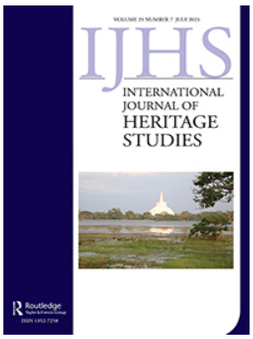

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(Re-)valuing and co-creating cultures of water: a transdisciplinary methodology for weaving a live tapestry of Blue Heritage

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ABSTRACT

This article develops a transdisciplinary methodology for valuing and co-creating 'tapestries' of Blue Heritage. Given impending threats to the environmental sustainability and maintenance of Cultural Heritage surrounding oceans and freshwaters, it is increasingly urgent to develop a methodology that addresses the significance of the past and its rapport with the continuous future creation and valuing of what we here develop as 'Cultures of Water'. This idea encompasses water-related practices that occur in various ways across diverse groups and arenas. Therefore, the proposed methodology is informed by several disciplines, notably History, Ethnography, Cultural Heritage, Arts, Design, Planning, and Geography. It emphasises the creation of a continuously evolving and changing tapestry of knowledge, jointly threaded by local populations, governmental and non-governmental institutions at various levels, industries, businesses, and academia. The tapestry is woven by connecting diverse disciplinary methodologies along specific threads, three on content and six on methods and related key questions. This article presents the methodology and reflects on its practicability and potential based on autoethnographic reflections, literature reviews, and first findings from implementing parts of the methodology in northern Portugal.

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Cultures of water; blue heritage; co-creation; transdisciplinary methodologies; citizen science

1. Introduction

> 'Our weavings in the cosmic web are not self-contained. Rather, they are part of the design of our collective humanity'. Lisa Hunt

This article departs from three observations. First, that Heritage surrounding oceans and freshwaters is at high risk of disappearing – due to environmental degradation and biodiversity loss, and due to the lifestyles that no longer require nor encourage many of the cultural practices, rituals or even entire local economies that had thus far shaped countless local 'Cultures of Water' (Hallgren and Hansson 2021; UNESCO IOC 2022; van Schaik 2015). We develop the idea of Cultures of Water in relation to 'Blue Heritage' in this article, dissociating the latter from strict adherence to Ocean waters, and rather broadening it to include all bodies of water. We use Blue Heritage to seek out specifics for Waters-related Cultural Heritage, to draw participants, and to relate to and challenge the concept of Blue Economics in its quantitative and competitive qualities. But we also engage with Blue Heritage to help develop the specificity of Cultures of Water within it: Cultures

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which are at risk of sinking into oblivion if they are not retrieved to the foreground of contemporary memories and activities. In the north of Portugal, we have observed Cultures of Water manifesting in a close relationship between Heritage, Environment and Society through the long-term bond that local populations have established with water (Coentrão 2022; Roberti 2021). The literature on the relationships between water and culture suggests that this phenomenon is not unique to Portugal (see Boswell, O'Kane, and Hills 2022 and others below).

The second observation this article departs from is that there is still much to be done to bridge the gap between academic efforts to understand and (re-)value Blue Heritage, including its cultural elements, and the unfolding realities of people living and working alongside and with water (Boswell, O'Kane, and Hills 2022; Franks 2020; Gold and Klein 2016; Hein 2020). For example, fishing practices are adjusting to changes in climate and in the natural environment (see Holm et al. 2022; Papaioannou et al. 2021; Snyder and St Martin 2015). Understanding about these changing societal practices is being incorporated into research and environmental planning decisions (idem; Kittinger et al. 2014). However, too little is known about the effect on cultural practices and artefacts. As Boswell (2022, 5) recounts, 'conserving marine ecosystems and safeguarding unique coastal cultures and livelihoods, are key to protecting biological and cultural diversity, as well as the knowledge these can impart in a time of climate crisis'. This article builds on that statement, expanding its claim to freshwaters. Yet, it also takes a step back to allow a less instrumental motivation for (re-)valuing Blue Heritage, emphasising Cultures of Water in particular. It recognises that knowledges and practices that are not immediately important for solving climate change or other pressing challenges, may still be important and valuable to particular people, and this is reason enough to help avoid the loss of such Heritage.

The third observation is that while co-creation and citizen science are not new concepts, they hold an underexplored potential to contribute to bridging disciplinary gaps, to bridging the gap between academia and daily life, and to (re-)valuing Blue Heritage (Fokdal et al. 2021; Trencher et al. 2014). This article defines co-creation as the involvement of diverse actors from thematically and geographically relevant areas to contribute to the ideation, development, implementation and maintenance of a given initiative or research theme (Ramaswamy and Ozcan 2018; von Schönfeld et al. 2019). We apply the ECSA (2015) definition of citizen science projects as those 'actively involv[ing] citizens in scientific endeavour that generates new knowledge or understanding', while considering it key to identify mutual interest and benefit, rather than chiefly the extraction of knowledge from citizens by academia. Citizen science is increasingly advocated, but still finds most application in the natural sciences – despite growing interest in social sciences and humanities (Tauginienė et al. 2020). Co-creation is a more common method in social sciences, especially those concerned with 'action research' (i.e. research that embraces subjectivity and actively attempts to change the studied reality while at the same time studying it; see Somekh 2006). Shaw, Bennett, and Kottasz (2021) apply co-creation in a humanities context, but notably the method is applied to a relatively small set of invited participants rather than to a broad societal group. There may sometimes be logical and legitimate reasons for humanities to be less prone to engaging with co-creation methodologies, such as when studying long-dead subjects, or choosing a more textual or literary approach. Nevertheless, co-creation methodologies have specific relevance in the fields of Heritage and Culture since they provide ways to engage diverse people's experiences and historical perspectives to identify, understand and, within that process, begin to rethink and (re-)value Cultures of Water.

Given these observations, this article proposes a methodology to create what can be called a 'live tapestry of Blue Heritage', with particular attention to the role of culture, and developing the idea of Cultures of Water. The methodology builds on calls for more in-depth and contextualised applications of local knowledges and practices, in which nature, humanity, history, architecture, planning, humanities, geography, politics, arts, and heritage all share symbiotic relationships (Hale et al. 2022; Porter et al. 2015; Sandercock 2022). A transdisciplinary approach is taken, inspired by how Ingold (2011) discusses anthropology, its differentiation and yet similarities to art and architecture and

even philosophy: while there are important differences between disciplines, it is unsustainable to hold on to the differences when bringing together insights from different disciplines is more valuable, interesting and impactful.[1] While acknowledging important drawbacks of approaches that throw together incompatible methods and/or theories (van Assche et al. 2023), this article highlights the relevance of transdisciplinarity by building on the different disciplines brought in by each author. The methodology is based on continuous co-creation involving academics from various backgrounds, as well as actors from pertinent perspectives in a given location. The co-creation spans all phases of the methodology and tapestry creation, from ideation to implementation and maintenance or continued change, with each participant bringing in specific expertise, experiences, cultures, practices and worldviews.

The metaphor of the live tapestry is considered especially appropriate because it highlights the interweaving of individual threads – memories and ideas of each participant – that create a joint picture, without each thread losing its individual characteristics. Furthermore, the tapestry is a form of art frequently used to capture memories, while also allowing them to be recombined and reinterpreted over time (see Carson, n.d. and others). Cultural heritage is intimately connected to space and physical objects, and reflects these, but it is simultaneously more elusive than these grounded elements. The live tapestry allows for the seeking and representing of encounters and divergences that change over time and thus can embody these seemingly contradictory sides of cultural heritage in ways that a static object or list of methods cannot. The tapestry then is about the meeting, bonding and interweaving between objects, people and ecosystems, entwinedtogether to create something greater than their isolated meanings. The tapestry also allows the identification, creation and representation of 'border' spaces, in the sense of local encounters, exchanges and reconfiguration processes. In such border spaces, cultures meet, collide, mix, are reconfigured and can give rise to something novel, without erasing the traces of what once was. For example, for historians, this process is observable notably in encounters between distinct cultures (Burke 2009; Pratt 1992). Using such a metaphor also clarifies and strengthens the spirit of the proposed methodology, so that even when elements (e.g. given methods) are added or subtracted, the collaborative and interwoven aspects will more likely remain.

In the following, section 2 describes the methods used for developing the methodology of the live tapestry. Section 3 presents the results, structured along types of threads that can be picked up as the continuous tapestry is woven and how they might be applied. Finally, section 4 draws together the insights gained and reflects on the role of Cultures of Water in Blue Heritage and the potential of the methodology the article proposes.

2. Methods: identifying and collecting threads

A methodology is more than a method or series of methods. It is an approach to how a given subject can be studied, including the particular ontologies and epistemologies that underlie it. This section describes the four methods used to identify the threads that weave the methodology proposed in the results and discussion. Each of the methods is based on a transdisciplinary approach. The first two methods identify themes that inform the application of the following two methods. Transversally to all methods, a qualitative approach is taken, even though insights and materials of a more quantitative nature are not dismissed. Heritage, being highly reliant on an interplay between the tangible and the intangible, cannot be accurately represented – let alone valued – by *only* quantitative measurements or *only* qualitative means.

2.1 Transdisciplinary autoethnographies

Autoethnography is an established research method that 'seeks to describe and systematically analyze *(graphy)* personal experience *(auto)* in order to understand cultural experience *(ethno)*' (Ellis, Adams, and Bochner 2011, 1; see also Pink et al. 2022 for an application in Design studies).

Here, autoethnography is applied to take advantage of the transdisciplinary expertise among the co-authors of this article. The team brings together backgrounds in Historical, Ethnographic, Cultural Studies, Heritage, Arts, Citizen Science, Geographical, Governance and (Participatory) Planning backgrounds. These disciplines each have their respective background in autoethnography, though except for the Ethnography discipline itself, it tends not to be a very widely used method, likely due to its personal nature and in-built bias. However, it is a valuable choice for the objective at hand, which is to explicitly inquire how each disciplinary background brought together for this article might inform the methods and themes to be included in co-creative work on Cultures of Water. Each co-author's relevant expertise was summarised via a structured written interview[2] focusing on three investigative lines: (i) which methods of research are recognised in the disciplines the researcher is versed in, and which methods the researcher is familiar with that might clash with some of the more common methods of their discipline; (ii) which modes of communication or engagement with local populations (even if historical) and with a general public are recognised, and which the researcher is aware of as being less common in their disciplines, including why they might be less common; and (iii) to what extent and in which ways heritage, environment, and society emerge in their respective disciplines, and, if at all, how this is connected to Blue Heritage. For each investigative line, a reflection on the benefits, drawbacks or elements found lacking was also recounted. These autoethnographic reflections were then analysed and compared in several reiterations by the authors, looking for diverse but also overlapping answers to the three lines of inquiry.[3] This ultimately served to inform the identification and selection of 'threads' that must be included in the methodology presented throughout section 3.

2.2 Transdisciplinary literature review

A broad, structured review of academic literature from the disciplines of History, Cultural Heritage, Digital Humanities, Ethnography, Art, Geography, Political Ecology and Urban and Environmental Planning, was conducted. These disciplines were chosen based on their likely contribution to the theme at hand as well as the authors' familiarity with the disciplines, helping to interpret the results, without denying potential contributions from further disciplines.

For each discipline, articles, books or book chapters were considered, which have discussed transdisciplinarity and co-creation. Within the search engine Scinapse, the following combinations were set per search:

- Discipline as 'Theme' + 'transdisciplinary'
- Discipline as 'Theme' + 'co-creation'

The searches were then first sorted by 'most cited', of which the first five results were analysed; then the same searches were sorted by 'newest', of which again the first five results were analysed. This selection procedure limited the scope of the review to a manageable size while at the same time allowing for a relevant level of breadth. Even when the number of results for a search was relatively small, the results were nevertheless considered relevant enough to include. Interestingly, some search results overlapped along highest cited and newest and across disciplines.

2.3 Interacting with the wider public

As results from subsections 2.1 and 2.2 also suggest, interactions with a more general public (including but not limited to academia and educational institutions) are important for creating and (re-)valuing a live tapestry of Blue Heritage. For this research, the team of authors participated in two large-scale public events set up for science dissemination, and with a focus on 'hard sciences'. The authors brought the theme of Cultures of Water in as a conscious clash with this focus, to help bring Humanities and Social Sciences to such events.[4]

The first event was the European Researchers' Night (NEI) 2022 in Braga, northern Portugal. This is an annual event promoted by the European Union simultaneously in several cities across all its member states. The authors set up an interactive booth at this event, which included objects from marine and riverine contexts for participants to look at, touch and interact with. Additionally, printed photographs of water-related scenes (some including humans and/or animals, some not) and blank paper were provided, and participants were asked to indicate (and if they wanted, write or draw) what images or ideas they thought most represented the relationship they desired for humans and water, or which they would least like to see represent this relationship (see Figures 5 and 6 and discussion in subsections 3.2.1 for some more details). The public was mixed, from four-year-olds to elderly people, and from various disciplinary, occupational and societal backgrounds. The fact that pollution and environmental sustainability (e.g. ice melting, droughts, biodiversity protection, pollution) were topics that people often brought up was likely due to self-selection of the public and possibly a bias in the set-up of the booth. Interestingly, despite Braga not being close to the sea, the results revolved mostly around ocean water. Ultimately, a lot could be learnt about strategies of public engagement, preparation, and, in fact, which activities were most prone to bias etc., especially because of the creative and personal interactions that were possible at this event, and because of the diversity of people involved.

The second event was the 'Festival Internacional de Ciência' (FIC.A) 2022 in Oeiras, southern Portugal (along the river Tejo, near its mouth into the Atlantic sea). This is an annual event that is aimed at schools, who are incentivised to bring their classes to booths that are intended to bring different types of 'science' closer to children and young adults. Here, the Cultures of Water booth used a similar theme as the one at NEI, but was more directed at concrete questions and activities for children of ages six through ten. A relation between cultures of water and sustainability was sought through questions about the children's relationship with water, the specific question differing per age group. For instance, for younger children, the question was phrased as, 'when you think of water, what comes to mind?' or 'when you last went to the beach/river, what did you see/do there?' and then, if it seemed they were up for it, other questions would follow, such as: 'imagine a future, when you're old. How do you think the oceans and rivers will look?'. The children were invited to draw their answers, or write if they preferred, and then to talk about their drawing/writing on film.[5] Again, the most valuable lessons learned for the authors were about which kinds of questions and activities seemed most engaging to which age-groups, the importance of the background of each group, the teachers' involvement, and other such practical points.

2.4 Co-creative cultures of water laboratories

Three Cultures of Water Laboratories (Lab.CA) were conducted to help identify methods of engagement and what different groups would want to include in a definition of Cultures of Water. All of them involved in-depth debates among a series of diverse experts, and were based entirely on voluntary participation and with full knowledge that the results would be used for research purposes.[6]

Each Lab.CA had a specific focus. The first conceptualised Blue Heritage and Cultures of Water within a transdisciplinary academic conference. The second Lab.CA discussed digital and analogue photographic archiving and capture for (re-)valuing Cultures of Water with two local NGOs working on water, each with a specific local population in northern Portugal (RioNeiva and Bind'Ó-Peixe[7]) and a research centre working on Digital Humanities (CODA). The third Lab.CA followed the screening of a documentary about the water-related heritage surrounding the River Neiva in the north of Portugal, and its relation to the environmental challenges of the river and area (Roberti 2021). This Lab.CA then focused on which elements of local Cultures of Water the 16 participants of the event[8] thought should and which should not be preserved, what they thought should be reactivated, and how this might be achieved. Overall, the three Lab.CAs allowed for a wide diversity

Figure 1. Impression of a laboratory of cultures of water (Lab.CA 3). Photo by authors.

of voices (from local populations, municipalities, NGOs, academics, etc.) to be included in determining what Cultures of Water can or should entail, both locally and more generally. Figure 1 gives an impression of how the Lab.CA, in this case the third, was set up.

All three Lab.CAs made it clear that creating the methodology for the live tapestry also needed to clarify a number of points on content and include examples to ground and better explain what is being valued, rather than focusing solely on abstract methods.

3. Results: the threads

This section is structured along threads, which each make up a part of the proposed methodology for weaving a live tapestry of Blue Heritage. The idea of the live tapestry is meant to convey the constant evolution and construction of relations between threads, which sometimes come closer together, sometimes are separated by large spaces between them, and sometimes form harmonious compositions while other times they are more conflictual ones. The live tapestry can be woven together by many hands, and across generations, and some may choose to damage or re-make early parts of it to change the way a story is told. The live tapestry interweaves the complexities of heritage, and embodies the negotiations of what to include (and what not); it can also include wishes for, and visions of, the future (for examples and inspiration, see Carson, n.d.; More et al. 1992; NWW 2023; Pappne Demecs and Miller 2019). Perceiving the methodology through this metaphor secures the connection between the intention and its practical applications, in ways that a list or toolbox could not. It is with this in mind that this research has identified threads, based on key themes emerging from one or more of the methods presented in section 2, with each thread containing insights from several or all of those methods. Note that none of the threads can be described exhaustively here. Rather, the research aims to provide some key insights that have emerged through the methods presented in section 2. These insights should later be augmented through further research and other activities. We begin with the threads concerned with the content of what Blue Heritage entails and why. The content threads are chiefly based on the Lab.CA (section 2.4), and are considered necessary to ensure the inclusion of particular themes irrespective of the method, and because the methods need to be applied to a given content. Next, we turn to methodological threads, which each represent a crucial element in considering how Blue Heritage, and Cultures of Water within it, might be (re-)valued and interacted with. In section 4 we then circle back conceptually to how Blue Heritage includes Cultures of Water and how the tapestry helps to revive, engage and relate the different elements that make up Blue Heritage.

3.1 Content threads - blue, green and brown

The content threads are given the colours Blue, Green, and Brown, based on their representation of water, land, and vegetation, all three of which emerged as relevant to Blue Heritage. It is also not

accidental that one of these colours is primary, one is secondary and one is tertiary. Green is half made up of Blue (and half of Yellow, which appears in the methodological threads, showing that content and methodology are dependent on one another), and Brown depends on multiple colours to exist. Blue, however, can exist on its own as a colour.

3.1.1 The thread of work, past and present

An important recurring theme is related to work-based activities occurring in and/or with bodies of water, such as fishing, the collection of sargassum, naval construction, but also the use of mills and other such activities. Figures 2–3 illustrate how the collection of sargassum has been integrated into a local museum in the North of Portugal, and some photos about this practice that were shared by locals. Practices of work are often ritualised and intensely intertwined with local culture, and cultural artefacts often come from work practices, connecting work with Blue Heritage.

The impact of human-water relations has, in some cases, led to extreme consequences not only on and in the water itself (Markkula 2021; de Souza and Tavares 2021), and for its inhabitants, but also on land and in socio-political relations. The latter is for example demonstrated by the role of codfish catching, distributing and consuming in Portuguese nationalist politics throughout history (Tavares 2021). As such work-related practices change, due to environmental changes (e.g. water temperatures and therefore the presence of particular species), economic and/or demographic shifts (e.g. subsistence from artisanal fishing becoming less attractive to certain groups of people or generations), and other factors, some knowledge is no longer necessary and therefore at risk of being forgotten (Snyder and St Martin 2015). Some traditional practices are lost or reinterpreted across generations, while others are turned into tourist attractions, for example, creating complex new interpretations of the same spaces, activities, materials, etc (Kaul 2013; Porter and Salazar 2005). As Cultures of Water thus shift and adapt to changing work practices, their recognition as part of Blue Heritage can help ensure they are not entirely lost, for future understanding, creativity, sustainability and critical reflection, among other motivations.

Figure 2. Sargassum collection represented in a local museum ('Museu do Sargaço') and with photos of locals, in northern Portugal. Photo by Ana Clara Roberti (2021).

Figure 3. Sargassum collection represented in a local museum ('Museu do Sargaço') and with photos of locals, in northern Portugal. Photo by Ana Clara Roberti (2021).

3.1.2 The thread of leisure and sports, past and present

Water is not only used for work, however, and other practices are just as important in forming Cultures of Water. Leisure and sports also play an important role in solidifying the relationship between humans and water (Roberti 2021). In many ways and in many places, leisure and sports uses of water have become more dominant than work-based relations to water, as tourism becomes a larger source of income. In many cases, this replaces the need to use water for fishing or other industrial purposes. Family beach activities emerge in areas that lost most of their fishing functions, bringing different types of experiences and meanings to the water. Surfing (namely by tourists) has become an important activity and economy in certain locations (e.g. Nazaré, Portugal), and tourism generally seems to be changing local cultures significantly (e.g. Alqueva Dam, Portugal). It remains an open question to what extent such relatively recently proliferating practices (new in terms of their intensity, broad popularity, and surrounding economies) are endangering Heritage or creating new Heritage, and how this should be conceptualised (see e.g. Odyssea Blue Heritage Projects, funded by the European Union). However, leisure-based relations to water do not depend on tourism. Some of the most meaningful Blue Heritage has emerged from the significance of water and water-related locations (e.g. alongside rivers or mills) used for festivities and encounters that are purely local – such as emphasising regular encounters between two communities on opposite sides of a river (Roberti 2021). Figure 4 shows the current state of the Minante Mill along the river Neiva, in northern Portugal, which for the local population represents a place of social encounter and of crossing borders between municipalities and communities, rather than 'only' a mill.

This thread also highlights the importance of sociability constructed surrounding access to water in precarious situations or dry areas, uses of water for healing practices, uses of locations for learning to swim or for encountering others, etc. In many cases, rituals and even religious practices surrounding water emerged as a result (e.g. Sousa, Botelho, and Oliveira 2020).

Figure 4. Minante mill, at the river Neiva, northern Portugal. Photo by Ana Clara Roberti (2021).

3.1.3 The thread of environmental and social sustainability

Often, past Cultures of Water were based on mutual dependencies that enforced a kind of symbiotic relationship, where humans extracted from water but also made sure to sustain it (dos Santos, Conceição, and Bracht 2013), at least to a minimum for their survival to be guaranteed (Holm et al. 2022). Industrial technologies and other developments seemed to make such symbiotic relationships less necessary – though this was often a misjudgement (idem). However, there are also examples of very extractive and destructive, non-symbiotic practices that can be classified as 'traditional'. Indeed, some of these communities are rather against 'conservation' policies because they see these as threatening their livelihoods. Despite some ambiguity in terms of sustainability, both kinds of practices are considered Blue Heritage. Importantly, it seems imperative that environmental sustainability not be perceived only as a process requiring intervention at the level of chemical reactions, etc., issues that some claim could be resolved through technological innovations, but also at the level of human-nature relationships (Maffi 2005; Zapata and Bates 2021).

3.2 Methodological threads - red, yellow, orange, purple, pink and grey

The methodological threads are given the colours Red, Yellow, Orange, Purple, Pink and Grey. Again, there is a mixed use of primary, secondary and tertiary colours, to indicate that there are important baselines but also that mixed approaches are important.

3.2.1 The thread of (multi-generational) engagement

A common insight gained from the various methods described in section 2 was about the necessity, but also challenge, of engaging diverse people of diverse ages. For example, the activity-booths organised by the authors (section 2.3) highlighted the interest that transdisciplinary approaches can have in engaging a wider audience. In one of the booths, the exhibition of objects from rivers and seas that could be touched and examined brought people interested in Biology to the table. They were then surprised that we were working in the Humanities and were often intrigued enough to continue with the activities provided. While we were not biologists, we did have information from a biologist about the materials we brought to share. At the same time, we showed drawings from the sixteenth through

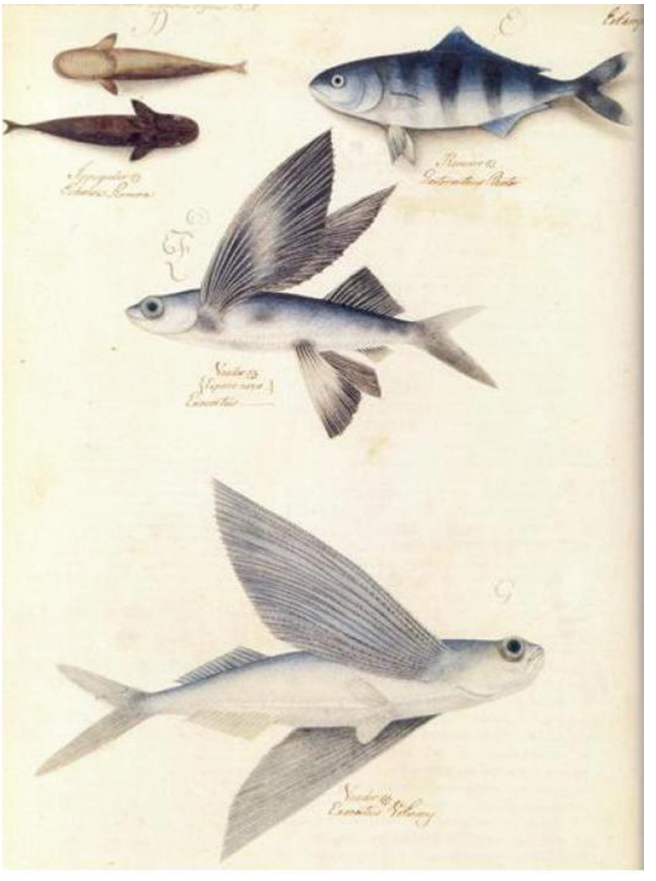

Figure 5. Species of fishes from Joaquim José da Silva's expedition to Angola, including flying fish – eighteenth century.

eighteenth centuries (flying fish, whale-hunting, etc.; see Figure 5), contemporary photographs (of clean or polluted rivers and oceans, animals using water, people drinking or bathing in water, etc.), and other information from Social Sciences and Humanities. With inspiration from these visual materials, we encouraged participants to write, draw and select images without a particular disciplinary allegiance. By offering these elements, the audience of diverse ages felt they could contribute easily. Participants could quickly connect to the idea of a local culture (showing the power of Cultures of Water) and found connections to their personal experiences (see Figure 6 for an impression of the results). An important mediating factor is the influence of parents/teachers/guardians and whether the participants already had previous experiences with similar activities. The more familiar a person was with the type of activity, the easier the participation became, though it was then also marked by pre-conceptions. Whether pre-meditated or not, the shared ideas demonstrated the engagement and recurrent themes that collective thinking about Cultures of Water created (i.e. collectively weaving a tapestry).

The laboratories and other sources suggested that multi-generational engagement helps transmit heritage across generations. It was also debated whether this could be a two-way process: children learning from adults, but also adults learning from children. It could be about literally transmitting heritage – children learning stories from the past. However, it might also be about bringing a different light to the heritage that adults carry through their memories, experiences and artefacts, triggering certain nearly-lost memories, or even creating understanding about contemporary

Figure 6. Cultures of Water booth at NEI event 2022 in Braga, already with many contributions and chosen images from participants. Photo by authors.

practices that may be similar or different from the past in unexpected ways. The third Lab.CA highlighted the wish harboured by older generations to transmit their skills and expertise, and the call for help incorporated in that wish.

Methods of engagement can involve interviewing, filming, or asking participants themselves to use a camera to explore a given topic. With such methods it is crucial, however, to ask participants to explain what they meant to capture, as the intention might be different from the interpretation of a viewer. Working with online programmes such as Mentimeter to ask questions to a larger audience with the answers remaining anonymous can also be helpful.

Whichever method of engagement is used, it is important for the researcher or organiser of any interaction to be genuinely interested in outcomes, and open to surprises, thereby attempting to counteract the bias of (inadvertently) steering such debates too much against what participants might want or be interested in.

3.2.2 The thread of justice and inclusion

This thread considers key questions and notes to consider for each context-specific intervention (such as co-creative workshops to understand and (re-)value local heritage concerning Cultures of Water; the collection of photographs to create local exhibitions; the feeding and dynamising of online archives). An explicitly normative, but academically informed position is taken here, in favour of justice and relevant inclusion (Bonello et al. 2022; Zandbergen and Jaffe 2014), that asks:

(A) Why is it of interest to local populations to participate in a given intervention? Do they want to participate, why or why not?

(B) Which (types of) heritage should be included in a 'tapestry' of a given locale? This question is key, and it is legitimate for expert organisations to prepare an answer. However, this answer must be flexible to changing perceptions based on subsequent interactions with local and other involved actors and populations, who might introduce new ideas. The ultimate selection may be in the hands of the organisers, with the corresponding responsibility, but should always be based on an open debate giving equal footing to all involved.

(C) Once a motivation of interest is clear, how are participants identified and selected? Should any outer selection occur, or should a call for volunteers suffice? Might such a call for volunteers end up reaching some and not others? These questions are a common theme in participatory initiatives in all areas (Taylor 2007; Turnhout et al. 2020) but must be considered on a case-by-case basis. Ideally including consultation of local actors with a certain expertise, making sure to study carefully which gaps consultants from different organisations (e.g. municipalities, NGOs, Associations, schools) might be able to cover. Sometimes, it might be legitimate not to seek to involve all possible actors, thereby not focusing on full 'inclusion', but rather seek out particularly relevant groups for specific themes, yet always with an eye to how the choices might reinforce or counteract systematic exclusion processes (on some of these issues see Cornwall 2003; Ferreira 2020). As with question B, the choices made should always be transparent and accountable to those responsible (i.e. initiators and/or organisers).

(D) Who decides what should be included, notably when calls for materials are determined and when the materials are eventually shared? The materials (e.g. photographs or letters) might be sensitive in ways that someone submitting them might not have considered. Although the idea is to (re-)value material and immaterial heritage, it is also not possible to hold on to every detail equally and thus freeze historical moments into contemporary ones – choices must be made, and they must be well-informed and acknowledged as political choices in the broad sense of the term (Gentry and Smith 2019).

(E) How can transdisciplinary approaches inform a more inclusive approach to the joint weaving of a local tapestry? The experiences described in sections 2 and 3.2.1 indicate that transdisciplinarity offers significant potential to attract diverse publics but also to bridge gaps of understanding between groups that otherwise might not come into contact (Fokdal et al. 2021).

Finally, this thread recognises the impossibility of complete inclusion in any one event or initiative, but highlights the need for awareness, transparency and continuous engagement with questions concerning this inclusion, and considering (systematic) (in-)justices along the way.

3.2.3 The thread of questioning assumptions

Questioning assumptions is important to transcend disciplinary boundaries: from the methods described in section 2 it becomes clear that necessarily each discipline brings its own questions, expertise and methods, but also its own assumptions that often do not match with those from other disciplines. By questioning these, it becomes possible to see a wider range of possibilities for thought, understanding and action – although it can also create a maze of misunderstanding, which one must be guarded against. Sometimes a given expertise must be valued, with its strengths and weaknesses equally recognised (Hølleland and Skrede 2019). And some assumptions, once questioned, might simply be confirmed. However, this is then in itself a valuable finding. Questioning assumptions can also be key for transcending boundaries between academia and local populations, between local authorities and businesses, etc. By harnessing the power of continuously questioning assumptions, making time for such questioning and encouraging it, especially among academics but also among all involved actors, it will be easier to engage, as well as to address the questions on inclusion and justice.

3.2.4 The thread of structure

Beyond the questions of who and what to include, and how, it becomes imperative to know how to structure any gained materials, knowledge, etc., so that it becomes accessible and useful for diverse purposes. It is widely known that the collection of (big) data has become commonplace and the organisation of this data is still a challenge (Gani et al. 2016). Collecting data simply for its own sake is not the purpose of this methodology. Rather, it is to provide guidance for (re-)valuing Blue Heritage in ways that are transparent to all participants and all those for whom this Heritage may someday be of interest. This involves techniques of archiving, indexing and sorting selected contributions. Part of this will already be applied during the selection process of materials and stories, etc. The disciplines of History and Archival Sciences are particularly helpful in this regard,[9] and for the digital sides the Digital Humanities are key. Expert knowledge must be sought in contextually relevant fields to identify how best to organise given materials, and help from local museums, associations, cultural institutions, municipalities and the participating population is likely to generate useful information. The analogy of the tapestry helps again to illustrate the importance of structure: all those involved must have some collective idea of how to place (or not to place) which threads, where, for which reasons, so they create a desired result – however abstract and temporary.

3.2.5 The threads of digital and analogue action

The threads of digital and analogue action are discussed together because they are two outcomes to quite similar questions. First, questions of access are important in both: who is able to access which kinds of platforms and activities, online or offline, and who should have this access? Which online platforms might facilitate knowledge dissemination about, and safeguarding of, Blue Heritage? Are there types of Blue Heritage that warrant (re)collection at local levels but should not be shared more broadly online? Might they rather be included in local events, exhibitions, workshops, film screenings, etc.? It is imperative to care for the privacy not only of those providing information but also of those included in the provided information (e.g. people appearing in shared photographs; stories that include others). At the same time, it may be important to create environments in which the offline activities can create safe spaces in which people can share more sensitive memories, which in a more widely accessible space they could not. The identification of issues of (systematic) inclusion and exclusion must be developed in collaboration with locals and thematic experts. This includes issues of the potential of instrumentalization of shared information, for example for political or specific academic purposes, which should be addressed so that participants can give truly informed consent in their participation.

Finally, a series of digital and analogue activities can be facilitated and proposed, after an exploration of what is contextually considered most interesting and relevant. Here, it is important to keep in mind who can act, when and where, and how this might be (re)negotiated. It can be useful to turn to insights from participatory governance, which has long theorised on these issues for the purposes of participation in public decision making (Healey 2006; Zandbergen and Jaffe 2014). An example of constraints that can be remedied may have to do with (mis-)aligning working hours, care-hours and free-time hours, depending on the people to be involved, with the activities proposed.

4. Final remarks: weaving a live tapestry

The methodology this article proposes for the (re-)valuing and co-creating of Blue Heritage is a flexible one, adaptable to diverse contexts, and providing diverse results. Its transdisciplinarity is one of its key strengths, bringing together History, Ethnography, Cultural Heritage, Arts, Citizen Science, Geography, Governance and (Participatory) Planning. By opening up to a joint challenge, each discipline contributes to the feasibility, inclusion, ethics and justice of the methodology, as well as to the diversity in content that each discipline can bring. Furthermore, each discipline brings in

crucial expertise to interpret the emerging and evolving tapestry in relation to broader historical, political, cultural, and other existing knowledge, understanding, trends and future contributions.

Another key tenet of the methodology, inspired by its transdisciplinary nature, has been the conceptual development of Blue Heritage as one including what we term Cultures of Water. While a utilitarian and perhaps economic focus is often present in discussions of Blue Heritage (Boswell, O'Kane, and Hills 2022), and the connection to a 'Blue Economy' is strong, the diverse approaches to the topic taken in this research have shown the importance and intrinsic value of considering cultures related to water – be it freshwater or ocean water – as key in the co-creation of the history and future of this relationship. We ultimately define Cultures of Water, then, as the closely woven relations between humans and water in all its forms, manifesting in practices, traditions, memories and imaginaries, most notably among people living close to bodies of water. Blue Heritage is certainly made up of more than these Cultures – it is also about the non-human ecosystems on their own, for example. However, Cultures of Water make up an important part of Blue Heritage, as also indicated by the wishes and visions emerging in various activities presented in this paper. The methodology for weaving a live tapestry of Blue Heritage, in co-creation between all those that embody Cultures of Water in some way, therefore seems to be an important contribution for the future of the symbiosis between humans and water. Through its interactive and continuous nature, inclusive of diverse ages and backgrounds, the methodology brings together the cultural and other aspects of Blue Heritage, and keeps it alive and changing, while safeguarding memory for future choices.

The proposed methodology is a challenge, with many open questions to consider at each step, and without blueprints. At the same time, it is a worthwhile challenge, because livelihoods, memories, heritage and sustainability (human and environmental) are at stake. Sometimes it is older practices, sometimes newer ones that are more sustainable. But keeping the memories of diverse practices alive can be important to understand which future the human world *can* and *wants* to build, and in which relations with the non-human. Importantly, this is why the threads that make up the live tapestry of Blue Heritage are full of open questions and open suggestions, and why it is a methodology rather than a method: fundamental questions must be answered contextually, and the universe of potential futures is endless in its diversity. Through this, the methodology of the live tapestry hopes to contribute to such diverse futures, within the bounds of human and environmental justice.

Notes

1. We consciously choose to engage with 'transdisciplinarity' rather than multidisciplinarity, interdisciplinarity, or other related concepts, because we wish to emphasise the idea of placing disciplines into dialogue and benefitting from their complementarity, recognising their differences but also engaging their commonalities to find places of convergence. We are aware of extensive literature on these diverse terms (e.g. Ingold 2011; Lawrence 2015; Nicolescu 2014) but rather than recounting the debate here, we make the conscious and explicit choice for transdisciplinarity, defining what we mean by it as we use it here.
2. The written interview is based on the idea of the narrative interview, which leaves the writer free to share what they think matters concerning a relatively open question, and allows the interviewee to structure their argument with only the researchers' initial questions as guidance and influence (see the method used in Nikolaeva et al. 2022). This structure made sense here also because the respondents were co-authors of this article, and this made it easier to create a distance from the research at hand to respond to the broader questions, as well as giving a more reflective answer, less connected to what the researchers already knew about each other. The written interview could then be discussed and interpreted by each researcher about the others, and by all together, for this article.
3. Naturally, this autoethnographic process is highly prone to bias, but as the interest was not so much in identifying unbiased results but rather facilitating the explicit identification and sharing of transdisciplinary insights, the bias was embraced, rather than checked, and is openly reported here. The authors acknowledge their positionality and inclination towards transdisciplinary thinking and openly make use of this for this article.
4. Both events were entirely voluntary for participants and had an ethical clearance for interaction, and use of results from interactions.

5. Participation was entirely voluntary and with written permission from the teachers for the use of the images. The teachers had gotten respective permission from parents beforehand.
6. Nevertheless, this article is based only on the researchers' own reflections emerging from the interactions, summarising points of discussion and leaving no information traceable to individual participants.
7. Rio Neiva is an environmental NGO, whose essential objectives are to defend and enhance the local environment and the natural and cultural heritage, so as to promote a balanced regional development of the Neiva River Valley in the North of Portugal. Bind´-Ó-Peixe is a cultural association based in Vila do Conde, Porto metropolitan area, whose mission is to enhance the coastal heritage of Northeast Portugal in close collaboration with local populations.
8. Participants included people from the local municipality where the film was shown, some of the people interviewed in the film, people from local NGOs, and some otherwise uninvolved residents of the area.
9. For example, see Koolen, Kamps, and de Keijzer (2009) on the transdisciplinary requirements for organising cultural heritage, and Gani et al. (2016) for an overview of indexing methods. Gilliland and Mckemmish (2004) provide a useful overview of methods used in archival research.

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