the tones and attitude seemed more hopeful. For it is contingent on their interaction with their students, just as it depends on students' interactions with their surroundings. Therefore, during each interview, it was no surprise that diver's impact was discussed. With stories of how baby divers and novice divers have touched, kicked, or bumped into coral, wrecks, or swim-throughs or taken souvenirs. They also indicate that they witnessed coral being broken during these events.

"It happens, divers move and bump into marine life, it mainly comes down to their buoyancy control and their situational awareness. I don't know if there is a way to fully stop it from happening but the best you can do is rectify the problem underwater and always pick sites suitable for the level of your divers. They need to practise, and it does get better the more they scuba dive. Also, I would not go to a reef or wreck with lots of branching and hard coral as that's more likely to break with beginner divers. Open water dives are more sandy bottom dives with lots of soft coral."
-- Fiona, 35, SSI Instructor

"I mean that is half my job as a divemaster isn't it? Making sure their buoyancy is good and they are streamlined so they don't accidently touch marine life." - Rob
"Have you had issues with divers not accepting help?" – Joelle
"No, not really. I think they get annoyed sometimes because they want to be able to manage their buoyancy by themselves. You also normally see them flapping around to stop themselves from touching anything and that is normally when breakage happens."
-- Rob, 24, SSI Divemaster

"Students don't want to touch anything underwater, especially coral. It is drilled into them how fragile it is. You can see them try so hard, not to sink to the bottom by using their arms to waft up."
– Emma, 29, PADI instructor

"I had a diver literally hugging the seabed, and this is why there are sandy bottom sites. For these divers, once they have their buoyancy under control you can take them to a more challenging site."
-- John, 30, PADI Divemaster

"I've seen it before, student taking shells or souvenirs from their dive. I tell them before this is a no-no, but you can't always catch them and if I do I put it back. I like to think none of my students do this, because I don't."
-- Jack, 44, BCAS instructor/ Technical Diver

The attitude is different when addressing recreational divers' impacts compared to other anthropological activities. They accepted that impact can and does happen but indicated that they could fix these issues with training and experiences to make an individual diver better. Edney "found that people were often surprised, if not horrified, to find out that they had been kicking or touching wrecks when diving and modified their behaviour as a result of finding out" (Appendix A6; Q5a). There was also an emphasis on how training and experience was exceedingly as important to ensure that divers' impact in the underwater world was minimal. However, regardless of how good or bad a diver's buoyancy was underwater, they all wanted to do better and strove to prompt better dive behaviour. Van Tilburg, Auer, Edney and Underwood all noted that degradation to a site is the consequence of only a few individuals condemning the rules/laws of UCH (Appendix A; Q2 & Q5a).

There is this spoken and unspoken respect for the ocean and everything in it. The want and the intentions of recreational scuba divers generally is to preserve the ocean – otherwise there would not be anything to see -, translating nicely to a positive narrative of recreational divers. These good intentions have not gone unnoticed by the professional archaeologists who have worked with the recreational dive community (Appendix A; Q5a). However interestingly, Scott-Ireton, van Tilburg (both NAUI instructors), Edney (PADI instructor), and Underwood (BSAC instructor) were more receptive to understanding the community rather than single out individual divers/events. The biggest hurdle to safeguarding UCH is the overabundance of misinformation driven by the media. Scott-Ireton and Márquez sympathise with the recreational community but made a point of how misleading and damaging this information can be to the intentions of the public - not only recreational divers. Recreational scuba divers

wanting to be involved can earn themselves the new title of citizen scientist, but as Márquez indicated these efforts will never replace the professional training of an archaeologist irrespective of what the dive course certification may say (Appendix A1; Q4a). In contrast Underwood stipulates that "professional guidance can enable them [recreational divers] to achieve acceptable standards – equivalent to professional standards – and participate in an active role in supporting professionals in working on archaeological sites" (Appendix A7; Q2). Segueing into van Tilburg belief that the barriers between recreationalists, and professionals to be more arbitrary (Appendix A2; Q2). Ultimately diving could be used as a tool to educate the public actively and engagingly about the ocean's life and histories, as they witness it first-hand.

4.2 Interactions

Section 3.1 defined the interactions made by recreational scuba divers to be emotional and phycological whereby plunging into the underwater world creates a sensory experience that cannot be replicated through AR/VR. It supports the MET idea that the limitations of understanding the extended world are not constructive but can be an extension of cognition (Iliopoulos, 2018; Malafouris, 2018). The theory brings forth the mutual interactions between humans, things, and the environments – scuba divers/wreck divers, the scuba equipment, and the underwater world/UCH. Therefore, the way in which scuba divers receive this knowledge is through their ritual-like process of transforming into a cyborg, as scuba diving technology allows for the transcendent of humanity's biological limits (RayCraft, 2020). Making the impossible, possible, and allowing for humans to transgress boundaries between fact vs fiction and real vs imagined. Scuba diving therefore surpasses the human domain and into that of cyborgs which translates into a hybrid body when submerged in the water. Underneath the surface, there is a reality greater than human, natural or technical capabilities. This then strips the scuba diver of the humanistic core and extends the preconceived notion of the underwater world (Stevenson, 2007).

When talking to the scuba divers I asked them "can you describe diving to non-divers?" The question was purposely vague to help initiate a conversation about what diving really means to them, why they got into diving and what they consider the 'selling point' of this activity. The

reasoning is to keep the recreational divers at the forefront and to highlight the interactions made.

"It's like being a mermaid. You grow up fantasising about all these mythical creatures, unicorns, dragons, fairies, and of course my personal favourite mermaids." - Emma
"True, because The Little Mermaid was one of my favourite movies growing up, I wanted to have those underwater adventures like Ariel." – Joelle
"Same! She had all these amazing treasures and secret coves. I guess scuba diving will be the closest thing we will ever get to being mermaid!"
– Emma, 29, PADI instructor

"I feel like a ninja when suiting up. Wetsuit, hood, gloves, BCD, regulators. I feel like it's a transformation. I would describe it like being an astronaut suiting up to go into space. You're weightless, in a completely different world and there is basically no one there."
-- Ty, 39, NAUI/PADI instructor

"Diving into the deep abysses is insane. It is such a different feeling – euphoric almost. There is literally no other activity that I can relate it to."
-- Fiona, 35, SSI Instructor
"Underwater is a whole different world. The sensations are so different; that is what makes it special. It is so peaceful underwater and I feel at one with it."
-- John, 30, PADI Divemaster

Time moves so differently underwater; you just lose track of time, and you just feel so present and forget the human world – becoming one with the ocean."
-- Jack, 44, BCAS instructor/ Technical Diver

The tone and language used – mermaids, ninjas, astronauts, euphoric, peaceful, and special – really advocate for this transgression of mythical, to obtainable and technological to natural. It suggests an altered reality where the scuba diver is transported via technology through a sensory experience. The reactions to the transformation were positive and regarded in ways that were understandable to non-divers. These sensory experiences underwater are driven by the changes in the physiological environment.

"My favourite thing to see with new open water divers is when they do their safety stop at 5m for 3 mins. Because we have to stay at the stop for a while, we tend to use mooring lines so the students can hold onto the ropes, so they do not drift away. We do warn the student that they need to compensate for the magnification underwater. More often than not they don't believe us, and they miss the rope."- Emma
"Does this still happen to you?" -Joelle
"No not really, I kind of just know now."
-- Emma, 29, PADI instructor

"In Koh Tao, like you know, there is an underwater playground, where students can practice their buoyancy. There is this octopus structure where students can swim through the arches of the tentacles. I always see students readjusting as they forget when they swim lower and more horizontal, they have extra height due to their tank."- Rob
"haha yes, the octopus at Twins, that's a great site to get students to understand their buoyancy better. Taking off the fins and doing backflips and running under

water, feels like you're in the matrix but is so important to understanding breathing! I'm sure you have assisted on many courses there?" – Joelle
"Oh 100%, it is still one of my favourite things. Students come up really understanding how different being underwater is - basically your feet are useless, and it all requires amazing breath control, and they all think it's so funny! But you can really see the improvement after that dive."
-- Rob, 24, SSI Divemaster

"Breathing underwater is crazy. You can actually feel the difference. I always have to try not to laugh underwater as it wastes air!"- Fiona
"Can you elaborate on what feels different" - Joelle
"Well, the air feels colder on your teeth, you can hear every single breath you take because of the bubbles and when your tank becomes empty you can feel how much harder it is to breath."
-- Fiona, 35, SSI Instructor

The difference in the underwater world extends to the feeling of weightlessness, hearing and seeing. It requires divers to completely learn how to adapt to these new challenges to allow for complete immersion which heightens our awareness and sense. It becomes an embodied and embedded way of understanding the alien world, as they become accustomed to their new surroundings and bodies (Straughan, 2012) - the divers all 'just knew' how to compensate when underwater. Experiencing these heightened senses plays an emotional role in cultivating a memorable and positive experience (Fredrickson, 2001). The language used, also provides preconceived ideas of what is expected underwater (as demonstrated above) and UCH. By understanding the changes underwater, it was valuable to explore the emotions, reasonings and knowledge for wreck diving.

"Wreck diving is so cool, mainly because you never know what you might encounter. The layer of history to the devastation adds to the haunt-iness of the site, making it even more tantalising to go."
-- John, 30, PADI Divemaster

"I love going into the unknown, caves and wrecks. The mystery is what enticed me to learn more technical dive skills. I would never enter a wreck or cave where I did not feel comfortable, nor would I enter if my buddy was not comfortable. It is the rule. Thumb up means dive ends no questions asked."
-- Jack, 44, BCAS instructor/ Technical Diver

"It is trained from the beginning, no matter what qualification you obtain, that you should never ever exceed your qualification. I remember when I was signing my liability forms for my advanced (penetration) wreck diving certification, every other sentence said, "and you could die; consequences can result in death; life threatening consequences. It really puts it in perspective how dangerous scuba can."- Rob
"Yet you still did it!? Why" – Joelle
"Well yeah… so did you! why did you do it?" - Rob
"I thought it would be cool, something new and exciting."- Joelle
"Yeah same! It's different from diving on a reef, there is more involved."
--- Rob, 24, SSI Divemaster

The words used to describe wreck diving – cool, unknown, mysterious, exciting, different – and the words to describe the training – new, proper, comfortable, possibly deadly – are interesting as they highlight the confidence and curiosity of the individuals. Confidence is paramount for penetration dives and is an extension of the embodied and embedded experiences a recreational diver gains with their hours underwater.

"This is why you [Joelle] are always last in the dive crew, to go through holes. If I can make it, you definitely can. It is also why I prefer to dive side-mount to give me the extra mobility to squeeze through them small holes. I just know though. There are just some holes that look too sketchy."
-- Jack, 44, BCAS instructor/ Technical Diver

"My favourite thing ever to see underwater is the sign postage before a cave entrance. It is almost comical to see a sign underwater, but then again, if you think about what dangers can happen in a cave or even a wreck, it seems stupid to enter without the proper training."- Ty
"And what would you describe as 'proper training', explain please?" – Joelle
"Well, any wreck training but I think to be fully comfortable you need to do the advanced wreck certification either recreationally or through technical diving. The technical course is obviously more intense."-Ty
"Yes, it is. For my training they took me off the line that is essentially your lifeline out of the wreck. Blindfold you, take your touch away and tell you to find your way out. It's wild, but doable. Just have to keep calm" - Joelle
-- Ty, 39, NAUI/PADI instructor

Penetrating wrecks comes with risk more catastrophic, if, emotion and confidence in competency is wavered. However, the rewards gained via the Hedonistic Loop, encourages divers to create new memories or seek further training (Bonnet et al., 2008). The conversation showed a mutual understanding and respect of how important it is to have the proper training. The questionnaires support this notion, as the professional archaeologist describe proper training and intentions significantly increase better interactions on UCH (Appendix A; Q4a & Q5b). The only way to ensure that emotions and competency is solid, is by having these experiences underwater. When divers do not display these measures, they can become panicked.

I would like to reflect on the interviews with, Emma, and Fiona, who both had less to say about wreck diving and the emotions they felt, in contrast to the men involved with this interview who clearly had a keener passion for these riskier dives. They told me (individually) that although they like diving on/around wrecks they did not necessarily have to penetrate them. Although this statement is not divergent from the desk-based research where the average wreck diver is 21-30 (63%) and a more significant margin of males participating (86%) in this

activity (Edney et al., 2021, p196). The validity of this statement for not wanting to penetrate a wreck, is their complete understanding of the limitations of their mental and physical capacities. However, less risky dives are not dependent on penetration dives on UCH alone, but also on the competency level of an individual diver to understand their new surroundings and bodies.

This section had a lot of emphasis on the experiences divers have underwater also with respect to UCH. It highlighted the desire for those who want to pursue riskier dives to view it as a positive experience, provided good practices are adhered to. Lemke noted how recreational divers who have shown a key interest in conducting science were highly skilled (Appendix A4; Q2), while Scott-Ireton and Edney called recreational divers passionate advocates for the ocean (Appendix A3 & A6; Q2). Skill comes from embodied and embedded experiences. Passion can only come from experience that are deemed important enough to continue learning (Serin, 2017, p60) - reflective of RST. Scuba divers' interaction with the underwater world, the nature and culture, because they have the drive to seek out the unknown and invest in the time to achieve this sort of diving practice. Edney pointed out that "divers are highly educated and relatively affluent, with wreck divers being more educated and affluent than general scuba divers. Many want to dive with a purpose" (Appendix A6; Q2). The simple ethos recreational divers are taught is to respect the ocean and everything in it, the purpose is to be environmental conscientious, which likewise translates to less risky UCH dive sites.

4.3 Values

Values are internalised cognitive constructs that influence judgments by evoking a feeling of the importance of intrinsic ethical principles, a sense of priorities, and a proclivity to create meaning (Oyserman, 2015). These values can be instilled in people formally and informally, and it is by understanding the specific experiences one has, which creates meaning (Alexiou, 2019; Oyserman, 2015). It is through their experiences and imagination where these fundamental ideas may be broken down into three categories: social (entertainment, education, escapism, and aesthetics; Pine and Gilmore, 1998), economic (Marxist viewpoint), and linguistic values (language, perception, and symbols) (Graeber, 2001; Dor, 2017). However, in section 3.2, this archaic way of trying to determine the values of UCH were questioned as UCH goes through many life histories, eventually being incorporated into the

ecosystem. As UCH sits in situ it becomes completely immersive and environmental (Scott-Ireton & McKinnon, 2015, p167). Therefore, these values become a complex understanding of how we value nature vs culture – are they really that different? Conservation cannot be viewed as unbiased, especially when subjective values are assessed.

As the interviews progressed and stories unfolded, I asked them to highlight the difference between wreck vs reef diving and what their preference was. This question opened the dialogue to the very nature of what is valued – marine life vs histories.

"To me UCH is just a very cool dive site. It has history, but it's just something different to look at underwater. On reef dives however, I find there are more animals. So, it does depend on what you want or what you're in the mood for."
- John, 30, PADI Divemaster

"UCH sites are my favourite sort of dives just because I feel like there is just more happening. In terms of aquatic life, vibes, and history. To me it's the most epic sort of dive you can do!"
-- Ty, 39, NAUI/PADI instructor

"I prefer reef dives, just because I like the colourful and natural environment. Wrecks are nice but I go to escape the human world.
-- Emma, 29, PADI instructor

"It depends on the location of the wreck and what is growing on, living in, or around it. I want to see interesting things. That is why I always research the UCH site before diving."
-- Fiona, 35, SSI instructor

"A wreck. In all honestly, I get bored on most reef dives. I know a lot of people get fascinated with all the different underwater life but that just isn't for me."
-- Jack, 44, BCAS instructor/ Technical Diver

"I mean I think it's pretty obvious I would prefer a wreck. They have something extra to look at, to me there is also something more to think about."
-- Rob, 24, SSI Divemaster

Unsurprisingly when asking them their preference, it started addressing different values. Sociological values in section 3.2.1 utilised the experience model (entertainment, education, escapism, and aesthetics (Pine and Gilmore, 1998) to help formulate a systemic understanding of how recreational divers view the UCH. The interviewees started to address why they thought wrecks/reefs more interesting to look at underwater, which is a passive process that extends to the entertainment and aesthetic aspects of diving within the experience model. In contrast, education and escapism are active processes which require understanding why they go on wrecks rather than reefs. This means there is this preconceived notion that they already know

what will await them underwater; their use of imagination hence brings forth what they hope to see. The active choice in picking a reef/wreck means they have built an idea on what will happen. Either way, in their mind they actively decide which site holds a greater truth or value to where they want to escape to (imagination) and what they have learnt from their previous experiences (education). This then speaks to the linguistic/semantic values, as the perception of what they will see gives a site meaning (Mason, 2002).

Although this question did not tackle the economic value of UCH, other anecdotes showcased the relevance of money spent recreationally and professionally.

"I always try and go scuba diving abroad, it is a new environment, and it is a great way to meet people as most divers that I meet have the same mentality."- Rob
"Do you have a bucket list" – Joelle
"Yes of course! The majority of them are wrecks!"
-- Rob, 24, SSI Divemaster
"I learnt to dive, so I could explore and travel the world."
"And when you go abroad do you hire a dive guide" – Joelle
"Yes, because they know the most about the site. To be fair I do love it when I dive a new wreck and my dive guide can give me a full history of the wreck. It brings it back to life for me."
- John, 30, PADI Divemaster

"I plan almost 90% of my holidays around scuba diving. I want to go to destinations underwater."
-- Fiona, 35, SSI Instructor

*"I have no idea how much I have spent on scuba courses, and equipment. I don't want to think about it. *laughs* specifically for more advanced training courses like wreck dives and cave dives. There is always more equipment you need"*
-- Jack, 44, BCAS instructor/ Technical Diver

"I always suggest and ask for a dive courses of dive equipment as presents because I cannot always afford it myself but am addicted to having and doing more!"
- Ty, 39, NAUI/PADI instructor

The economic values described section 3.2.2 included individual monetary gains and local economies from dive tourism. Scuba is an expensive hobby as it needs specialised equipment and training; therefore, the microeconomics of this endeavour is minimal unless extended to the looting and selling of artefacts. Although looting and removal of artefacts is a concern amongst the professionals, Márquez points out that fishermen are also implicated in this activity (Appendix A1; Q6b). However, a decline of recreational divers may retrogress safeguarding measures on UCH as Edney elucidates that "if fewer divers are visiting, there is less impetus for dive guides and operators to look after sites and promote sustainable practices at sites if they can't see a future in the dive business due to the decline" (Appendix A6; A6a). If

dive centres/shops are working against CRM because of a decline effecting their business, they may sell artefacts on the black market or allow dive tourist to keep artefacts in hopes for a bigger tip; these issues are especially imperative in developing countries where they are reliant on tourism is their livelihood (Appendix A6; A6a).

Nonetheless, the substantial benefits to economic values come from the macroeconomics of UCH and have been one of the driving ideologies for sustainable conservation within UNESCO (Pedersen, 2002). Dive tourism strikes up an interesting aspect of how values are placed on UCH, as divers are willing to travel to other locations to experience a specific site. The willingness to travel alludes to the fact that individuals have imagined and therefore made an emotional connection to the site. Yet dive tourism is pillared on the conception that the dive community is stable.

The ethnographic accounts, support the desk-based research whereby the values of UCH are subjective to the beholder. Reenforced by Márquez's accounts "as human behaviour is influenced by a variety of factors throughout life" (Appendix A1; Q5a) and Auer's stating that "most divers are probably looking for other experiences underwater and are not primarily attracted by UCH" (Appendix A5; Q6c). It is all about what people know and want to know. Ultimately, all individuals will have different experiences, diverse emotions and imagination which drive value placement. The only analytical way of addressing values is through economic value of UCH, where it looks at the dive tourism industry to propel local economies. However, dive tourism is not limited to wreck dives, nor are wreck dives indifferent to reef dives, both still pillar on the preconceived notion of what will be experienced underwater (imagination vs reality). If dive tourism is a driving factor, then an interdisciplinary cooperation supports a bottom-up approach to safeguarding UCH and the ocean – thereby moving away from 'how to value' and give way to 'how do we live with dynamic heritage'

4.4 Laws

Section 3.3 focused on the protection framework placed on UCH and its attitude towards the recreational scuba diver community. The second part of this statement is paramount to understanding the anthropological aspect of UCH legislation. The desk-based research concluded that a preconceived view of recreational scuba divers diving on UCH existed from a top-down approach. With reference to the professionals' questionnaires, it is interesting to note that those who are also recreational dive instructors have a broadly positive opinion and see the benefit of including scuba divers (Appendix A2, A3, A6 & A7). However, the archaeologists who learnt to dive for the job and thus had less interaction with the recreational dive community address the threats slightly more, but most have eased this perceptive to focus on the benefits (Appendix A1 & A4 &A5). The affiliation with the recreational dive community by CRM and, as an extension, the policymakers may alter and influence the efforts in integrating recreational divers as stewards of UCH.

Nonetheless, when asked if the decline of the recreational dive community would make a difference in safeguarding UCH, most professional archaeologists believed it would not. Appropriately they highlighted fewer divers could benefit UCH, and safeguarding measures are more dependent on education and fiscal efforts (Appendix A; Q6). However, they also indicated that if the trend continues, CRM will lose the ability to exchange information and work in collaboration with recreational divers to help protect UCH. Edney connoted that although the decline will have ripple effects with CRM, the silver lining beyond the direct implications of interacting on UCH was that this is an opportunity to engage a new generation of divers with better responsible dive behaviours (Appendix A6; Q6a). Which is needed as Underwood mentions "wreck-diving is a one generation activity and as you have said most go to sunny clear water places to dive. Therefore, the days of the serious wreck-diver are, perhaps, numbered" (Appendix A7; Q6a). Although there is a need for new divers, addressing the linguist hurdles embedded in law and education and the preconceived view of recreational divers made by CRM, indicating the bias field of heritage management – what do we value and how do we value?

The desk-based research and questionnaire do not address the recreational divers' attitude from a bottom-up perspective. To better understand recreational divers' thoughts on this topic

my final pre-written question 'do you think the laws and scuba schools are doing enough for the scuba community?' could highlight the key areas where legislation lacks and exceeds.

"I don't know the laws if I am completely honest. I just follow proper dive etiquette by trying to not destroy the ocean and just being mindful."
-- Rob, 24, SSI Divemaster

"Scuba law is simple. You are a guest; therefore, you must behave like one. Other than that, I rely the dive-shops to keep me informed."
-- Emma, 29, PADI instructor

"Laws? I'm assuming there are laws, but I just do what other divers do. The amazing thing is scuba divers are not afraid to tell other divers off for inappropriate behaviour. I think that's amazing as we all have a shared common goal to not destroy this environment."
- John, 30, PADI Divemaster

"I do not understand how treasure hunters are allowed to do what they do. It seems illegal because you should never take anything. I just bring my camera and take photos."
-- Ty, 39, NAUI/PADI instructor

These four accounts really contribute to the ambiguity or confusion of the laws and how they are presented to recreational dive professionals, despite "years of raising awareness to the legal responsibilities, there can be no excuse for not knowing the rules" (Appendix A7; Q2). So, the fact recreational divers almost religiously follow the basic law of diving – to be mindful of the environment - highlights how convoluted laws can get lost. However, the questionnaires demonstrated that professionals believed that proper dive etiquette was integral to the education and awareness of recreational divers (Appendix A; Q5b). Van Tilburg stated that local "dive shops and divers are more familiar with preservation laws today and so those who want to damage sites have to be pretty secretive" (Appendix A2; Q2) and Edney also mentioned that over the years she's noticed that "the industry has recognised the importance of protecting the marine environment and incorporates these messages in even entry level training now" whereby impactful behaviour is very much discouraged (Appendix A6; Q2). So regardless of specifically knowing the laws, this well-respected dive etiquette is instrumental in cultivating good interactions. Interestingly, the questionnaires pinpointed dive shops and individual divers to learn and obtain the laws, rather than addressing the scuba schools' roles in distributing this information (Appendix A).

Although these stakeholders have a common goal of preserving the underwater environment, there is somehow still a disconnect throughout the industries. Interestingly, this simple

mindset portrayed is not far off from UNESCO's 15 guidelines to UCH (Appendix D) - specifically looking at guideline number 14 "Be a Role Model" (UNESCO, 2010). The characteristics of these guidelines are by no means difficult to follow, but are a great strategy for addressing proper dive etiquette on UCH. Scuba diving is an international activity and if the focus is on local laws and it does not apply to the location of teaching or dive site, then it is easy to dissociate oneself with the responsibilities. Diving is about making an emotional connection and these emotions are limited when they are not personal. Therefore, adopting the UNESCO guidelines may inspire better UCH values and interactions, as it becomes more personal to the recreational diver. These guidelines do not apply to specific dive locations but rather focus on the activity itself.

While training is of the utmost importance, van Tilburg advocate for promoting UCH within its natural context and calls for more emphasis in "the integration of cultural and natural resource conservation and management" (Appendix A2; Q4b), he highlights how "UCH is increasingly being integrated into Marine Protected Area management. (Appendix A2; Q4a)". This type of integration is amical for future endeavours concerning the dynamics of the ocean. So, the question remains, is there really that big of a difference when teaching dive etiquette on UCH vs reefs; or should the same values be instilled regardless of where a recreational diver is diving? If CRM wish to proceed with this notion, as Underwood highlighted, they must gain the support of marine conservations to balance the disconnect between the two parties (Appendix A7; Q4a).

4.5 Education

The above section started to address how important it is to cultivate an environment in which good values are instilled. This idea extends to the need for scuba schools and governing bodies to issue accessible text, thereby attributing to the full appreciation of UCH, within dive shops and individual divers. Recreational scuba divers tend to abide by a simple rule, the ocean is a place that needs respect to safeguard it for the future. It would be naive to assume that recreational divers just know; a more prominent role must be played by scuba schools and governing bodies to foster proper dive etiquette on UCH (Mason, 2002). Instilling these teachings is, therefore, best done through scuba schools and recreational diving professionals.

"Baby divers are so impressionable. If you do it, they will think it's okay to do it as well. The old saying do as I say not as I do – does not apply"
-- Fiona, 35, SSI Instructor

"New scuba divers just trust you, as they should – you are their lifeline. So, you want to make it an experience they enjoy and remember otherwise they won't be relaxed underwater."
-- Jack, 44, BSAC instructor/ Technical Diver

"I very rarely have a student who was forced to learn to scuba dive and the few times I did have a student like this they rarely ever finished the course." -- Fiona
"Yeah, that is because most students learning to dive want to dive." -- Joelle
"Exactly, scuba diving is costly and can be a scary experience for some, so why would they do something they do not want to do?"
-- Fiona, 35, SSI instructor

"I always make sure that my students are comfortable with the dive before we start suiting up. There is no point in jumping in, descending, for them to then tell me they are uncomfortable. Especially if it is a deeper site, a site with strong current or a difficult entry/exits"
-- Rob, 24, SSI Divemaster

The prevailing attitude of recreational dive professionals is to ensure a safe dive; however, this already starts before a diver gets into the water. Those seeking to become competent scuba divers generally want to learn, and those wanting to go on a dive have a responsibility to relay any concerns to their recreational dive professional. It is with this desire that you catch people at their best – the activity is non-competitive, while requiring mutual trust in your buddy and in the training received. This attitude is different from, say, those wanting to visit a land heritage site, where specialised training is non-essential for the most part. Thoroughly educating recreational divers on UCH is the biggest hurdle amongst dive professionals. This brings me to my next pre-written question, where I navigated this topic to more focus on the UCH discussion of 'do you think the laws and scuba schools are doing enough for the scuba community?' to help address my sub research question 'What are the noticeable differences between scuba schools' approaches toward teaching and safeguarding UCH?'

PADI

"PADI's attempt to explain UCH is almost laughable. I also think its mental they even propose both sides of removing artefact from underwater, but I always make it super clear to my students this is the biggest no, no."
-- Emma, 29, PADI instructor

"I think if students go in the water, they need to know what is down there. Aquatic life, yes, but also human history which is so much more than just shipwrecks."
-- Emma, 29, PADI instructor

"PADI does a great job at connecting new divers to marine conservation, but the same attitude has not been applied to UCH."
– John, 30, PADI Divemaster.

"Honestly, I was shocked the first time I sat in on a class and read/heard about removing artefacts from the ocean. PADI makes the effort to tell students not to remove shells, but historical artefacts are, okay? Seems very backwards."
- John, 30, PADI Divemaster

SSI

"I do feel like there is a gap of knowledge when I teach a wreck diving courses. I am an instructor and my confidence in understanding UCH is minimal in comparison to let's say knowing my fish species"
-- Fiona, 35, SSI Instructor

"Whenever I take divers on a wreck dive, I make sure to state the importance of being careful. Regardless of if it is a historical wreck or not. The biggest issue is it hurts both the wreck and diver if they are not careful."
-- Rob, 24, SSI Divemaster

BSAC

"I think BSAC in comparison to other scuba schools makes a better effort to teach students about UCH. However, I just think BSAC is a much more encompassing organisation who set the bar high for students."
-- Jack, 44, BSAC instructor/ Technical Diver

NAUI

"I do wish scuba school made more of an effort to educate students on all the dynamics of the ocean. There is just so much happening down here!"
-- Ty, 39, NAUI/PADI instructor

"I swapped over to NAUI just recently because they offer more flexibility in teaching, in PADI I found that there is a lot of vagueness and NAUI at least gives me the option to emphasise different things. Even when teaching a PADI course I try to include as much information as possible."
-- Ty, 39, NAUI/PADI instructor

Analysing each scuba school's code of conduct while diving on UCH is not the goal as it has already been established that there is currently very little done with regards to proper training, and it is mostly left up to the individual recreational dive professionals' ethos to set the standard. However, if there is a lack of text and teaching materials available for a recreational dive professional to gain a better insight into matters surrounding UCH, then this knowledge gap will unquestionably affect their students. The general attitude from the interviewees was that more could be done by their certifying school to bridge this gap, as there is a willingness to understand, but the information must be easily accessible to ensure that the same standards are communicated between these scuba schools.

Fixing this is relatively easy, if UNESCO is recognised as the higher governing body to ensure the safeguarding of UCH, then scuba schools – while a private institution – should adopt the

UNESCO guidelines and endorse them at an international scale. Scuba schools' teachings ultimately come down to the individual recreational dive professional. As certifying organisations, they, must support dive professionals to achieve a level where they are demonstrating not only good dive practice on reefs but also on UCH. Ultimately, it is the recreational dive professionals that proffer their scuba school's teachings and ethos. If the six recreational dive professionals all outlined that the scuba schools are their default platform where they receive information about diving, scuba schools then must be held accountable for relaying appropriate information to the people representing their business. Intentions to be better divers should be utilised to the fullest degree but must be supported by the scuba schools, as recreational dive professionals are one gatekeepers of the ocean.

CMAS and NAS, have adopted and promoted these guidelines within their training, but the rest of the 'Big Six' Scuba School have yet to promote these values. Márquez, Lemke, Auer and Edney call for more educative programs for UCH, specifically to be taught in the beginner open water courses and the adoption of these teachings to be done by individual dive shop collaboration (Appendix A; Q4). Although individual dive shops have a major role to play, they are still guided by their overseeing scuba school to set standards. If these standards are not legitimised by the scuba school, they discredit the efforts to streamline the consensus of UCH among varying stakeholders. Alternatively, Scott-Ireton addresses that education needs to start with the recreational dive professionals who can then implement their knowledge into a module for the open water course (Appendix A3; Q4a). Suitably she, developed the Heritage Awareness Diving Seminar which targets recreational professionals to learn more about UCH. Scott-Ireton believes if this teaching module is adopted by either NAUI or PADI the rest of the scuba schools will follow suit (Appendix A3; Q4b). If one had to pick where to place pressure, PADI who certifies 70% of recreational divers annually, would be the ideal candidate.

Van Tilburg and Underwood, in lieu, rather than placing the pressure on education, to call for CRM to shift the divide between natural vs cultural, stating it is more of a matter of imbalance in the interest in activities (Appendix A2 & A7; Q4). The popularity of certain underwater activities within governing legislations creates unnecessary discrepancies on how to interact on a site, despite simplicity achieving universal easy-abiding guidelines.

4.6 Summary

Part IV introduced ethnographies of six recreational dive professionals, supplemented by the professional perspective questionnaires, to better support the final aspect to addressing the main research question 'How do recreational divers' interactions on UCH positively add to the narrative, values and safeguarding of UCH?'

According to the RST, highly specialised recreationists will be more aware of and supportive of management actions aimed at reducing the environmental effect of their activities (Edney, 2018). By accepting this theory, it notes that all six interviewees demonstrated their respect for the ocean and willingness to do better while relaying this mindset to their students. They understood what their actions underwater meant to the environment and took responsibility for their invasive activities. Nevertheless, they trusted their training, and embedded/embodied knowledge to minimise these effects, while valuing the education needed for baby divers. Through their individual experience they established a foundation for their understanding of the world and oneself (Higgins & Jo, 2016) – through the transformation into a cyborg, enhancing their imagination and reality.

Education then poses an ethical dilemma since recreational professionals are not always objective and will typically convey their own values to their pupils (Barni et al., 2018). Consequently, it is the responsibility of these educators to help students understand fundamental principles and equip them with the knowledge and skills necessary to think critically about their interactions and values and to act accordingly (Sutrop, 2015). However, if recreational professionals do not have the resources and teachings because of a lack of accountability from the scuba schools, the next generation of divers are at a disadvantage. Mottos such as 'take only photo, leave only bubbles' or 'be mindful of the environment' and 'you are a guest; therefore, you must behave like one' hence become important in reiterating and summarising many recreational scuba divers' values, beliefs, and narratives. Although simple, these mottos contribute to the proper diving etiquette and intentions of the recreational dive community, without making a distinction between nature or culture.

The interviews were used to help highlight areas where improvements could be implemented to help protect UCH and uphold positive values and interaction. Regardless of the scuba

schools' teachings or policies, the recreational dive professional will experience and connect to the underwater environment on a personal level nevertheless. By physically 'becoming one' they become an extension to the technology and environment, in a space where their imagination allows them to transform into 'mermaids' and 'ninjas', and to fully satisfy the metamorphosis and perception of being underwater. These emotional, subjective experiences and connections really help instil positive mindsets to safeguard the ocean. Showcasing how plunging into the depths comes from an innate desire, this desire then translates to diving on UCH - if the desire is not there then divers will not do it. Therefore, the interaction recreational divers have with UCH becomes how they see, portray, and imagine the experience which then provides the incentive and follow through to have this experience. Imagination becomes the prism of reality. No diver subjects themselves to a situation they do not wish to be in, so therefore it is of paramount importance they can rely on their training, to stay calm when subjected to such an increased sense of emotions. Air is the lifeline, training the subconscious.

However, as the interviews progressed these recreational dive professionals highlighted areas where better communication could be transferred to help achieve the best possible practice when diving on UCH. Again, these interviews are not to generalise the recreational dive community at hand, but they attempt to provide a small treasury of meaningful insights to areas of concern. Specifically, the understanding of UNESCO as the pinnacle of governing bodies to relay laws and regulations of UCH. Plus, the role of scuba schools to translate this information into their teachings. Although the information is readily available, it is also about making it readily accessible. It is not that these recreational professionals are specific UCH or maritime specialists, but they are first and foremost scuba diving specialists. Diving is the interaction with the underwater world and everything that resides in it. The scuba schools place a great emphasis on marine conservation but lack literature about UCH. A holistic approach is not to divide these entities but understand the symbiosis of the two. The recreational dive professionals are the unofficial gatekeepers of the underwater world, they endeavour to safeguard the oceans. More emphasis on the recreational dive professional's training could help accommodate all elements of this dynamic environment. If efforts are made to impart a greater understanding of UCH in all its glory to recreational dive professionals, then this increased awareness will translate to a culture of good practice of student divers.

PART V: THE FINAL ASCENT

This thesis began by addressing the threats and challenges of UCH, to ensure that a balanced comparative of influencing factors attributing to the degradation of UCH was explored. Next, desk-based research provided an opportunity to understand theories and literature surrounding interactions, values, laws, and education of recreational scuba divers on UCH. Finally ethnographic research was added to really involve recreational diver professionals by taking a bottom-up approach to this topic, helping identify their values, interactions, comprehension of the laws, and their insight to education. These accounts were supplemented by the professional perspective questionnaires to create a poised discussion. These PARTS highlighted areas where UCH values and interactions create a positive narrative to submerged histories while opening a discussion about proper safeguarding measures to the longevity of UCH. The Final Ascent will discuss the three summaries formulated at the end of each PART followed by preliminary recommendations.

5.1 Discussion

UCH lives in a dynamic environment; it juxtaposes the natural and human world, extending to technological vs biological when submerging to its depths. Heritage is not a singular component but, a progression which should not be cheapened by one narrative. It is neither neutral nor objective; it is a choice, depending on what is considered important. This subjectiveness of heritage and scuba diving has been a pillar within this thesis. Navigating such personal emotions and experiences becomes a task that can only be understood when reiterating the transformation of a person to cyborg and of a cyborg connecting with UCH. These emotions and experiences translate to the values, and interaction one makes related to UCH, via their imagination and reality as implementations of the infernal process.

The importance of safeguarding UCH becomes a question of why? For the 'out of sight – out of mind' becomes pertinent to this submerged heritage. As recreational scuba divers only make up 0.5% of the population (Underwood, 2015) they are, in fact, a niche community who *can* interact with UCH through an entire sensory experience. The heritage cycle dictates that heritage must be understood, valued, cared for, and enjoyed, to warrant safeguarding while encouraging individuals to explore heritage to make these personal and emotional connections. (Thurley, 2005). It therefore needs to be understandable, assessable, and

relatable to fully encompass a positive narrative. If there is a lack of social engagement with the past, there will be neglect for its transformative potential that UCH holds as it cycles through its life histories - questioning the philosophies of when culture becomes nature, in addition to when humans and technologies become an extension of both. Therefore, determining how recreational divers' interactions on UCH positively add to the narrative, values and safeguarding of UCH, it becomes a social dynamic endeavour dedicated by understanding this topic from a bottom-up approach, both in terms of community and nature. Ultimately, it is not just how one interacts with UCH that influences values, but it is the values that also influence the interactions, both determined by the design and implementation of laws and foundations of teaching.

5.1.1 Recreational Divers Influence and Impacts on UCH

Humans have been the only creatures to extensively module the environment to their needs. As a result, human impact is visible in all corners of the world. The ocean is no exception, with climate change affecting the water's temperatures, salinity and locomotives, overfishing using highly destructive methods, and offshore activities becoming the last frontier for human industrialisation. By the end of the century, the continued depletion of resources in the ocean will create an environment in which its already dire state may be irreversible (Pauly & Palomares, 2019). UCH then contributes as an active agent within the oceans and ecosystems as it goes through its lifecycle.

A more compelling argument subsequently situates on a deeper question, targeting a much bigger issue and a larger community – “is there a future without the oceans?” This question circles back to all anthropological impacts made directly or indirectly by individuals and industries. Then it becomes a question of why safeguard UCH when the oceans cannot be protected? Because irrespective of who or what is interacting with UCH, there will always be some form of degradation. With this looming over UCH's future, concentrating on positive interactions can only assist with preserving UCH and community relations. UCH is a finite and non-renewable resource but situated in an unregulated ocean. The balance between safeguarding and offering experiences becomes a balance of protecting the past for the future or protecting the future by showcasing the past.

Recreational divers are some of the few people able to fully experience the ocean in its complete transformative role, but not without risks. Interactions then can be physical and emotional, it can highlight the destructive nature of humans, or the emotional geographies created. When these emotional geographies are created, recreational divers become more aware of their activities. Exploring further, based on emotional geographies and connections, the interactions are twofold: first focus on a person who's diving and how they relate to the environment around them, and secondly looking specifically at a diver diving on UCH. The ethnographic accounts support the emotional and physiological changes when submerging. With applications to the MET, the Hedonistic Loop, and RST, the recreational dive professionals provided a rich personal account to illustrate the importance of cognition of scuba and how this is extended to how one establishes connections. The metamorphosis into a cyborg immediately plays tribute to the MET, where the transformation of how one knows is never optional but embedded/embodied, and one is perceptually, cognitively, and emotionally engaged with UCH as the diver becomes one with it (Malafouris, 2013). As divers subject themselves to these alterations, it facilitates the Hedonistic Loop, as activities underwater are riskier than on land, this loop is then stretched when divers choose even riskier dive sites (such as wreck diving) Nonetheless, these experiences create a positive reaction thereby encouraging divers to further their education (Bonnet et al., 2008). By advancing their education it is reflective of RST where those who are particularly dedicated to the progression of their scuba diving skills will be more aware of the potential consequences, and therefore more supportive of management efforts to minimise these negative effects (Edney, 2018; Thapa et al., 2006).

Relaying the ethnographic accounts, the recreational dive professional reiterated how they took responsibility for their harmful interactions, but intentions are to always strive to be better divers. These good intentions have also been witnessed by the professional archaeologist, who do believe *most* divers who have proper diving etiquette will be less likely to inflict accidental damage on UCH (Appendix A; Q5). Moreover, those divers wanting and willing to go diving are keen to make the effort; in point of fact, no person will go diving if they do not want to, and no diver will dive at a site they do not want to. The ethnographic data has been instrumental to understanding the recreational diver's mindset. Highlighting the very bases of the attitude of divers on UCH – to be comfortable with their surroundings and 'new

bodies'. The interviews demonstrated what they taught to their students is reflective of their philosophies of diving. It is about celebrating those with a passion to dive and an interest to go and discover UCH. The passion, motivation, and interest for diving on UCH make these recreational divers most eligible to become citizen scientists; to become allies in collaborating with CRM about UCH (Appendix A). For historically humans cannot interact with the surroundings without altering it, but the first step is to always recognise any destructive behaviours, so they can be avoided and rectified to safeguard our heritage for future generations.

The future of UCH rests on the public's desire to engage and interact. Efforts both with VR – "a powerful and very compelling technology by which humans interact with computer-generated environments in a way that mimics real-life and involves multiple senses," (Mendoza et al., 2020, p373)- and AR – "the overlay of the view of the real environment with additional digital information… presented as two- dimensional images, which are generally fixed in the user's field of view or dynamically change location based on markers in the real environment," (Mendoza et al., 2020, p372) - are innovative strategies to present UCH to a wider community. Márquez made a point of addressing these technological advancements as a benefit to UCH, as it allows for a wider demographic to access UCH without diving (Appendix A1; Q6c). These new technical tools in accessing UCH are now growing within the heritage sector but are still sorely underused. With the benefits of low- damage impact on UCH, people can dive down virtually and immerse themselves in the comfort of their own home. However, this is a double-edged sword as in-person travel revenues will always exceed stay-at-home travels (Talwar et al., 2022, p21).

It will still be several years before VR advancement, and by extension, all AR technologies create the same meaningful, immersive, deeply emotional, conscious sensory experience comparable to scuba diving. Wholistic, five-dimensional cultural participation that does not break the 3rd wall with poor, clunky, unnatural, and artificial user experiences is the prerequisite for a meaningful commitment to heritage site conservation for the general public. The archaeological community cannot afford to have its inestimably precious UCH sites remain in a state of constant fluctuation, instability, and inevitable decay. Until the general public reaches a stage, both technologically and culturally, of being capable of creating a tangible

affinity to these sites that is otherwise not allowable with current technology. Investment into VR/AR as a testament to what is achievable with even the most basic training in scuba is a valid and appropriate passover for this technological utopian goal. Be that as it may, the value of VR/AR should not be underestimated as they present a great way to at least introduce non-divers to UCH.

Despite constant technological advancements, the cyborg scuba diver of the 21st century is placed in a state of purgatory where they are both at the lull point and the take-off point of virtual reality. So, the option while waiting for the technology to catch up with the needs of the world, is then either to mitigate all impact on UCH and allow the recreational dive community to remain in its lull point; or to increase the recreational dive community involvement as stewards of UCH. Not all efforts to protect UCH are beneficial to the observation and viewing of UCH. The issue then is to decide the proper installation of methods for safeguarding that benefit both CRM and the recreational dive community.

Although the decline of the recreational dive community has not raised too many alarms for the safeguarding of UCH within the field of professional archaeologists, it should not be ignored (Appendix A; Q6). They attribute that longevity of UCH is more dependent on money and education, and not the number of divers. To play devil's advocate to this statement, however, increasing the recreational dive community could alleviate some of the fiscal and physical hurdles facing UCH. Currently a few exceptional recreational divers and dive groups have become amateur underwater archaeologists, by making a special effort on their own accord to obtain this type of training, which has assisted with the exchange of information with CRM (Appendix A). This niche community of amateur underwater archaeologists must start somewhere; somewhere being the beginner introduction open water course within a scuba school where they first experience the reality of their transformation into cyborgs thereby creating purposeful interactions and values. Education obviously must play a cardinal role to reflect the heritage cycle (Thurley, 2005), yet, a compelling goal should be for the public to engage with heritage within its context to obtain the meaningful experience needed to create an emotional attachment.

Research shows that the best method of experiencing is not through technological mediums but still through the real thing (Akhtar et al., 2021, p15). So, while efforts are made to generate better technological tourist experiences, the efforts to safeguard UCH should align with the community's interests to interact and engage with these sites. This means CRM must decide either to bring the heritage to people by excavating and displaying it in museums or allowing recreational scuba divers to witness UCH within its context, aligning with UNESCO's preferred conservation method, in situ (UNESCO, 2001, p2). Financially the best method is also in situ conservation. However, once optimal safeguarding methods have been instilled, it cannot exclusively be left to the natural world without consistent monitoring for changes in the integrity and stability of the site (Manders, 2011). The costs relating to preservation of UCH are not alleviated once installations are secured. With ongoing expenditures, CRM must avail of the resources available – recreational scuba divers could yield constructive solutions.

5.1.2 The Sensory Experience – Valuing UCH in Its Natural Habitat

Through recreational diving, links are made to UCH, these connections reveal the subjective values directed by individual divers. Current value placement reflects Mason's (2002) typography of values which can be divided into sociological (entertainment, education, escapism, and aesthetics (Pine & Gilmore, 1998), economic (Marxist viewpoint), and linguistic values (language, perception, and symbolism) (Graeber, 2001). By using this format to calculate values, it becomes highly idealised. Conservation cannot be viewed as a neutral endeavour, particularly when the validity of subjective values is under question. The ethical and moral implications of conservation become apparent when values are assessed. The systems currently used to place value on UCH use far too many words and phrases, all of which are arbitrary in the eyes of the beholder and subjects humans to be at the centre of conservation. Moreover, the continued barriers of entry to scuba diving have created an elitist demographic where the majority consists of white males over the age of 35 (Kieran, 2021d). Therefore, continuing with the system of values only reiterates the anthropocentric mindset, and lacks different perspectives of knowledge and values that are to be gained from UCH. Thus, one cannot avoid considering value as morality when considering value as a theory (Graeber, 2001).

The question then becomes, what is valued more, nature or culture? Or is there really a difference? Can humans really isolate themselves from their surrounding world – and if so, why is it done? Or does the ritual-like process of transforming into a cyborg unlock a diver's understanding of the extended mind on a more conscious level where the recreational diver feels part of the underwater world?

Although the systems of values were explored, it demonstrated the importance of offering unadulterated experiences to instil positive values of UCH, but it should not be the central strategy to implement methods for safeguarding. Positive values, create positive interactions, and vice versa, all generated by the sensory experiences of UCH - the experience then becomes something lived or imagined, fostering the idea of the extended mind. The idea of what divers will see underwater through their imagination, inspires what they believe to be true. The ethnographic interviews highlight that although there is often a preference for either reef or wreck diving, the driving factor was mainly what is to be *seen* underwater. However, the sad truth is the oceans are dying, and scuba diving numbers are declining (Kieran, 2021a; Pauly & Palomares, 2019). Without creating these emotional geographies and connections, the ocean and UCH face an uphill battle to advocate for their protection.

With dying oceans and reefs, UCH serves as a platform to cultivate an environment favourable for marine life (Wright, 2016). As UCH transitions through its lifecycle, the connection between nature and culture becomes more integrated, invariably instilling new, even more dynamic, values. By fostering symbiotic relationships, heritage conservation may go beyond its anthropocentric perspective (Blumer, 1969). Therefore, protecting UCH requires shattering the traditional paradigm that divides management of cultural and natural resources by identifying the consequences and overlapping characteristics of both sectors and applying a holistic strategy by incorporating this relationship into management strategies (Boyd, 2012). Van Tilburg asserts that "UCH sites and the cultural imprint of human behaviour on the seafloor should be understood, in this context asand part of the ecosystem". In addition, there should be more "emphasis on the integration of cultural and natural resource conservation and management" (Appendix A2; Q4). This is complemented by Underwood's account stating "there is a disconnect between heritage and marine conservation. Yes, more, or ideally equal time should be devoted to both cultural and natural perspectives. However, there has always

been a disparity between them" (Appendix A7; A4a). Edney further believes that the wreck diving community, is a "largely untapped resource for maritime archaeologists and heritage managers", and suggests that "dive schools and heritage/site managers form partnerships to develop and deliver information that could be incorporated into courses as the local content part that instructors are expected to deliver to divers", to ensure that the correct messages are given to divers", while it "provides opportunities for heritage managers to tailor the type of messages they want to get out to divers in particular areas" (Appendix A6; Q4b). The question of "how to value" must now make way for the question of "how do we live with this dynamic environment – culturally and ecologically?"

Recreational scuba divers can become key components in analysing and monitoring these transformative narratives and values. They dive because they *want* to, and dive on UCH because they have the desire to do so– no one is forcing them to immerse themselves into this breathtaking environment. It is not because they want to damage the ecosystem but because they want to be a part of it. This mentality and ideology of recreational divers is fundamental to the concept that combines the meta investigations of social structure with micro-level investigations of interpersonal interactions. This statement showed a lot of support within ethnographic research, where recreational dives have shown a willingness to pay for continued education, equipment, and travel but it also showed how proper dive etiquette was the pillar of all interactions. If understanding the changing ardent narrative is important to validate the living heritage approach, at what point does it become essential to ensure that the extinction of this community engaged with UCH does not prevail?

The dynamic nature of UCH resonates with the idea of a bottom-up approach to safeguarding through the living heritage method (Poulios, 2014). Living heritage supports efforts to utilise the Blue Economy, whereby UNESCO advocates heritage as a form of tourism and tourism as a form of conservation, both in terms of justification for safeguarding and economic stability (Pedersen, 2002, p3). The scuba industry is a multi-million-dollar affair, and the tourism industry is a trillion-dollar enterprise (Kieran, 2021b). Whilst the scuba diving industry contributes substantially to local economies, both in direct revenues and the jobs it creates the reliance on this monetary advantage the tourism industry gains from it may not be the sole mechanism that drives UCH conservation. Although financial benefits are important, better

communication and cooperation on the preservation of UCH by not diverging from the pillars of UNESCO's guidelines, is deemed even crucial. The decline of active recreational divers should raise some concern with CRM as the benefits of UCH extends past the site itself and into the stability of local livelihoods. Márquez noted this concern, but also stated that the decline has not been reflective of the situation in Mexico aligning with Auer's view of the German recreational dive community (Appendix A1 & A5; Q6a). Scott-Ireton and Underwood see recreational diving to be a trend (Appendix A3 &A7; Q6a) and therefore it may be premature to conclude on the prospect of recreational or wreck diving. Regardless, the popularity of recreational diving is clearly of importance since they make a fair contribution directly and indirectly to the safeguarding and economic stability. Edney brings an important observation by stating that although the decline will affect CRM coverage of safeguarding UCH, it will also invite a new generation of recreational divers. These new generation of recreational divers therefore will either become more of a threat to UCH with lower level of competency or can foster better values all dependent of the teachings (Appendix A6; Q6).

Conservation is an expensive endeavour; nearly 1100 ships can be protected in situ for the same cost as extraction (Manders, 2011, p45). In situ conservation costs €35,000-€71,000 (Manders, 2011, p43), with continuing monitoring costing via diving is €6,200 (Manders, 2011, p44), while excavating can cost anywhere between €0.5million to €77million (Manders, 2011, p45). UCH in situ, however, can generate about €50,000-70,000 annually (Firth, 2015; Scott-Ireton & McKinnon, 2015; Beattie-Edwards, 2013; Crabbe & McClanahan, 2007). Although this is not reflective of a universal global benchmark it does highlight the economic value and benefit of a site if measures are taken to accommodate the recreational dive community. Additionally, maintaining and displaying a fully excavated ship may jeopardise smaller museum economies (Manders, 2011, p44).

With the current trajectory of the scuba diving industry, the in situ economic value may become obsolete, thereby hindering local economies but raising UCH could also endanger the economies. So, what should be done in this impossible situation to keep UCH understandable, relatable, and accessible? Returning to the ethnographic accounts in section 4.3, the interviewees demonstrated how diving has been a source of wanderlust - recreational divers do because they want. By imagining what their dives will be like around the world, it drives

them to travel to place for these experiences - it is directly associated with the direct and indirect economic value of UCH.

The capacity for the scuba industry to reflect on their current business model does not only become a question of their ethos driven by capitalism but also of how CRM cultivates an inclusive experience that endorses the dynamic nature of the underwater world through living heritage. Questioning the scuba industry's monopoly and, by this very nature, why? Should CRM not also be more intimately involved with the scuba industry, considering the industry is the one producing this niche cultural community and is responsible for this cultural community's decline? If not, the predicament of how recreational divers place value on UCH sites may not matter in the near future. Firstly, values are subjective to the imagination and lived/ sensory experiences that cannot be replicated through different mediums. Secondly, attempts to move away from a value-based approach to a bottom-up approach will also become obsolete as the core community no longer exists.

The use of VR/AR is a step in the right direction to help cultivate the intrigue to obtain a diving certification. However, pressure must be placed on the scuba diving industry to emphasise their community's importance and to engage more actively with their skill set. By doing this, CRMs have the community needed to activate a better living heritage approach and integrate them more within the management and monitoring of UCH. What is the point of preserving UCH if no one can experience them in context – the saying out of sight out of mind then becomes more permanent.

5.1.3 Is the Protective Framework Meant to Keep Divers away?

It is worth noting that cultural heritage generally only becomes endorsed when it can be related to; a living heritage that enriches our lives, often encompassing empowering stories that make UCH come alive by integrating them as living legacies. Whether humans engage with UCH directly or through other indirect ways, we make them a beneficiary despite seemingly different indirect national and ethnic identities. This attitude aligns with the UN Declaration of Human Rights and the EU Faro Convention, whereby States agree to protect and preserve cultural heritage and the rights of people to access and participate in said heritage. Along these tenets we could argue that the practice of scuba diving and the access to UCH becomes a right

(Kharatishvili, 2021). However, by accepting the UN as a governing body, it should be cognisant that their progress has been hampered by a lack of international bodies that have the authority and competence to hold non-state actors responsible (Forrest, 2002). Since no external representatives monitor their actions, penalties for complying with treaties are rendered ineffective. This issue is exacerbated when treaties adopt policies that comply with the High Seas covering 50% of the planet – such as the PUCHC.

Nevertheless, the establishment of the PUCHC in 2001, which 71 States have now ratified, has provided a framework in which proper safeguarding measures are outlined for UCH (UNESCO, 2021; Appendix C). In most situations, underfunding and insufficient staffing required for efficient implementation undermine the efficacy of legislation. By failing to support the core costs of implementation, the system's components cannot function properly – access, research, training, monitoring, and conservation are all aspects of this process (Barnhizer, 2016, p2; Adeyeye, 2007). Policy innovations are also often undermined by the deliberate creation of ambiguity or a gap in forming legal norms, which utilises legislation to create the illusion of law but not 'real' law (Barnhizer, 2016, p3). Understanding this statement means looking at the construct of maritime law, which is rooted in a 15th century mindset created from the unique issues generated by colonial encounters (Jones, 2016, p25) – more specifically, who controls the High Seas, the law of salvage and how this relates to the PUCHC.

Moreover, governments can be influenced by peer pressure from competing sectors (Friedman, 2016). The actions and mindsets of stakeholders either enhance or undermine the UN's and international treaties' sustainability goals (Howard, 2018, p3). States, as rational, unitary players, act in their own best interests, which can be impacted by peer pressure from other states and stakeholders (Barnhizer, 2016, p6-7). The conflicting and, at times, mutually contradictory ideals that these diverse stakeholders perceive have led to conflict in the management of UCH (Friedman, 2016; Adeyeye, 2007). The goal is to keep an open dialogue between the stakeholders and not hold one voice over another. To simplify stakeholder perception, the ambiguity and contradictory narrative given by PUCHC, and the law of salvage must be resolved. The ocean is a commodity with numerous social, cultural, and economic qualities and advantages.

PUCHC's Article 2(10) calls for the development of "responsible non-intrusive access to observe or document in situ underwater cultural heritage shall be encouraged to create public awareness," (UNESCO, 2001, p4) and mandates State Parties to adopt Article 20 to "raise public awareness regarding the value and significance" of UCH (UNESCO, 2001, p11). The romanticised view of how scuba diving is depicted by UNESCO mitigates the opportunity for recreational divers to fully immerse themselves on UCH. For recreational divers, this statement is an oxymoron because the activity is invasive no matter how skilled and trained a diver may be – intentionally and unintentionally, interactions, good and bad, will happen. Most recreational divers are aware of their impact. However, since they have a deep and abiding appreciation for their environment, they will by all means try and minimise these detrimental effects on the underwater world, – by and large, their intent is good. Can the same be said about other industries intentionally and unintentionally interacting with UCH? Regardless, recreational dive professionals, even without comprehensive knowledge of the applicable laws, or trying to navigate the paradoxes of law, have cultivated simple philosophies to ensure the safeguarding of the ocean. Edney stated that code of conducts that are "more universally applicable guidelines are probably more effective because it is one set of etiquette to learn and apply and would probably then be more consistently adhered to" (Appendix A6; Q5b), which has been reflective of the ethnographic interviews where simplistic mottos guide most behaviours.

Equally the lack of a reward system in which stakeholders may disclose information (even anonymously) about uncovering possible UCH creates a knowledge barrier. Therefore, making interactions with UCH illegal prevents the potential to use the knowledge gathered from these illegal operations, since individuals would avoid them out of concern for the repercussions. Edney's motivation to study recreational divers' impacts on UCH was driven by her superiors wanting to implement fines on people impacting UCH. However, fines are unsustainable and to a degree lack enforceability, she also notes that there is a "small minority of people who won't comply with rules regardless of the likelihood of penalties or education/communication to persuade them otherwise" (Appendix A6; Q1). Development for the EPRRN framework is one solution that enables the evaluation of the law of salvage in a way that allows for consistent correspondence with non-professionals (Dobat et al., 2020).

The issues surrounding the framework of UCH are four-fold: the ambiguity, the effectiveness/accountability, peer pressure and cost. Since the scuba industry is a multi-million-dollar industry that goes heavily unregulated, there is a unique opportunity to utilise the schools in a bid for effective UCH management and as gatekeepers of the ocean, meanwhile this effort may help redress the four issues surrounding UCH. As stakeholders to UCH, and as an industry producing the relevant skill set needed to submerge on UCH, why is there not more pressure to involve this industry to do more for UCH? These international institutions have been left to their own devices for too long, reaping the benefits of the ocean but the open dialogue needed to contribute to the scientific community has been lacking. These business models, and laws need revamping, as does the public's perception of these issues that needs addressing; a challenging task the scientific community can help with and want to help with.

The questionnaires demonstrated how professional underwater archaeologists favour education to assist recreational divers but the difference between them is where this education is implemented – some at the professional recreational level, and others at the introductory level (Appendix A). However, this proclivity for realising appropriate training must address the changes required in the scuba industry's business model and rectify public perception of UCH. Therefore, it is interesting to see how professional underwater archaeologist/CRM and recreational dive professional view implementation of better education for UCH. Whereas the questionnaires pointed to local dive shops to have the correct information, most recreational dive professionals wanted to see these efforts placed in the scuba school's literature. By having written guidelines of how to interact with UCH placed within the scuba school's literature, creates tangible associations that recreational divers can come back to and read, legitimising proper etiquette. The difference is looking at the hierarchy structure that should benefit both CRM and recreational divers. CRM should listen to the needs to recreational divers by addressing scuba schools and dive shops, simultaneously scuba schools need to listen to CRM to help address the longevity of UCH.

Suggesting scuba schools become regulated through governments is not the goal, as scuba diving, over the years, has become one of the safest recreational sports, as long as all the rules are followed, and proper training is received. However, ideally, the dive community should get

more involved and take responsibility as a stakeholder wanting to safeguard the ocean and contribute (financially and physically). Ultimately, the issue is not an unwillingness of individual recreational divers; the simplicity of their ethos is not contradictory to UNESCO 15 guidelines (UNESCO, 2021; See Appendix D) but the negligence of the scuba schools. The industry itself needs to take a more active stance and have more accountability, whilst accepting UNESCO as a governing body. Scuba diving is an international activity; thus, it is simple to distance oneself from obligations if one focuses on local regulations that do not apply to the place of instruction or diving. Diving is about connecting emotionally, and these connections are curbed when they are not personal. Since UNESCO recommendations do not relate to a specific place for diving but rather the sport itself, they may encourage improved UCH ideals and relationships.

Through ethnographic research, and RST the support from the dive community is there. While drafting a useful framework to aid in the safeguarding of UCH, one must take into consideration the innate desire and emotional connection that exist when diving. Therefore, moving towards a more synoptic understand the dynamic nature of UCH within its context. The recreational dive professionals' philosophies may be simple in their teachings and while it does not distinguish between cultural and natural, its simplicity is rather unambiguous. To succeed and safeguard a sustainable future for both scuba schools and UCH we must aim to harness a collaboration on collective and individual actions, perhaps starting with the understanding of how the richness and diversity of language influences our imagination, circling back to the question of what is nature and culture – should the teaching, practice, and safeguarding ultimately be that different?

5.1.4 Educating Recreational Divers into Valid Monitors

It is an oversimplification to minimise the influence of subjectivity in changing the course of history, law, language, values, and education. In point of fact, subjectivity is how the social world, the recreational scuba diving community, experiences, understands and produces meaning. Instructors are regarded as the gatekeepers of truth and knowledge as they relay their philosophies to their students. Hence there is no value-free education, as teachers virtually always express values to their students by how they act, address topics, and cultivate a wholesome learning environment (Barni et al., 2018). Whether a teacher has a positive or

negative attitude about their work as educators is critical, as they guide their students through new territories (Sutrop, 2015).

The noticeable difference between the scuba school's education system, then, is dependent on the resources available through the schools and the individual dive professional's ethos. Tackling this matter is three-fold: what is CRM relaying to these scuba schools, what do scuba schools teach their recreational dive professionals, and what do the dive professionals teach *baby* divers? It is a trickle-down effect of professionals educating an ally who teaches a niche community. Regardless, the overlapping principle in question is the scuba school's curriculum.

Understandably CRMs primarily strive to educate the entire public on heritage, making it a one-fits-all program, irrespective of the metamorphic transformation affecting the cognition and understanding of recreational scuba divers. Efforts in utilising volunteer underwater archaeology programs, such as Diving with a Purpose, the Heritage Awareness Diving Seminar, the Submerged Sites Education and the Archaeological Stewardship program, and Badewanne, have been successful in assisting the CRM (Viduka, 2020; Appendix A). However, there is still a disconnect between the CRM and the scuba school education models. CRM should not be relying on the good nature of recreational divers to swim to them, but rather they must be on the frontlines of their teaching.

As discussed in sections 3.3.3 and 5.1.3, peer pressure from stakeholders influences the outcomes. The stakeholders that influence the scuba industry emphasise exemplary conservation of the natural ecosystem. However, UCH is waived in their definition, bringing to question where CRM is within the scuba school paradigm. Evidently, marine scientists and conservationists are well established within the 'Big Six' with programs such as Project Aware (PADI), Blue Ocean (SSI), Green Diver (NAUI), partnerships with Marine Conservation Society (CMAS and BSAC), and continuing education speciality conservation courses. Moreover, current campaigns to advocate for marine conservation have sparked public interest immensely; approximately 70% of individuals recognise that anthropological activities endanger marine ecology, with 45% believing the threat is significant or extremely high (Lotze et al., 2018, p16).

Although significant efforts have been made to increase global ocean literacy, the continued divide constructed by language has hindered the ability to create a fully encompassing definition of the magnitude of the dynamic ocean of nature vs culture. Even UNESCO's 7 principles of Ocean Literacy and the UN's 17 Sustainable Development Goals eschew the definition of UCH. It is only when an individual specifically looks for the connection between ocean literacy, and UCH is there one; otherwise, it remains elusive. However, threats to the ocean's ecosystem are reflective of the threats of UCH. Yet, with the life histories of UCH, only 44% declared UCH to have a degree of importance, while 19% of the public deemed shipwreck sites were 'not at all' essential (Underwood, 2015, p125).

However, UNESCO has simple guidelines (Appendix D) to help address the proper dive etiquette on UCH. Regrettably, these guidelines are underutilised as a teaching aid in the recreational dive community. If we advocate for educators and scuba schools to provide a platform to instil good values, and for the law to provide a framework of values that are accepted and straightforward in nature, then this would present a more desirable outcome. These guidelines, therefore, ought to be implemented into scuba schools' teachings precisely because of the simple language used, making the international standards more relatable to individuals. Scuba schools must recognise their global influence and become accountable for properly instilling universal standards in recreational scuba divers – regardless of whether it concerns nature or culture, the doctrines that apply should be mutually interchangeable – Edney, van Tilburg, and Underwood have called for this notion of interchangeability of diving etiquettes, teachings, and management – highlighting relevance of the interdisciplinary subject of the ocean (Appendix A2, A6 & A7).

The general attitude of the interviewees was that their certifying school could do more to bridge this gap in education of UCH. There is a willingness to understand, but the information must be easily accessible to ensure that the same standards are communicated between these scuba schools. Therefore, UNESCO and CRM should intervene regarding what is taught in this private sector, as scuba schools generate an exclusive community that interacts with UCH. If scuba schools cannot comply with the simplicity of UNESCO's guidelines, then what is the point of establishing these ground rules and assuming the public will somehow stumble upon them? The scuba schools are the biggest platform to ensure these resources are distributed to the

vast majority of recreational divers while standardising the values within the 'Big Six'. Currently only BSAC and CMAS attempt to highlight UNESCO's importance.

The attitude of wanting to know more about UCH highly reflects RST within the recreational dive professional community. The importance of educating what UCH is, therefore, should be emphasised in the recreational dive professional's curriculum. If their teaching enforces ethical diving on UCH, the mottos they teach to their students can then encompass *everything* practised underwater. The cascade of information starting from the top, renders the importance of proper interactions UCH – CRM to scuba schools, recreational dive professionals, and baby divers. Therefore, by not targeting scuba schools unequivocally, it means individual recreational dive professionals must make a special effort to cultivate this understanding and appreciation of UCH, which is later related to their students. But that means scuba schools take no responsibility for cultivating UCH values in their dive professionals or newly certified divers. By not taking responsibility, scuba schools ensure they are not accountable for the risk recreational divers pose to UCH. Here is where the disconnect between CRM and the recreational dive community lies; recreational divers ultimately do not know the protocols because scuba schools fail to teach them, and one cannot value if one does not know (Mason, 2002).

When comparing the answers from van Tilburg and Márquez in the professionals' questionnaires, there clearly seems to be a difference in their willingness to have recreational divers interact with UCH (Appendix A1 & A2). Van Tilburg was a recreational diver since he was 11 and was an NAUI instructor before becoming a maritime archaeologist. In contrast, Márquez was an archaeologist first and learned to scuba dive to study UCH. Although they both agree there is a benefit to teaching about UCH to recreational divers, van Tilburg is more willing to see recreational divers involved in assisting in UCH preservation efforts. While Márquez is more cautious to share UCH sites with non-professionals. As a recreational scuba instructor, van Tilburg, can appreciate that as an instructor you are liable for people's lives. To minimise any risks, your conduct and compliance with the educational dive curriculum is of vital importance, but also offers an intimate and personal teaching opportunity. The vulnerability of *baby* divers, as discussed in section 4.5, makes them very impressionable. By being involved and setting an example to novice divers, dive professionals see the potential

effectiveness of moulding good divers which should include proper dive etiquette for interacting both with the marine environment and UCH.

It is also not just about regulating scuba schools but also about integrating CRM into their business and academic teachings. Scuba diving is not only about the physiological, technical or ecological aspects but also about the scuba culture they have created. They have fabricated a community that goes through cognitive changes that influences their emotions and connection, thereby inspiring their values. Unwittingly by not addressing UCH, this private sector has minimised the importance of UCH in terms of history, science, and nature and has not allowed recreational divers to partake in addressing all aspects that help create subjective values of the ocean. CRMs who try and keep the right of interacting with UCH exclusive to their professional domain may overlook the fact that if heritage is not relatable or accessible, it may, from an economic point of view, not warrant the investment of funds for research and preservation. On the other hand, if scuba divers are involved in documenting and preserving UCH, it can help instil a sense of stewardship for these resources, and UCH becomes something of interest.

With the recreational dive community declining, CRM is losing out on the potential to create a new generation of gatekeepers of the submerged past. It would therefore seem prudent to include the scuba diving industry in the participatory process and knowledge flow to make UCH and the legacies of our past more accessible, understandable, and relatable. These emotional connections are paramount for the longevity of UCH in situ, as different mediums (as of now) cannot replicate these experiences.

Scuba schools must understand their relationship as a stakeholder in UCH and provide the learning environment needed to cultivate sound values encompassing the entire dynamics of the ocean. UNESCO and CRM are also not absolved of their duties, as they must understand that the lack of education of UCH within the scuba schools is not reflective of the recreational dive community. If the recreational dive professionals were better educated on UCH, it would mirror their teaching more firmly. As of now, it is up to individual dive professionals' ethos to portray the values of UCH. Luckily recreational divers obey simple philosophies, which, if clarified, can also incorporate UCH.

5.2 Enhancing UCH as Safeguarded and Living Heritage

Living heritage advocates for the continuity of a cultural site. This conservation method is advantageous when addressing UCH, which goes through many life histories as it integrates into the environment. As a result, it showcases that the intricate tapestry of time is continuous and that the past, present, and future are not discontinuations of each other (Poulios, 2014, p39). The living heritage approach comes ternary:

1. The core communities now have the power in the conservation process instead of just the conservationists, who now take on more of a secondary role (Poulios, 2014, p39).
2. The focus is no longer on preserving the (tangible) material but rather on protecting the (intangible) link of communities with history, even if the material is marred (Poulios, 2014, p39).
3. Heritage conservation is integral for present-day life rather than something of the past that must be kept inseparable from the existing population for the benefit of future generations. (Poulios, 2014, p39).

To fully achieve a living heritage approach, it must take into consideration the current state of the core community. Recreational scuba divers are on the decline and there is an increasing number of non-active divers compared to those who are certified (Kieran, 2021c). The situation is unique, for if there is an understanding that recreational divers have their own culture, and that they are the core community that engages with UCH - how do safeguarding methods move forward to satisfy the core community and 'why' is conservation needed for these veiled sites? The issue we must address is that we are dealing with a recreational scuba diving culture that is both an inclusive community united by a common interest, but that it is also a money making business that focuses on the management of divers' training, service delivery and the minimisation of environmental impacts. We should appeal to this industry to drive further their efforts for safeguarding UCH. Their business model could include UCH as a sustainable Blue Growth Investment. Heritage, then can also be regarded as business, it can be directly related to and be sustained through individual engagement from tourism (Baxter, 2014). Almost 40% of all international trips are related to heritage/culture, while 70% of recreational divers travel internationally to scuba (Global Heritage Fund, 2019, paras6; CBI, 2017, section2 paras2).

In 2015, Professors W. Chan Kim and Rénee Mauborgne published Blue Ocean Strategy, Expanded Edition: How to Create Uncontested Market Space and Make the Competition

Irrelevant, launching a revolution in business strategy (Kim & Mauborgne, 2015). The theory is based on the metaphor of breaking out of the bloody shark-infested red ocean's competitiveness and migrating to a new deep open Blue Ocean market where competition is obsolete. Using this model is twofold, improving the recreational scuba diving business model and incorporating the UCH business model to achieve a sustainable effort in safeguarding UCH. UCH's competition is heritage sites on land, museums, and reef dives. While the competition that scuba diving faces is other recreational activities enjoyed on holidays, such as hiking, snorkelling, ATV, rock climbing, boating, etc.

Application of this theory gives a framework to help project UCH in a different light and hopefully reach a larger audience – an individual's experiences and interactions inherently influence their values. Therefore, these fostered values will inevitably determine how one interacts and engages with heritage. Thus, the success of a Blue Ocean Strategy depends on 'Value Innovation'. Value Innovation is a combination of cutting-edge innovative technologies designed to improve products and keep costs as low as possible, thereby increasing value to both the customer and establishment (Chan Kim & Mauborgne, 2015). By Using the ERRC Grid: Eliminate-Reduce-Raise-Create, this matrix identifies what areas need eliminating and reducing while innovating by raising and creating. The idea is to have a parallel focus on all areas to ensure better values are instilled (Chan Kim & Mauborgne, 2015). The ERRC Grid can then help the heritage sector and scuba diving industry become more encompassed and achieve a more wholesome understanding of UCH (Figure 14).

By involving the public in the decision-making process, it can help ensure that laws and policies reflect the ideas, values, and interests of the community (Boyte & Kari, 1996). Therefore, by recognising and empowering underwater explorer communities (recreational scuba divers) as the core fluid communicators who interact with these sites, we would ultimately see them relay these crucial values to a wider discoverer hobbyist community for future self-motivated safeguarding. UCH sites are treated more as bank safes of fluid, non-transparent, opaque resin entombing a fixed station of human cognitive development. Instead, UCH should be managed with policies agglomerated from marine protected areas and those from terrestrial sites.

ELIMINATE	RAISE

• Non-divers' accessibility to UCH. With the introduction to VR/AR, UCH has become a way to introduce non-divers to the underwater world
  ○ The option to interact with UCH then can be done real-time or as a VR/AR dive, thereby reaching a larger demographic
• Attract more divers by offering 'the experience of scuba diving' rather than the 'courses.'
  ○ Courses imply something that 'needs to be done; but focusing on the fun aspects of diving highlights the real reason people get into scuba diving – for the adventure and the experiences.
• Value-based methods for preservation
  ○ Move to Living Heritage
• Barriers of entry thereby increasing diversity of scuba diving demographic
	• Education and training standards to include UCH in:
	  ○ the recreational dive professional course
	  ○ the entry-level course and more explicitly in 'Wreck Diver' courses
	  ○ Utilise UNESCO guidelines of UCH (Appendix D)
	• The *access* of availability of resources of UCH within scuba school literature.
	• Local dive shop responsibility to UCH
	  ○ Done through cooperation between the heritage sector and scuba sector
	  ○ Local historical knowledge and values of UCH
	  ○ Use of Adopt a Wreck program within all scuba schools
	• Outreach - especially to non-divers
	  ○ Use of VR and open days to entice divers to UCH.
	  ○ Use of social media
	• International cooperation
	  ○ States and companies - salvage companies
	  ○ Streamline values between stakeholders to highlight the benefits for UCH in the Blue Economy

REDUCE	**CREATE**

• Cost of training and equipment
  ○ Creating membership or allowing scuba divers to bulk-buy dives that can be used anywhere.
  ○ Equipment recycling
• Amount of training course.
  ○ The time it takes to do the course - a commitment to an entire 3-4-days scuba course can deter potential new divers - flexibility and convenience is key!
• The ambiguity of PUCHC and salvage law
  ○ The anthropocentric conception where there is a division between humans and nature
• Impact on UCH to ensure longevity for future generations.
  ○ Done through education, diver experiences/technique and introducing control measures to physically safeguard UCH.
	• Unique and memorable experiences on different UCH sites
	• "Open Days" "Limited Edition Dives"
	• Effective reward/punishment methods for not abiding by PUCHC
	  ○ EPFRN within scuba schools
	• Consistency in the quality of the experience among scuba schools
	  ○ Potentially having one governing body oversees dive training to provide safe diving standards for the underwater world and divers, involving marine scientists, maritime archaeologists, conservationists, and dive medics.
	• Customised experiences
	  ○ Modelling the teachings to the interest of the diver.
	  ○ Dive in a specific area that explains different parts of history
	  ○ Make history come alive – understandable, relatable, and accessible

Figure 14 – Preliminary recommendation using the ERRC Grid: Eliminate-Reduce-Raise-Create for UCH & Scuba Diving experience (Eversdijk, 2022)

PART VI: THE DEBRIEF

The field of maritime archaeology is still developing, as is our definition of UCH. The growth of this field should not be limited to professionals but extend to the public and recreational divers. “Heritage is a culturally constructed concept and set of values, and as such holds different meanings and importance for different individuals and groups,” (Edney, 2018, p10). It is imperative to note that the varying ways different cultures associate with heritage need consideration, since their significance and values depend on their relationship and knowledge of UCH (Graeber, 2001). Additionally, acknowledging that heritage receives different levels of attention from individuals or stakeholders, must not deter motivations to safeguard or instilling memorable experiences. Heritage is a fluid subject whereby values can change - one party may value it more or less depending on their relationship to the subject (Aplin, 2002). These differences between groups are significant when addressing heritage sites that are less accessible except to niche communities such as scuba divers. These perceptions ultimately can change when there is a shift in values and attitudes (Aplin, 2002). However, heritage must be inclusive and not reflect the dominant group's perception nor exclude minorities – thus bridging the relationship between professional and recreational communities.

6.1 The Conclusions

This thesis aim was to advocate for recreational divers as the core community who are positively interacting with UCH and to investigate how they can serve as a beneficial stakeholder group in UCH management. I argued that a niche community can help the security of UCH regardless of stakeholder’s intervention; however, if streamlined, results could be more desirable. Their cultural group must be supported to fully achieve a living heritage approach to UCH. Ultimately heritage is for the public and therefore needs to be brought to the community in an experienceable way to instil meaningful interactions and values. Without public involvement, the trajectory of safeguarding UCH becomes a question of 'why'- as access becomes limited to those with specific skill sets. Consequently, the experiences recreational divers have when scuba diving and diving on UCH cannot be replicated through different mediums. The ritual-like process of transforming into a cyborg and the physiological changes that occur can only happen within the environment where the extensions of the physical and mental world blend. Therefore, it is vital to keep the scuba diving culture from becoming

extinct, and foster their community to keep UCH understandable, accessible, and relatable, thereby safeguarding it.

6.1.1 Recreational Diver's Positive Influence

The address the first sub-question of this thesis "How can recreational divers' current interactions facilitate the preservation and protection of UCH?"- the answer becomes an expressively emotional and physiological subject. The layers involved when diving onto UCH are hard to mimic as they are abstract extensions of understanding the world. Divers must transform into a cyborg through the ritual processes, to fully gain the cognitive and sensory experience of being underwater. Coupled with the historical aspects of UCH, the history can increase a sense of place and belonging, which in turn, creates a positive impact (Power & Smyth, 2016). The positivity does not only extend to the submerged history but also to being in the blue space, and the physiological changes that occur – from more meditative breathing, rhythmic hearing, being weightless, and change in body temperature (Helmreich, 2007). These involuntary responses to scuba diving make the person more present in their activities. When a diver chooses to go wreck diving, this highlights the competence of the diver as the activity becomes riskier and needs more specialisation in their skill set. The idea of risk can send positive reactions to the brain and the desire to become more specialised indicates the situational awareness one has with this activity.

Recreational divers must be comfortable underwater to interact with confidence, by building up their confidence their knowledge of the underwater world becomes more embedded into their understanding. By 'just knowing' they enter a new reality and new body to help navigate the alien world. These sensory experiences cannot be translated through a different medium such as VR/AR (section 3.1.4). Although these technologies should be utilised, the connection recreational scuba divers make far exceeds what non-divers can comprehend in the restrictive way of experiencing UCH. However, VR/AR can be an effective tool to entice more non-divers to partake in the underwater world.

6.1.2 Equalise the Natural and Cultural Value

To address the sub question “How do recreational divers place value on UCH sites?”, it now becomes a question of what arbitrary method humans are using to place values. UCH is subjective to the beholder, as every diver has their own experiences, emotions, and imagination to envision what they will experience underwater (Dor, 2017). Although individuals may have a preference to why they value one site more than another, the true dynamics of the ocean leave the impression of values on UCH fluctuating for future safeguarding methods.

Scuba divers understand the abstract nature of the ocean and witness the integration of UCH into the environment. Coupled with, the cyborg transformation, it helps connect a person and technology to nature whereby there is no disconnect between manmade and natural, which is reflective of the relationship of manmade structures and the underwater environment. The foreshadowing of how UCH embeds into its final surrounding, represents the mindset of how recreational divers value their surroundings – by becoming an extension of it. Therefore, the values recreational divers place become a complex understanding of how we value nature and culture and technology. For the difference between these isolated identities borders a fine line, advocating for a more grandiose designs to conservation.

Moving away from this mindset of the anthropocentric way of interpreting the world, means accepting that division between sectors is not sustainable and a more interdisciplinary cooperation is needed. It is not about either valuing heritage or only valuing marine life, but more about how these two are symbiotic of each other. The bottom-up approach can yield a more inclusive strategy to better manage the unique characteristics of UCH. Living heritage embraces people's associations with locations and the ongoing process of creating sites in the context of their interactions. The emphasis of this model is not on how to restrict the influence on the site to preserve the past, but on how to support, manage, and lead the growth of people's values and interactions with UCH across time and into the future (Poulios, 2010). By shifting to this approach, the site becomes alive to the natural and cultural phenomena.

Equally, the systematic values of economics, showcases the strength for using the living heritage conservation method as it also advocates for the Blue Economy which supports

tourism. Reflective of UNESCO ethos which is to promote heritage as a kind of tourism and tourism as a form of conservation, both in terms of reason for preservation and economic stability (Pedersen, 2002, p3). Conservation in retrospect is expensive and time consuming. The least costly endeavour is in situ, but it comes with the price of continuous monitoring. Conclusively this is where recreational divers can become allies in this pursuit to preserve, while interacting with UCH.

6.1.3 Mitigating and Romanticising Scuba Diving

To answer the sub question “What protection framework is in place for UCH, and what attitude does it have towards the recreational scuba diver community?” requires recognising the question in twofold. The first being the international/national/regional laws implemented on UCH, and secondly how this affects the recreational scuba diver community. Addressing the first part requires wading through the history of maritime law creation and shifting through the ambiguity of the laws. While the second part involves understanding the subjective language used and how it is interpreted among the recreational dive community.

The lack of control over the unregulated ocean and the unregulated scuba diving industry thereby forces a disconnect between stakeholders. The inability to monitor UCH effectively means looking for alternative methods to ensure their safeguarding. However, to fully drive a positive attitude towards UCH, it requires international/national/regional laws to refrain from being anthropocentric, and by recognising the entangled lifecycle of UCH and using this to their advantage. Why should culture and nature be protected differently?

Part two of this question looks at how these frameworks affect recreational divers. According to PUCHC's Article 2(10) it for the development of "responsible non-intrusive access to observe or document in situ underwater cultural heritage shall be encouraged to create public awareness,” (UNESCO, 2001, p4) and mandates State Parties to adopt Article 20 to "raise public awareness regarding the value and significance" of UCH (UNESCO, 2001, p11). However, this is an oxymoron for recreational divers as the activity, in itself, is intrusive regardless of how specialised and trained a diver may be. Moreover, the connection created, as demonstrated in section 3.1 and 4.1, cannot be duplicated through different mediums. To really appreciate UCH

requires a complete transformation and submersion. Therefore, UNESCO's attitude to divers is a rather romanticised view of what scuba diving is.

The subjective language is attributed to the ambiguity and confusion of the laws in addition to how they are presented to the recreational diving community. The fact the recreational dive professional almost religiously follows a basic law of diving – to be mindful of the environment - highlights how convoluted laws can get lost. The fact that recreational dive professionals obsessively obey simple diving etiquette, to be environmentally conscious, regardless of the characteristics of a dive site, demonstrates how complicated laws can become. Regardless of the characteristics of a dive site, these philosophies have witnessed more acceptable diving behaviour as they are sweet and simple mottos.

6.1.4 Educating Scuba Divers as Safeguarding Monitors of UCH

To address the final sub-question "What are the noticeable differences between scuba industry, approaches toward teaching and safeguarding UCH?" requires acknowledging the plethora of organisations, certifications, and definitions of UCH. Interestingly, the focus on UCH within the 'Big Six' is mainly on shipwrecks and only sparely refers to UNESCO as the overseeing body that contributes to the laws and regulations of UCH. This is the biggest issue, as to ensure the full effectives on the PUCHC, full transparency is needed from all stakeholders – including scuba. As a self-regulating industry UNESCO must strive to integrate this private sector more to achieve the desirable outcomes for proper safeguarding and interactions.

Moreover, it quickly becomes clear that currently it is the responsibility of the individual instructors, who are certified by the scuba schools, to cultivate an environment where good values are instilled. It would be naïve to assume that the recreational dive professionals do not have the capabilities to help enforce good standards, interactions, and values regarding UCH, as they have continuously been enforcing proper dive etiquette. Recreational dive professionals are effective gatekeepers of the ocean, their passion for the underwater world and wanting to share is reflective of their mindset and teachings – knowing they are role models to their students. Their desire to preserve the ocean is not limited by culture or nature as language suggests. However, within the resources easily accessible, there has been a huge

push to ensure proper interactions with marine life, but it has for the most part been dismissed when it concerns UCH.

The absence of literature is more reflective of the self-regulating industry than that of individual divers. It highlights the lack of accountability and responsibility the scuba industry takes as a stakeholder when addressing UCH. The resources available from most scuba schools are inadequate to fully appreciate and understand the importance of UCH. Ultimately if people do not know, they cannot value it (Mason, 2002). By scuba schools not teaching the impacts of recreational divers on UCH, or by embracing the international laws placed by UNESCO with the PUCHC, it results in that the niche community interacting with UCH does not recognise how fragile these finite resources are. This puts recreational divers at a disadvantage when addressing their positive narrative to CRM.

6.1.5 The Final Remark

To answer the main research question "How do recreational divers' interactions on UCH positively add to the narrative, values and safeguarding of UCH?" it becomes a dynamic answer between human vs technology and nature vs culture It requires analysing personal experiences, and an understanding of what diving and UCH is, and to shift out of this anthropocentric mindset to fully cultivate positive interactions and values. Moreover, the positive narrative with the recreational dive community is their ability to create these unique interactions and values through their imagination and reality. The recreational dive professionals are one of the gatekeepers to the ocean and UCH. With the support of dive professionals, we ensure that the future of recreational divers is well versed with the ecological matters underwater extending to UCH. The two are not indifferent to each other and should be treated as such with the dynamic nature of UCH life histories.

Finally, by addressing the scuba community, governing legal bodies and scuba schools' involvement and attitudes towards UCH can help streamline how UCH is portrayed, understood, and taught. This can be achieved by keeping recreational scuba diving attractive and appealing to lure more divers and non-divers to make emotional attachments to UCH through a whole sensory experience. Through this sensory experience the recreational divers' emotions and imagination drives value placement. Diving is about making the emotional

connection and these emotions are limited when they are not personal. Legislation must inspire this emotional connection by making the laws relatable, and simple – easily done through UNESCO's 15 guidelines of UCH (Appendix D). The simplicity reflects proper dive etiquette as demonstrated by the recreational dive professional, these mottos are effective in teaching and instilling good values and interactions.

The narrative produced should, therefore, be positive of the recreational scuba diving community. With the oceans at the brink of death, the recreational dive community becomes an integral part of the monitoring of the vast open oceans. Recreational divers in comparison to other threats (climate change, fisheries, and off-shore activities), are the only stakeholder to connect with UCH, whose values and interactions are positive. People dive because *they want too,* and recreational divers search out the riskier and different dives because *they want too.* It is by no means to harm the environment which they become an extension of. Giving the recreational dive community the platform to effectively cultivate these interactions and values aligns with living heritage.

By understanding the importance of recreational dive professionals as instillers to this positive narrative means also understanding the business of heritage and diving. One without the other threatens the trajectory of UCH. Both industries must work together and involve each other more to give access to the people wanting to create these emotional values and interactions.

6.2 Research Limitations

Understanding what drives people to act in certain ways is the goal of social science, not comparing their various social systems – i.e., recreational divers vs CRM/professionals. Ethnography has various advantages as a qualitative research approach. For starters, ethnographies may account for the complexities of group behaviours, disclose interrelationships among various aspects of group interactions, and give context for activities. Unlike many other study techniques, ethnographies can provide light on aspects of collective experience and can help identify future study questions to guide further research.

When considering the application of ethnographic methods, the critical drawback and difficulty are that they are frequently challenging to carry out, as it can be difficult to choose a representative sample of the community. Reaching out to specific groups of individuals takes time and can be problematic, which therefore becomes a primary objection. The effort described was heightened upon the COVID-19 pandemic. Nonetheless, the six interviewees that did reach out make up a collection of case studies to help simulate the thoughts projected through the recreational dive community.

Moreover, there is an argument that this qualitative method is unscientific, makes generalisations, and is subjective (Bumbuc, 2016). The crux of the matter, and the primary debate boils down to the ideas of reliability and validity. As a positioned subject, I clearly stated my stand and relationship to the study. My relationship was beneficial when making connections with my interviewees, but I did not want to minimise the potential biases of the topic.

Supportive material given by the seven professional underwater archaeologists and CRM, also provided a limited scope, as the participants were only located within Mexico, USA (Hawaii, Florida, and Texas), Germany, Australia, and UK. Therefore, is also not representative of the entire professional community but should only be seen as a few select spokespeople. The challenge of distributing the questionnaire by email is that it can be easily overlooked or forgotten making the response time longer or non-existent. However, the questionnaires are fruitful in understanding the trajectory of recreational divers on UCH through a professional lens. The participants also demonstrated some bias to the topic, depending on their personal

relationship/history with recreational diving. Although this is not an issue it does testify that regardless of how objective one can be on a subject, personal narratives shift the interpretations of UCH and recreational divers' management. Would this bias be seen in large-scale research on attitudes towards recreational divers, and how would this affect management plans for UCH? Does the personal relationship advocate for stronger efforts and push to include the recreational dive community in safeguarding or the ecology to UCH?

The issues that the recreational dive professionals highlighted were better training, accessibility to UCH resources, and streamline legislation for it to be better understood. However, the recreational dive professionals pointed fingers at the scuba school to make the effort, the questionnaires suggest that CRM are looking at dive shops for collaboration to help cultivate better awareness and training on UCH. Although local laws to UCH undeniably holds importance, the basic interactions will not be completely divergent depending on which international waters a scuba diver is diving in. The goal ought to give individuals the tools and resources to help understand how to properly interact with nature or culture.

Future investigations for this topic should include other stakeholders' perspectives on recreational divers on UCH - scuba school representatives, different levels of certified recreational divers, more extensive interpretations from underwater archaeologists/CRM, marine scientists, fisheries, and governing legal bodies. It would be interesting to further explore the standpoint of other stakeholders in UCH and their view on recreational divers; and furthermore, how the improvement of legislation aids in better safeguarding UCH for now and the future, while aligning it as living heritage while disconnecting the anthropocentric mindset that nature and culture are completely different.

Abstract

This thesis analysed how recreational divers' interactions with underwater cultural heritage (UCH) can positively add to UCH's narrative, values, and safeguarding. Investigation on this topic included the creation of interactions and values coupled with a review of the relevance of current laws and scuba schools' education pertaining to UCH. Nonetheless, recreational scuba divers are recurrently sidelined as stakeholders in preserving the longevity of UCH, oftentimes due to a lack of knowledge and awareness, despite them being the core community able to interact with UCH. As a piece of collective history, cultural heritage belongs to the community and should be an accessible experience. Methods of investigation included both desk-based and ethnographic research. Observations from desk-based research on ocean dynamics highlighted the anthropocentric mindset of current understandings of legislation and education, which influences individuals' interactions and values. These experiences are all subjective to the beholder, shifting the discussion from 'how do we value' to 'how do we live' with UCH. While ethnographic research in the form of interviews with recreational dive professionals emphasised the need to adhere to simple mottos to instil proper etiquette while diving on UCH, regardless of the dive site (nature vs culture) and call for more accountability from scuba schools to relay universal guidelines. Questionnaires from maritime archaeologists and heritage managers gave a professional perspective on the recreational dive community and their interactions with UCH, demonstrating that personal narratives shift the interpretation of our affiliation regardless of how objective one can be on a subject. By taking into account the issue of recreational divers' impact having a direct bearing on UCH, it can be deduced that with training and education, the negative effects may be greatly minimised. Achieving this will be an ongoing process that requires continual monitoring while keeping an open and ongoing dialogue, ensuring no voices remain unheard. Finally, by advocating that UCH is a resource of economic benefit, the scuba diving industry's potential within the Blue Economy is valued. Ultimately, making UCH more accessible will ensure its longevity and survival.

Abstract Wordcount: 335

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Figure 3

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Figure 4

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Figure 5

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Figure 6

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Figure 7

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Figure 8

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Figure 9

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Figure 10

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Figure 11

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Figure 13

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Figure 14

Eversdijk, J. (2022a). *ERRC Grid: Eliminate-Reduce-Raise-Create for UCH & Scuba Diving*

Appendix A: Professional Perspective Questionnaire

A1 Participant - Laura Raquel Carrillo Márquez

Name: Laura Raquel Carrillo Márquez

Job Description: Underwater archaeologist, full time researcher at the Underwater Archaeology Vice-directorate of the National Institute of Anthropology and History (INAH). Mexico.

1. **Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?**

   I was an archaeology student when the opportunity arose to study for a diploma in underwater archaeology. My interest was oriented towards the study of the Maya and their relationship with aquatic environments, however, for work reasons, I had to focus on maritime archaeology. I learned to dive in the aforementioned diploma course.

   My recreational dives have been very few in comparison to those derived from my work as an underwater archaeologist.

2. **What is your point of view to the recreational dive community?**

   My profession has allowed me to meet divers of all kinds, from amateurs to professionals. In general, I believe that in Mexico, although there is progress, there is still a need to sensitize the diving community towards a culture of respect for the natural and cultural heritage.

   The notion still prevails that if they find cultural remains they have the right to extract them, which is one of the main problems we face for the protection and conservation of our submerged cultural heritage. However, I believe they could be great allies in documenting and protecting our heritage with proper training.

3. **What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?**

   Some divers are very committed to the protection of cultural heritage, and try to promote a culture of respect for this heritage. Several of them collaborate with us on projects, and when they know that someone is affecting an archaeological site, they report it to us so that we can act accordingly.

   They have also functioned as informants about the places where they have found wrecks and have even become their main protectors. However, their participation in underwater archaeology is limited by our own federal law on monuments, so they cannot carry out actions outside of the projects of the Underwater Archaeology Vice-directorate.

4. **My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this**

responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.

a. Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?

It is very important that divers are aware of the importance of conservation and protection of the heritage (natural and cultural). To this end, professionals in underwater archaeology can collaborate in the creation of an outreach program on the UCH, aimed at this same conservation.

BUT the problem with some of these courses that have been given for years is that they try to train divers in tasks that only archaeologists are qualified to perform, and divers are left with the idea that they already have a "specialty course in underwater archaeology" and can do archaeology, when this is not the case.

b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.

Developing a program that considers general aspects of underwater archaeology and UCH, highlighting the scope of its legal protection, who has the authority to develop archaeological projects, why it is important not to remove, remove or disturb cultural remains, and so on. People protect what they value and know. This program should be offered to dive school teachers or instructors and students alike.

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like "take only memories; leave only bubbles" and "you are a guest underwater, therefore must behave like one".

a. Do you believe this is the case - recreational divers normally have good intentions?

This is a complex question, as human behavior is influenced by a variety of factors throughout life. I could not generalize and say that everyone normally has good intentions, because that is not the case, just as it is not the case that everyone has bad intentions.

Sometimes it is not that they have bad intentions, but that they act badly due to lack of knowledge, for example, they find a plate, a bottle or a coin and their first impulse is to extract them, as a souvenir or maybe to sell them, hence the importance of providing them with adequate information before they dive.

b. Does proper dive etiquette make a difference in interactions with UCH?

I don't understand what you mean by proper dive etiquette, but I believe that what makes the difference has to do with the education and awareness of dive instructors, operators and tourists regarding the importance of the UCH and its conservation.

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.
    a. Do you think it matter that the recreational scuba diving community is on the decline?

        This decline undoubtedly affects certain sectors of the population, which have made diving their livelihood, although this decline has not been reflected in Mexico, and was even reactivated after the pandemic.

    b. Do you think this will affect UCH safeguarding?

        A decline in this activity could be beneficial for the preservation of the marine environment and the UCH. On the other hand, in Mexico we also face the looting of cultural remains by fishermen.

    c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?

        It is a shared responsibility, although I believe that the primary task of a heritage manager is to ensure the protection and conservation of UCH, so any action aimed at the enjoyment and knowledge of this heritage must be guided by these principles.

        On the other hand, there are other means of making UCH accessible to society, which do not necessarily involve diving. I believe that these options are the ones that should be explored and applied more since with technological development they reach many more people around the world.

7. Other remarks and opinions?

    We have had good and bad experiences with divers, some manage to understand the importance of protecting the UCH and others have chosen to ignore the legal framework that protects our heritage and dedicate themselves to recover artifacts and carrying out actions on this heritage that are only INAH's responsibility.

A2 Participant - Hans K. van Tilburg

Name: Hans K. van Tilburg

Job Description: maritime archaeologist/historian for National Oceanic and Atmospheric Administration (NOAA) (Hawaii)

1. **Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?**

   I had been a carpenter for about 10 years after getting my BA degree, but then on a lark took a summer field course conducted by East Carolina University in maritime archaeology (Great Lakes sites) and had a great time…realized my passion for maritime history. So, went into the MA program at ECU in maritime archaeology and history, later got a PhD in Asia/Pacific maritime history, and taught maritime archaeology at University of Hawaii…then hired by NOAA.

   Yes, I started diving in 1972 (age 11) and dove recreationally until becoming a NAUI scuba instructor and a commercial oilfield diver as well. Then professional maritime archaeologist and taught diving for NOAA for years.

2. **What is your point of view to the recreational dive community?**

   Recreational community often willing to share maritime archaeology information, work collaboratively to identify sites they they've discovered, and also often show concern for the preservation of such sites. Some avocational divers have as much if not more information on site background than the professionals. I'm not sure we correctly distinguish between "professionals" and "recreational" or "avocational" divers…need a way to recognize non-professional expertise…

   There will always be a few divers who intentionally damage/loot submerged sites and that's unfortunate, but dive shops and divers are more familiar with preservation laws today and so those who want to damage sites have to be pretty secretive.

3. **What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?**

   I work with a number of "recreational" divers who share site data and efforts to identify resources, and more formally, we (NOAA) have agreements in place for collaboration in heritage preservation with non-professional "citizen scientist" groups (e.g., Diving With a Purpose DWP, National Association of Black Scuba Divers NABS).

4. **My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.**
   a. **Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?**

Yes, from this perspective UCH should not be treated as a different and separate resource, but simply as another marine resource that we should be aware and respectful of…conservation and preservation being two sides of the same coin so to speak…UCH sites and the cultural imprint of human behaviour on the seafloor should be understood, in this context, and part of the ecosystem. UCH is increasingly being integrated into Marine Protected Area management (i.e., marine conservation).

b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.

Emphasize the integration of cultural and natural resource conservation and management…

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like "take only memories; leave only bubbles" and "you are a guest underwater, therefore must behave like one".
   a. Do you believe this is the case - recreational divers normally have good intentions?

      Yes, I think the majority of impacts are inadvertent…

   b. Does proper dive etiquette make a difference in interactions with UCH?

      Absolutely, beginning with anchoring properly (not damaging the UCH) to diving the site (not impacting the site, not moving artifacts around, not taking anything, not "cleaning" the site…)

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.
   a. Do you think it matter that the recreational scuba diving community is on the decline?
   b. Do you think this will affect UCH safeguarding?

      Both good and bad…fewer potential diver impacts to sites, but fewer opportunities for data sharing and collaboration with UCH managers…

   c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?

      Sharing appropriate UCH information with the public is the responsibility of heritage managers, so doing a better job with that would enhance recreational diving experiences. Wreck stories and the mandate for preservation of UCH should be shared by the heritage managers with the public in general…including scuba school operators.
7. Other remarks and opinions?

A3 Participant - Della Scott-Ireton

Name: Della Scott-Ireton
Job Description: Associate Director, Florida Public Archaeology Network

1. Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?

   Archaeology has always been a passion and I began studying to become an archaeologist about the same time I learned to dive. I worked my way up to Divemaster while in college, working at a dive shop on the weekends, and later Instructor (NAUI #13824).

2. What is your point of view to the recreational dive community?

   I am part of the recreational dive community – I enjoy diving as much as anyone. Recreational divers are among the most passionate advocates for ocean science. Like any community, some are problematic, but the vast majority care about the oceans and everything in them and are anxious to conserve submerged resources, both natural and cultural, for future generations of divers.

3. What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?

   In my experience, recreational divers have served as dedicated and enthusiastic volunteers on nearly every project I've been involved with. Every one of Florida's Underwater Archaeological Preserves was established through the committed efforts of a group of local divers who wanted a shipwreck preserve in their community.

4. My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.
   a. Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?

      Absolutely they should! I've been advocating for this for years, and developed the Heritage Awareness Diving Seminar (https://www.fpan.us/training-courses/hads/) specifically to address getting information on UCH to diving Instructors and other leadership. The training agencies should include a module or training on the topic of submerged heritage sites for all Open Water I classes and make it part of Standards as a required topic.

b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.

The adoption of a training module in Open Water I classes specifically on UCH, to include laws, ethics, preservation, and value of sustainable visitation. If one of the major agencies – PADI or NAUI – would adopt such a module, the others would follow.

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like "take only memories; leave only bubbles" and "you are a guest underwater, therefore must behave like one".
   a. Do you believe this is the case - recreational divers normally have good intentions?

      I agree this is the case. The training agencies make a solid case for general ocean stewardship and I think this carries over to UCH. There is, however, a lot of misinformation in the media about sunken treasure and getting rich quick, which takes a more direct approach to counteract and which the training agencies do not address.

   b. Does proper dive etiquette make a difference in interactions with UCH?

      Yes! Looking with your eyes and not your hands, and taking only photos and leaving only bubbles, are applicable to coral reefs and to shipwrecks.

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.
   a. Do you think it matter that the recreational scuba diving community is on the decline?

      It's cyclical – diving, like any other sport/activity/hobby, waxes and wanes in popularity.

   b. Do you think this will affect UCH safeguarding?

      I think it's more dependent on education efforts, regardless of the number of people diving.

   c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?

      Both are responsible. Training agencies should restructure their current curricula to include discussion of UCH, and heritage managers should engage recreational divers in UCH initiatives (exploration, recording, visiting, managing, protecting). The growth of "citizen science" is a prime opportunity for both the agencies and managers to recruit participants.

7. Other remarks and opinions?

A4 Participant - Ashley Lemke

Name: Dr. Ashley Lemke
Job Description: Associate Professor of Anthropology, University of Texas Arlington

1. Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?

   I got into maritime archaeology through already working as a terrestrial archaeologist and was given the opportunity to work offshore. I did not start diving recreationally before becoming a professional

2. What is your point of view to the recreational dive community?

   The recreational dive community in the Great Lakes, North America has been instrumental to my research, cold, deep water diving is challenging and many of the divers on my project are volunteers from the recreational community, they are very skilled, friendly, and interested in the science

3. What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?

   See above

4. My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.
   a. Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?

      Yes

   b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.

      In the United States (and many other parts of the world) UCH is a common dive site for recreational divers, more education about UCH and how to protect it while enjoying it would be great

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like “take only memories; leave only bubbles” and “you are a guest underwater, therefore must behave like one”.
   a. Do you believe this is the case - recreational divers normally have good intentions?

      Yes, now – but there is a long history of plundering shipwrecks

b. Does proper dive etiquette make a difference in interactions with UCH?
   Absolutely, removing materials for the shipwreck breaks the chain of evidence and makes archaeological interpretation difficult or impossible, wrecks can also be irrevocably damaged

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.
   a. Do you think it matter that the recreational scuba diving community is on the decline?
      Expense (I attached paper that touches on this)

   b. Do you think this will affect UCH safeguarding?
      No

   c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?

7. Other remarks and opinions?

A5 Participant - Jens Auer

Name: Jens Auer
Job Description: Maritime archaeologist, LAKD M-V (Germany)

1. Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?

   I always had a very strong interest in maritime history and archaeology, so maritime archaeology seemed to be the perfect combination of those interests. I learned diving when I started to study archaeology and started out as a recreational diver.

2. What is your point of view to the recreational dive community?

   It's a very broad community, so there is not only a single answer to that question. I meet a lot of extremely motivated recreational divers with a strong interest in cultural heritage, but I know just as many negative examples with looting always being a substantial problem.

3. What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?

   There are a lot of examples for that. We have one extremely active and engaged dive club in Rostock whose activities greatly contribute to the preservation of and information on maritime cultural heritage. They conduct numerous projects every year and have a very positive media presence. (GfS Rostock)

4. My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.
   a. Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?

      Definitely!

   b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.

      Raising awareness already in the course of the first open water diving courses. I can imagine positive collaboration between us as professionals and dive schools (presentations, etc.)

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like "take only memories; leave only bubbles" and "you are a guest underwater, therefore must behave like one".
   a. Do you believe this is the case - recreational divers normally have good intentions?

I believe that is difficult to say. Many divers might have good intentions, but a lot of sites are looted and destroyed by divers with less good intentions. Maybe it's the few ruining it for many, but difficult to say.

b. Does proper dive etiquette make a difference in interactions with UCH?
   Absolutely!

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.
   a. Do you think it matter that the recreational scuba diving community is on the decline?
      This is not a trend I can see here in Germany, where I think the numbers of active divers are fairly stable.

   b. Do you think this will affect UCH safeguarding?
      However, if it is a trend, it can affect safeguarding UWCH both positively and negatively. A strong community can look out for wrecks, but at the same time, less divers cause less harm…

   c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?
      I'm not sure that any of those measures would actually have an impact as most divers are probably looking for other experiences underwater and are not primarily attracted by UWCH

7. Other remarks and opinions?

A6 Participant - Joanne Edney

Name: Joanne (Jo) Edney
Job Description: Researcher and Research Manager at Southern Cross University (Australia)

1. **Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?**

   I am not a maritime archaeologist. I have been involved in cultural heritage management throughout my career. I originally trained as an ecologist (primarily terrestrial). I got into maritime cultural heritage through my passion for scuba diving. I learned to dive primarily because of my interest in, and fascination with wrecks. In my professional life I was involved in threatened species conservation and protected area management, which involves managing the natural and cultural environments of these areas and managing recreation/tourism. It was frustration with the myopic way my superiors wanted to manage issues with illegal use and illegal recreation activities that led me to start doing research into wreck divers because I knew there were better ways to manage these problems. My superiors just wanted people to be fined and I understood this was not a sustainable or constructive way to manage these types of problems, and only gets people offside. I could see that gaining knowledge about who was doing these activities and their motivations for doing what they were doing was key to understanding how to sustainably address these kinds of issues or use conflicts. I decided to apply my ideas to diver use of shipwrecks, something I was passionate about as a diver, and also a heritage manager. It was through my research I became more involved professionally with underwater cultural heritage. This led to me becoming an Tutor on the NAS maritime archaeology courses and becoming involved with citizen science involving underwater cultural heritage. I love being involved and teaching on these programs. My main focus regarding maritime archaeology as a professional, however, is cultural heritage management and understanding the human dimensions of wreck diving.

   As noted above I did start diving recreationally before becoming a cultural heritage professional. It was my interest in underwater cultural heritage that motivated me most to learn to dive, although I also am very passionate about marine biodiversity too! I learned to dive shortly before completing my Bachelor degree. I got a job working in forest research soon after completing my Bachelor degree, and alongside that career I was also beginning a career in the dive industry. I became totally addicted to diving and became a dive instructor. As an instructor my favourite course to teach was always wreck diving. I also bought my own dive boat and when I wasn't teaching diving I was usually out exploring wrecks.

2. What is your point of view to the recreational dive community?

This is an interesting question, because I am part of that community but have also been a heritage manager, so I have an insider and outsider view. I have been diving since 1982 and have seen many changes in the industry and the recreational diving community over that time. I think most divers are passionate about protecting the marine environment and dive because of that, or develop a love of the marine environment as a result of learning to dive. I think the majority of divers want to limit their impacts on the marine environment and willing to learn more about how they can do this.

I have seen many changes in the industry since learning to dive at the end of 1982 and becoming an instructor in 1985. The industry has recognised the importance of protecting the marine environment and incorporate these messages in even entry level training now, plus stress the importance of the dive skills needed to minimise impact. I have seen these changes regarding wrecks as well. When I learnt to dive we were taught to collect artefacts form sites and divers openly went out collecting artefacts from wreck sites. Now that type of behaviour is very much discouraged and the importance of protecting wrecks for their heritage values, as well as their recreation/tourism values. When collecting was popular, it was illegal, as it is today.

I am also a realist and I am very aware that there is a certain element of the recreational and technical diving community who do remove things from wrecks and have the 'treasure hunter' ethos. I think that holds true of most recreational activities and law enforcement generally, where most will comply, some can be encouraged/incentivised to comply and a small minority of people who won't comply with rules regardless of the likelihood of penalties or education/communication to persuade them otherwise.

As I mentioned above, I am very interested in the human dimensions of wreck diving. People do it because they love wrecks. The problem arises when their values differ from the heritage management goals for sites. It is really important that we understand the divers' point of view if we are to provide opportunities that divers want and in understanding their attitudes to management strategies, with the view of achieving high levels of voluntary compliance with management rules at sites. This also can assist heritage managers in framing education about wrecks. Basically, I think we need to understand divers better if we are to effectively manage diver use impacts at UCH sites.

I also think the recreational dive community, particularly the wreck diving community, is a largely untapped resource for maritime archaeologists and heritage managers. Divers are highly educated and relatively affluent, with wreck divers being more educated and affluent than general scuba divers. Many want to dive with a purpose. Most are passionate about the marine environment, wrecks and their favourite dive sites. This is a large group of potential citizen scientists and people who can also play a stewardship role at sites and they can afford to be involved in these programs.

3. What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?

   Finding and recording wreck sites and being eyes on the ground for heritage managers. I live in Australia and there are many examples of divers searching for, finding, recording and monitoring sites. This is a huge benefit to maritime archaeologists and heritage managers because it effectively expands on the amount of work that can be done to record many more sites than their levels of resourcing would ever achieve. It also allows wrecks to be recorded at depths maritime archaeologists are not permitted to dive beyond, due to government restrictions. The technical and recreational diving community have contributed significantly to finding, recording and monitoring sites. These divers have financed the diving operations required to search for, record and monitor sites.

4. My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.
   a. Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?

      I think more weight could be given to teaching UCH. I am a PADI instructor and most familiar with PADI teaching materials. The standard course materials even in the entry level courses do cover UCH protection, although not in as much detail as marine biodiversity. There is, however, a role for instructors and dive centres to add local content, including local laws, and context to the materials. This is flagged in the teaching outlines for Advanced Open Water and the Wreck Diver course. PADI places this responsibility on instructors. For some instructors this is easy because they are interested and materials are available or they are motivated enough to create them and do research. I don't think this can be done properly by the certifying agencies alone.

      I think at the national and more local/regional levels partnerships between government UCH managers and dive schools/instructors could create content that is appropriate for UCH protection and covers the laws that apply, local area info that the training materials currently do not include. This could also have broader flow on benefits through relationship building and trust, e.g. divers and diver schools being more willing to report illegal activities etc and providing anecdotal info about site conditions etc.

      Some instructors work independently, others as part of dive schools. I think both should be contributing to tailored UCH information that is presented to dive students, even though PADI places this responsibility with instructors.

b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.

I think I have partly covered this in my response above. PADI also now offer a Wreck Detective specialty course. I am certified to teach this course and in order to be accepted I had to demonstrate to the Nautical Archaeology Society (NAS) that I had the appropriate skills and qualifications to do so. If diver centres promoted this type of course it could develop more divers who are interested in protecting wreck sites.

My above suggestion about the dive schools and heritage/site managers forming partnerships to develop and deliver information to divers that could be incorporated into courses as the local content part that instructors are expected to deliver is something I would like to see happen. This would ensure the correct messages are given to divers, and provides opportunities for heritage managers to tailor the type of messages they want to get out to divers in particular areas. I think it could go beyond just training courses. Most dive schools/centres also have some kind of club or similar for divers. They could invite maritime archaeologists to come and speak about sites in the local area and get more information to divers this more informal way and perhaps stimulate their interest in learning more. Same applies to any UCH citizen science programs, where they could come and speak to divers at club nights or other occasions (including during diver training), and also form partnerships with the dive schools to record sites. In the past one of the dive centres I was involved with partnered with the government heritage office and adopted sites that they recorded and monitored. These programs have benefits beyond just the divers who participate by generating more interest and higher levels of knowledge among divers.

I think that there is also a need for dive schools/instructors to include content in their course information about the causes and consequences to diver impacts on UCH, both from the perspective of how this impacts on their diving experiences into the future and also how it affects heritage values of sites. This could be done at the dive certifying agency level because much of this information is applicable universally, and local examples could be given.

As I mentioned above, wreck divers dive wrecks because they love them. The way they behave at sites is affected by their diving abilities and skills, and their values. Not all divers will love wrecks because of their heritage values, or these values may be less important to them than other values of sites. Some collect artefacts because they want that tangible connection with history, so they are valuing and loving heritage but not in a way that protects the heritage values of sites, or that aligns with the values of heritage managers. It is important when delivering messaging to divers to connect with their values. Partnerships between heritage professionals and

dive schools can help achieve this by educating divers about heritage values and also recognising sites have different values and meanings to different people. If heritage managers want to effectively influence divers, recognising and connecting with their values is important and requires meaningful dialogue between these groups.

Dive schools focusing on dive skills that minimise damage to sites is also important. I know that PADI give much more attention to neutral buoyancy and mastery in that skill than was the case in the past. In the past it was mostly about the comfort and safety of the divers, now the messaging also includes doing this to protect the marine environment, including UCH.

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like "take only memories; leave only bubbles" and "you are a guest underwater, therefore must behave like one".
    a. Do you believe this is the case - recreational divers normally have good intentions?

        Yes, I think the majority of divers do have good intentions but as stated above, there is an element on the dive community who are and probably always will be treasure hunters. From my observations, I think that many are not fully aware of the causes and consequences of diver impacts on UCH, or how they can minimise or avoid them. More emphasis needs to be given to educating divers about the causes and consequences of diver impacts on UCH and the importance of appropriate dive skills and techniques to avoid damage to sites. Giving divers feedback about their behaviour/dive skills is also important because they are not always aware that they may be causing negative impacts. I found that people we often surprised, if not horrified, to find out that they had been kicking or touching wrecks when diving and modified their behaviour as a result of finding out. Many divers do not know practical steps they can take to minimise or avoid damage to sites. More focus needs to be given to educating divers about this and the benefits to them and society more broadly by minimising and avoiding damage to sites. Many divers still think they are doing the right thing by 'recovering' artefacts from sites. More education around these types of heritage management issues would be beneficial.

    b. Does proper dive etiquette make a difference in interactions with UCH?

        Yes, and Code of Conduct, or similar, for diving on UCH would be beneficial because they set out expectations of the types of behaviours that are appropriate and the dive skills (e.g. neutral buoyancy / keeping a tidy profile) that are necessary and important for sustainable use of sites. Wider promotion of more codes of conduct, for example, the PADI Project AWARE Responsible Wreck diving considerations would be advantageous. Codes of conduct could be general and applicable everywhere, such as the PADI responsible wreck diving considerations, or could be more detailed to cover certain sites, or types of sites. More universally applicable guidelines are

probably more effective because it is one set of etiquette to learn and apply and would probably then be more consistently adhered to.

As mentioned above, also making divers more aware of the causes and consequences of diver impacts on sites and how they can minimise or avoid them would help with more sustainable use of UCH sites. Most divers do not fully appreciate or understand this.

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.
    a. Do you think it matter that the recreational scuba diving community is on the decline?

        In terms of managing diver impacts on UCH, I think it does. It means that there are likely more inexperienced divers visiting sites. Less experience usually means lower levels of competency in dive skills that make diving more sustainable. It also means that these divers may not have as much knowledge about UCH as newer divers.

        A decline in divers will have implications for dive businesses who are reliant on this for livelihoods, especially in developing countries. This may mean operators will take less care of sites, and perhaps engage in behaviours that damage sites, such as supplying artefacts to the black market, allowing divers to collect artefacts so that they get better tips. There will be lower impetus to protect sites for the longer term because people need to feed their families. If fewer divers are visiting, there is less impetus for dive guides and operators to look after sites and promote sustainable practices at sites if they can't see a future in the dive business due to the decline.

        The upside of the decline, however, is that there will be fewer older divers who learned to dive in the days when taking artefacts from wrecks was acceptable, if not encouraged (legacy divers). The newer divers will be educated differently and likely be more responsible when diving at UCH sites because current training covers more about protecting UCH and focuses more on skills that limit damage to sites than was the case in the past. There are also many opportunities today for divers to participate in public archaeology and other programs that engage divers in recording and monitoring sites. This can also bring benefits to heritage protection with more educated divers and divers with more site attachment that can result in stewardship for these sites, and from a dive business perspective is likely to retain divers.

    b. Do you think this will affect UCH safeguarding?

        Yes, as noted above it has the potential for positive safeguarding and also more damage to sites.

c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?

I think heritage managers do need to provide high quality diving experiences so people can visit and enjoy sites. This is key to people wanting to protect UCH. Heritage managers also set the rules for divers at sites, and these can affect the experiences. Heritage managers need to ensure the heritage values of UCH are protected and maintained. There also needs to be more consideration by heritage managers of the way in which different management actions can affect the dive experience, and also compliance with rules. Heritage managers need a better understanding of who is visiting sites, what they want and how they feel about rules to protect heritage.

I think dive school/centres also have a role to play in ensuring divers are equipped with the correct skills and knowledge to safely and responsibly dive UCH sites and to foster positive attitudes towards the protection of sites. They can also be influential in helping divers understand how applying the correct skills and etiquette when diving UCH can mean better dive experiences now and into the future. Most dive business models are about attracting more divers, so I am not sure what you mean about restructuring their current business models. The certifying agencies are always looking at ways dive businesses can do this and actively support schools/centres in this way. Dive schools are always going to be focusing on attracting new divers to their businesses, otherwise they would not survive, or thrive, financially.

7. Other remarks and opinions?

No. Just that your research is very interesting and important and I am looking forward to seeing it published!

A7 Participant - Chris Underwood

Name: Chris Underwood
Job Description: I'm an independent archaeologist with multiple interests: Researcher - Instituto Nacional de Antropologia y Pensamiento Latinoamericano (INAPL-PROAS) Argentina, President of ICOMOS-ICUCH, Trustee of UK ICOMOS, Fellow of the Nautical Archaeology Society, International Associate Member of the Advisory Council on Underwater Archaeology, Director of the Sustainable Conservation Trust (Portsmouth - UK), and Board & founder member of the Ocean Decade Heritage Network

1. Why did you get into Maritime Archaeology? Did you start diving recreationally before becoming a professional?

   I became involved in maritime archaeology by accident. Yes, I was originally a recreational diver and BSAC instructor. In the 1980s, my diving business included a BSAC dive school. During that period, I hosted the second NAS Training course.

   I always had an interest in maritime history and had dived on many historic wrecks. My first experience of maritime archaeology was as a volunteer on the Mary Rose Project in 1978. After holding various staff positions from 1979-1982, and after four intensive years of field work experience, including surveying, videography, excavating and recovering artefacts, I'd had an amazing aprenticeship in underwater cultural heritage.

2. What is your point of view to the recreational dive community?

   I would say mixed. The recreational diving community is a very important stakeholder and can be a very positive force in discovering, protecting and promoting good management of underwater cultural heritage, and with professional guidance can enable them to achieve acceptable standards – equivalent to professional standards – and participate in an active role in supporting professionals in working on archaeological sites.

   The negative is that there remain individuals who take artefacts in a random, rather opportunistic way and others who are much more organised and plan to recover artefacts cultural material as the aim of their 'recreation'. After years of raising awareness to the legal responsibilities, there can be no excuse for not knowing the rules.

3. What positive experiences has the recreational dive community brought to the discipline of Maritime Archaeology? Can you provide some examples of when recreational divers went above and beyond?

   This is a very broad question and is to some extent related to the above. No doubt in the post Second World War era, let's say 1945-1970 there were few trained archaeologists who dived. Consequently, most of the 'archaeological' work was undertaken by amateur archaeological groups, sometimes under the guidance of trained archaeologists.

From the 1970s the UK's management of its legally protected sites – Protection of Wrecks Act 1973 – placed a great deal of responsibility and faith on 'licensees' – recreational or avocational archaeologist with a 'nominated archaeologist' providing the guidance. Most of these groups are totally voluntary, so you have to give them great credit. In fact, George Bass in his book Archaeology Under Water (1966) stated that the amateur diver deserved a great of credit for leading the way.

A good example of professional and amateur together is the SOMAP, Sound of Mull Archaeological Project.

4. My ethnography interviews highlighted a *want* for scuba school (PADI, SSI, SDI, NAUI) to make UCH resources more available, recreational dive professionals have placed this responsibility of their understandings within their school, indicating there is a lack and disconnect between heritage conservation and marine conservation.
    a. Should recreational scuba school take a more involved approach to their teaching of UCH, as they do the marine conservation?
        The short answer is yes; there is a disconnect between heritage and marine conservation. Yes more or ideally equal time should be devoted to both cultural and natural perspectives. However, there has always been a disparity between them. I think that there is a lack of projects that provide adequate training to the dive schools in how to become more involved in cultural activities. The Adopt A Wreck Scheme is a good example but NAS lacks the financial input to fully expand the scheme. Viduka's 'Girt' project is also a good example of what can be achieved.

        Marine conservation groups have always been more popular, which transcends into the respective political lobby. The UKs Sea Search and NAS are good examples of where there have been links with mutually beneficial outcomes.

    b. How would you involve scuba school more effectively in their teachings of UCH? What would you like to be seen done within the recreational scuba schools? – Understandably CMAS and BSAC have a more extensive relationship with UCH.
        Historically, diving organisations such CMAS and BSAC are already well connected with unch, it's a matter of imbalance in the interest of natural or cultural activities. The mechanisms are already in place, but need more resources and knowledge.

5. During my ethnographic interviews with recreational dive professionals, they indicated that most scuba divers have good intentions when going underwater, by obliging to basic mottos like "take only memories; leave only bubbles" and "you are a guest underwater, therefore must behave like one".
    a. Do you believe this is the case - recreational divers normally have good intentions?
        Yes, I do, but it's a minority that spoil the overall impression.

b. Does proper dive etiquette make a difference in interactions with UCH?

Yes, but hard to quantify.

6. The recreational dive community is on the decline with an increase of non-active certified divers. Notably cultural tourism contributes to 40% worldwide and 47% in developing countries while 70% of recreational divers travel internationally to scuba, contributing to the Blue Economy and Growth.

   a. Do you think it matters that the recreational scuba diving community is on the decline?

      This is a good question. It would be easy to say no. However, we need partners in raising awareness of the cultural, social and economic benefits that the recreational can be an important driver. So, I say, yes it matters. It has sometime been mentioned to me that wreck-diving is a one generation activity and as you have said most go to sunny clear water places to dive. Therefore the days of the serious wreck-diver are, perhaps, numbered.

   b. Do you think this will affect UCH safeguarding?

      I think my answer to this is in the comments above, yes it will not help raise awareness of the positive contributions uch can make to society.

   c. If so, is it the responsibility of heritage managers to foster better recreational scuba experiences on UCH or the scuba school responsibility to restructure their current business model to create more divers?

      Yes, undoubtedly it is the responsibility of heritage mangers to promote responsible access to UCH, but scuba schools should do more to provide access heritage trails, but this can be done in partnership with heritage bodies such as NAS, FPAN and others. It should be a partnership.

7. Other remarks and opinions?

   Too many to write – if you would like more information, please contact me cju@hotmail.co.uk

Appendix B: Risk Assessment for UCH

Risk Assessment table (B1 & B2) listed below highlights the possible risks to UCH due to recreational scuba diving, including in-water, and dive boat activities, the second risk assessment table address climate change, fisheries and off shore activities. Control measures have been listed as possible guidance to mitigate damage on UCH. The frequency of incident showcases the probable occurrence of the activity happening and the severity indicates the gravity of damage to site integrity of the activity on UCH.

FREQUENCY

1 = Highly improbable occurrence
2= Remotely possible/Known occurrence
3 = An occasional occurrence
4 = Frequent occurrence
5 = Regular occurrence
6 = Almost certain

SEVERITY

1 = Negligible damage to site integrity
2 = Minor damage to site integrity
3 = Moderate/noticeable damage to site integrity
4 = Serious damage to site integrity
5= Critical damage to site integrity
6 = Maximal damage to site integrity

Risk Rating (RR) = Frequency (F) x Severity(S)

B1 Recreational Scuba Divers Activities

Hazards & Risk	Risk Rating		Control Measures	Residual Risk		Responsibility
	FxS	RR		FxS	RR	
Boat Anchoring Damages can occur when boats anchor on a site. The anchor, and chains are heavy, but UCH and coral are fragile. Anchors can land on UCH, drag through the seabed, chains can rub/drag against UCH.	4x5	20	Anchoring on UCH site should be prohibited, to mitigate the potential for anchors and chains to become in contact with UCH. Permanent boat mooring should be placed within a safe distance to the UCH to ensure the chains of the mooring do not hurt the integrity of the UCH site. These permanent moorings should be placed by conservation specialist to ensure the safeguarding of UCH and artificial reef. Dive boats wanting to dive on UCH should practice drop off method of	2x5	10	Boat Captain
Boat Mooring Boats attached to a mooring line provide tension and force on the mooring line, which can damage the integrity of UCH.	3x5	15		2x5	10	Conservation Specialist (Heritage or Environmental)

Mooring have been known to be placed directly on UCH			diving – where the dive boat goes in neutral to allows the divers to enter the water and wait for the resurfacing of the divers to collect them.			
Artefact Removal 1. Complete removal of artefacts to the surface – looting 2. Removal to cluster artefacts to make for better dive experience (Edney, 2018) 3. Removal to conceal/hide artefacts to later show to divers. 4. Wafting to discover/find artefact but no attempt to redeposit. Adding of Artefacts Memorialisation of a site – often also seen on terrestrial Sites by adding object to commendate the site (Edney, 2018).	4x5 2x3	20 6	Education on the importance of in-situ as the preferred option for preservation and highlighting it as a UNESCO guideline for UCH preservation can help mitigate removal (Manders, 2008). Code of conduct for appropriate dive behaviour. Scuba divers would not pick up an ocean critter the same mentality should be placed on UCH artefacts. Interpretive/heritage trails can be placed on UCH sites to showcase artefacts or alternatively have 'sacrificial sites' to meets the needs of divers (Edney, 2018, p80). Designed by CRM. Mitigates the need for dive leaders to conceal artefacts. Proper dive briefing and intervention of dive leader to help preserve UCH sites (Edney, 2018, p76)	3x4 1x3	12 3	Dive Leaders and Divers Dive Leaders
Intentional contact with UCH - Contact on UCH by touching, kneeling, standing, holding, kicking. - Attaching dive equipment to UCH (penetration lines, moorings, tanks) Unintentional contact with UCH - Accidental body contact by touching, kicking, or poor buoyancy - Equipment contact by loose hoses dragging on UCH, poor	4x5 5x5	20 25	Require additional training to dive on UCH, with the focus on buoyancy control and proper finning techniques. This additional training will help showcase diver competency for UCH diving. Proper dive briefing and checks prior to entering the water. Ensure recreational diver is as streamlined as possible with no loose hoses. Encourage divers not to wear glove on UCH. Gloves give divers the illusion of safety and increases their likelihood of touching, holding, and picking things up (Camp & Fraser, 2012, p35).	3x5 3x5	15 15	Dive Leaders Individual Scuba Diver

buoyance with tanks touching UCH,			Restrict the number of divers on UCH sites. The more divers there are on a site, it gets crowded, which can increase the probability of contact with UCH.			
Exhaled air bubbles Open-Circuit scuba unit expel bubbles which increases the rate of corrosion on UCH (Edney, 2018, p64).	6x3	18	Require penetration dives to be done of a closed-circuit scuba set to eliminate bubbles. This would require diver to obtain a closed-circuit rebreather certification. Limit the number of divers on UCH sites. Reduces the amount of bubbles the site receives.	4x2	8	Dive shop
Pollution - Oil pollution from dive boats - Marine Debris produced from scuba dives on dive boats	4x4	16	Regulate dive boat engine requirements – MOT requirements Limit the number of dive boats on UCH site Make UCH sites a MPA as pollution can severely harm aquatic life.	2x3	6	Boat Captain and crew

B2 Other Anthropological Activities

Hazards & Risk	Risk Rating		Control Measures	Residual Risk		Responsibility
	FxS	RR		FxS	RR	
Climate Change rising ocean temperatures, ocean acidification, deoxygenation, sea-level rise, the decrease in polar ice coverage, coastal erosion and extreme weather events	6x5	30	Current global greenhouse gas emissions must be cut by at least 90% to stabilise and lower atmospheric concentrations of greenhouse gases, to prevent the worst effects of climate change (UN, 2019). This is a passive impact on UCH site therefore mitigating these destructions need to be done on a larger scale. Addressing every area where climate change can be controlled would require an entire thesis in itself and diminish the severity of the situation. So practical measures of slowing degradation of UCH will be listed mainly regarding the re-burial of the site (UNESCO, 2021): Re-burial of site with layers of sand, sandbags, fabric covers and nets, protective metal nets or cage protection (UNESCO, 2021) – for more information refer to : https://en.unesco.org/underwater-heritage/threats-and-protection	5x4	20	Governments, businesses and civil society members
Fisheries Destructive fishing practices such as cyanide fishing, bottom trawling and dynamite fishing	5x6	30	Currently destructive fishing methods is still frequently practiced. The issue to controlling these measures are extended to regulating the open oceans. Create more regulated MPA. Have fewer fishing boats Require these boats to be inspected before leaving the boat Return to traditional fishing methods. Technological improvements to ensure better control of species catching methods.	4x6	24	Governments

Off-shore activities marine construction, and installation projects, such as salvage work, offshore wind farms, marine energy plants, oil rigs, ports, shipyards, shore protection works and military exercises	5x5	25	Marine Spatial Planning	4x4	18	Governing bodies and industries

Appendix C: Ratification of PUCHC

Convention on the Protection of the Underwater Cultural Heritage 2001,
Paris, 2 November 2001

https://en.unesco.org/underwater-heritage/ratification

State Party	Date of deposit	Type of instrument
1. Panama	05/20/2003	Ratification
2. Bulgaria	10/06/2003	Ratification
3. Croatia	12/01/2004	Ratification
4. Spain	06/06/2005	Ratification
5. Libya	06/23/2005	Ratification
6. Nigeria	10/21/2005	Ratification
7. Lithuania	06/12/2006	Ratification
8. Mexico	07/05/2006	Ratification
9. Paraguay	09/07/2006	Ratification
10. Portugal	09/21/2006	Ratification
11. Ecuador	12/01/2006	Ratification
12. Ukraine	12/27/2006	Ratification
13. Lebanon	01/08/2007	Acceptance
14. Saint Lucia	02/01/2007	Ratification
15. Romania	07/31/2007	Acceptance
16. Cambodia	11/24/2007	Ratification
17. Cuba	05/26/2008	Ratification
18. Montenegro	07/18/2008	Ratification
19. Slovenia	09/18/2008	Ratification
20. Barbados	10/02/2008	Acceptance
21. Grenada	01/15/2009	Ratification
22. Tunisia	01/15/2009	Ratification
23. Slovakia	03/11/2009	Ratification
24. Albania	03/19/2009	Ratification
25. Bosnia and Herzegovina	04/22/2009	Ratification
26. Iran, Republic of	06/16/2009	Ratification
27. Haiti	11/09/2009	Ratification
28. Jordan	12/02/2009	Ratification
29. Saint Kitts and Nevis	12/03/2009	Ratification
30. Italy	01/08/2010	Ratification
31. Gabon	02/01/2010	Acceptance
32. Argentina	07/19/2010	Ratification
33. Honduras	07/23/2010	Ratification
34. Trinidad and Tobago	07/27/2010	Ratification
35. Democratic Republic of Congo	09/28/2010	Ratification
36. Saint Vincent and the Grenadines	11/08/2010	Ratification

37. Namibia	03/09/2011	Ratification
38. Morocco	06/20/2011	Ratification
39. Benin	08/04/2011	Ratification
40. Jamaica	08/09/2011	Ratification
41. Palestine	12/08/2011	Ratification
42. France	02/07/2013	Ratification
43. Antigua and Barbuda	04/25/2013	Ratification
44. Togo	06/07/2013	Ratification
45. Belgium	08/05/2013	Ratification
46. Bahrain	03/07/2014	Ratification
47. Hungary	03/19/2014	Ratification
48. Guyana	04/28/2014	Ratification
49. Madagascar	01/19/2015	Ratification
50. Algeria	02/26/2015	Ratification
51. South Africa	05/12/2015	Acceptance
52. Guatemala	11/03/2015	Ratification
53. Saudi Arabia	11/13/2015	Ratification
54. Ghana	01/20/2016	Ratification
55. Guinea-Bissau	03/07/2016	Acceptance
56. Bolivia (Plurinational State of)	02/24/2017	Ratification
57. Kuwait	05/30/2017	Ratification
58. Egypt	08/30/2017	Ratification
59. Micronesia (Federated States of)	04/19/2018	Ratification
60. Costa Rica	04/27/2018	Ratification
61. Cabo Verde	03/26/2019	Ratification
62. Switzerland	10/25/2019	Ratification
63. Niue	11/15/2019	Acceptance
64. Oman	06/10/2020	Ratification
65. Senegal	09/15/2020	Ratification
66. Estonia	11/02/2020	Approbation
67. Mali	03/02/2021	Ratification
68. Malta	04/07/2021	Ratification
69. Poland	05/18/2021	Ratification
70. Guinea	07/13/2021	Ratification
71.Dominican Republic	23/09/2021	Ratification

(UNESCO, 2021)

Appendix D: UNESCO's 15 Guidelines to UCH

UNESCO'S 15 Guidelines to UCH - to be found on the UNESCO website (https://unesdoc.unesco.org/ark:/48223/pf0000190621)

1.	*Protect underwater cultural heritage for future generations.*	Underwater cultural heritage encompasses all traces of human existence having a cultural, historical or archaeological character, lying under water. Over the centuries, thousands of ships, entire cities, and even landscapes have been swallowed by the waves. They constitute a precious heritage that needs to be protected.
2.	*Leave wrecks and submerged ruins untouched.*	The site of a wreck or a submerged ruin is historically important. When objects or any other kind of remains are displaced without prior scientific recording they are deprived of their context and lose part of their significance, they also risk deterioration in drying and their extraction, without appropriate conservation can already lead to their disappearance. Sites should therefore remain untouched by divers, not involved in a scientific archaeological project.
3.	*Obey legal protection of archaeological sites.*	Many underwater heritage sites are protected by the law. Know and understand the applicable regulations before you dive to prevent you breaking the law. *To know the law worldwide see: www.unesco.org/culture/natlaws*
4.	*Seek permission to dive on designated sites.*	Diving on designated wreck or ruin sites often requires a specific permission. Do not dive them without a licence, when it is required, as you may put the site or yourself in danger. Do also respect official directives concerning the limitation of diving in certain zones. Protected sites are often indicated on admiralty charts and marked by buoys or warning notices on the shore.
5.	*Only archaeologists may remove objects.*	Non-scientific diving should remain non-destructive and non-intrusive. Do not move or recover objects other than in the framework of an official archaeological excavation and under the supervision of a professional archaeologist authorized by the competent authorities.
6.	*Do not take souvenirs.*	Dive to enjoy and / or to get involved. Take photographs or document the site. However, do not take any object from a wreck or submerged ruin and do not disturb the site. You would destroy the historic context and damage the object when brought to the surface.
7.	*Respect measures that protect sites.*	Any protection measure (metal cages, sand layers, sonar buoys), placed over submerged archaeological sites by the responsible authorities safeguard them from erosion, irresponsible intruders and looting. They should be respected. Even if you take nothing away – any damage that you do to a protection device opens the way to damage to the site. If you note any damage done to such a device, report it to the authorities.
8.	*Report discoveries to the responsible authorities.*	If you do discover an historic wreck or site do not spread the word. Immediately contact the national competent authorities, who will advise you about the next steps. If your find is important it may be researched or designated a protected site.
9.	*Hand over objects that you took.*	Should you have taken an object from a submerged archaeological site to protect it from extreme risk of loss report it to the competent national authority as soon as possible. If ever you discover an ancient object in the water or at a beach, which is under the threat of private appropriation or damage, contact the competent authority. If this is not possible, then recover it and hand it over to the nearest authority. It can indicate the presence of an archaeological site off the coast and give information about it.
10.	*Do not sell our common heritage.*	Objects coming from a submerged archaeological site should not be commercially traded, but protected. We can learn much about the development of civilisations and our own past from the remains of wrecks and ruins under water. Dispersing this heritage robs us of our past. If you note the sale of illegally acquired artefacts, notify the competent authorities.

11.	*Document discovered sites.*	If you discover a wreck or submerged ruin document (photos, drawings or notes) its precise location and its state. Make a report about it and accompany it by your documentation.
12.	*Be careful when taking photographs.*	When taking photographs, be careful to avoid contact with the wreck or ruin site. A camera is not a licence to move or disturb cultural heritage. Many objects are fragile regardless of size. Improper techniques while taking photos under water can damage sensitive site elements and harm fragile objects with the bump of a camera or tank, swipe of a fin or even the touch of a hand. Camera systems may add weight or be buoyant. Make sure to secure equipment and be properly weighted to avoid contact damage.
13.	*Stay safe.*	Diving wrecks or ruins can be dangerous. Respect safety and health requirements appropriate to the sites in question. Pay attention to depth, time and currents and do not enter into cavities without taking highest safety precautions. Do never dive unaccompanied. Preferably dive only accompanied by a professional and qualified guide and gather information beforehand.
14.	*Be a role model.*	Be a role model for other divers and non-divers when diving submerged heritage sites. Encourage other divers to follow this Code of Ethics. Help create conservation awareness amongst the local community, general public and divers.
15.	*Support ratification and compliance with the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage.*	The UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001) is an international treaty protecting underwater cultural heritage. It sets basic protection principles, guides international cooperation and provides rules for underwater archaeology. Support the Convention.

(UNESCO, 2010)