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Research Article

Cultural Mapping and the Sustainability of Coastalscapes: A Conceptual Approach

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Abstract: Coastal regions, plentiful in ecological and economic value, have long been hubs for human settlement, recreation, and tourism. However, the growing threats of global climate change and urbanisation are endangering the sustainability of these vital coastalscapes. With nearly two-thirds of the global population living in coastal areas, there is an urgent need for innovative management strategies. This paper explores the critical role of local spatial knowledge, incorporating diverse cultural aspects such as memories, experiences, and oral traditions, to address the challenges confronting these regions. Cultural Mapping (CM) is introduced as a dynamic methodology – transcultural and transdisciplinary – facilitating creative representations of coastalscapes and serving as a vital tool for understanding the complex, reciprocal relationships between people, more-than-human entities, and places. CM reveals the deep-rooted connections that shape coastal communities' identities and sustainability practices by documenting intangible cultural resources and capturing the emotional and sensory dimensions of coastal environments. Drawing on the pioneering work of Pam Hall (2013) and incorporating insights from an in-depth scholarly literature review, this paper underscores the potential of CM to transform both research practices and policymaking. It offers a new lens for sustainability in coastal regions, paving the way for future studies and innovative, community-driven management strategies that engage a diversity of knowledge systems in addressing pressing environmental challenges.

Keywords: cultural mapping; coastalscape; sustainability; local spatial knowledge; intangible cultural heritage; critical cartography

Highlights:

- Cultural Mapping illuminates the emotional, social, and historical dimensions of coastal landscapes, enhancing sustainability efforts.
- Cultural Mapping fosters community collaboration, amplifying local knowledge to inform policies and decision-making in coastal regions.
- Integrating diverse cultural narratives through Cultural Mapping enables a holistic approach to coastal development, bridging scientific and local perspectives.

1. Introduction

Human beings have long recognised the opportunities presented by coastal regions, leading to their attraction as prime locations for settlement, recreation, and tourism (Martinez et al., 2007). These regions are ecologically significant and economically valuable, serving as hubs for human and more-than-human interactions. However, in the face of global climate change, coastal areas are becoming increasingly vulnerable and face uncertain futures (Walsh & Döring, 2018). With nearly two-thirds of the global population living in coastal areas and many major urban centres located along coastlines (Liao et al., 2023), the challenges posed by urbanisation and environmental degradation are numerous.

As pressure mounts on oceans and coasts (Kabat et al., 2012), local spatial knowledge is crucial in achieving sustainability, particularly in preserving coastal landscapes (Jepson, 2000; Grichting & Zebich-Knos, 2017). Research focused on coastal communities must incorporate diverse cultural aspects, including local knowledge, memories, and experiences, to gain a deeper understanding of these territories (Duxbury et al., 2015). Cartographic and spatial data tools, including maps, offer a unique way to integrate such data, visually stimulating critical thinking and providing new methods of organising, representing, and communicating information essential for coastal planning and sustainable development (Duxbury et al., 2015; Kent et al., 2020; de Abreu Santos & van der Borg, 2023). Cultural Mapping (CM) emerges as a transformative methodology in this context. CM extends from artistic and creative mapping – such as identifying assets in the creative sector (Evans & Foord, 2008) to artistic mapping through creative expressions (Duxbury et al., 2019), and the humanistic approach of deep-mapping (Hall, 2013).

Beyond its importance for planning, CM is a valuable research tool that transcends traditional data collection and scientific representation methods (Hall, 2013; Strang, 2010). It promotes inclusivity by compiling a local repository of intangible cultural resources, including aspects of

community identity, oral traditions, and collective memory (Hall, 2013; Strang, 2010). By documenting these elements, CM collaborates in highlighting the deep-rooted connections between people, more-than-human beings, and place (Dowling, 2016). The CM is thus aligned with an ecological, relational, and dynamic understanding of landscapes, where interactions are not only physical but also emotional and sensory, encompassing memory, affect, and the lived experience of dwelling (Ingold, 1993). By highlighting the complex and multifaceted nature of landscapes, CM enables researchers to explore places as lived experiences that transcend simple geographic representations.

However, despite the increasing use of CM in diverse contexts, conceptual frameworks that explicitly connect CM to coastalscape sustainability are lacking. Few studies explore how CM can critically and creatively address social-ecological conflicts in pressured coastal areas. This article addresses that gap by proposing a conceptual approach that bridges these domains and foregrounds local spatial knowledge as central to sustainability transformations. Our paper offers both a critical and updated interpretation of the existing literature. It underlines the pressing need to rethink sustainability in coastal regions, urgently recognising the knowledge, experiences, and sensibilities of those who live and engage with these landscapes. Specifically, we challenge anthropocentric perspectives on cultural landscapes and propose a more ecological and relational viewpoint that acknowledges the ongoing transfiguration of coastalscapes through interactions between human and more-than-human elements.

Furthermore, we bridge collaborative and creative methodologies that support bottom-up approaches to sustainability, aligning with contemporary debates on participation, co-creation, and social justice. By incorporating artistic methods and proposing creative, thick spatial representations, we expand the analytical, communicative, and political possibilities for researchers, policymakers, and communities working in and with coastal territories. The methodological foundation of this article is grounded in a comprehensive review of the literature on CM, enriched by participation in an intensive CM course (de Abreu Santos & van der Borg, 2023). This course, led by international experts, deepened our understanding of CM as a humanistic research practice while revealing its potential influence on cultural policy and spatial planning.

Building on the work of Pam Hall (2013), who explores the complexity of coastal landscapes through a collaborative CM approach in Bonne Bay and the Great Northern Peninsula in Newfoundland, Canada, this article challenges traditional methods of understanding coastal places by emphasising the crucial role of local spatial knowledge for sustainability. Hall's (2013) approach redefines the researcher's role as a learner, engaging in an inclusive, collaborative process where communities are involved and central to the research outcomes.

The article is structured into four main sections, each contributing to the central aim of exploring CM as a conceptual and methodological tool for coastalscape sustainability. Section 2 - Coastal Landscapes: A Conceptual Framework outlines a theoretical framework by unpacking the notions of cultural landscapes, coastalscapes, and the embodied experience of coastal spaces, emphasising the relational and affective dimensions that shape how these landscapes are lived and known. Section 3 - From Maps to Meaning: Critical Cartography and Cultural Mapping focuses on critical cartography and CM, framing mapping as a political and epistemological practice. It highlights how CM challenges dominant spatial representations and enables the integration of local spatial knowledge, particularly through its roles in policy, planning, and humanistic approaches. Section 4 – Cultural Mapping and Sustainability: Living and Knowing in Coastalscapes explores the potential of CM to support more sustainable and inclusive coastal futures. Drawing on Pam Hall's (2013) work, it highlights a powerful example of how CM can be effectively applied in coastal contexts, demonstrating how mapping can make visible situated knowledge and multispecies relationships. Section 5 - Final Considerations consolidates the central argument by positioning CM as a recognition practice and a pathway for rethinking coastalscapes sustainability through plural epistemologies, collaborative governance, and creative, thick, place-based representations. Together, these sections demonstrate how CM can reconfigure the way coastalscapes are understood, represented, and sustained.

2. Coastal Landscapes: A Conceptual Framework

2.1. Cultural Landscapes: Definitions, Meanings, and Interpretations

Discussing the concept of "landscape" – particularly "cultural landscapes" – is crucial within this paper's context, as CM has been linked to the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the idea of cultural heritage and cultural landscapes (UNESCO, 2007). Furthermore, this paper proposes CM as an investigative process capable of uncovering the ecological relationships, histories, and narratives of the landscape, allowing for the visualisation and analysis of these elements for local sustainability.

The term "landscape" originally referred to a genre of paintings depicting natural scenery that emerged in the seventeenth century (Smith, 2013). The concept of "cultural landscapes" was later introduced by Carl Sauer in The Morphology of Landscape (1926). Sauer's broader view of landscape, which emphasised regional patterns over isolated scenes, became central to historical and cultural geography in the second half of the twentieth century (Smith, 2013). By the late twentieth century, landscape conservation also evolved, shifting focus from individual sites to integrated areas. This shift was influenced by organisations such as the The International Council on Monuments and Sites (ICOMOS) Historic Gardens Committee and the International Union for Conservation of Nature (IUCN), which recognised protected landscapes as possessing both cultural and ecological significance (Smith, 2013).

The challenges associated with conceptualising the term "cultural landscape" have led the field of geography to distance itself somewhat from its application. Nevertheless, this concept has gained greater prominence in international conservation efforts. The postmodern re-evaluation of landscapes has engaged multiple disciplines, recognising intangible values acknowledged by UNESCO (Smith, 2013). In 1995, UNESCO published a volume titled Cultural Landscapes of Universal Value, which aimed to provide guidance for identifying and nominating cultural landscapes. This initiative followed the World Heritage Committee's decision to include "outstanding cultural landscapes" within the World Heritage List (Jones, 2003).

However, we acknowledge that what is commonly referred to as a cultural landscape can simply be referred to as a landscape. As Ingold (1993) suggests, landscapes are not merely the products of physical geography, but rather complex tapestries woven from the relationships between humans and more-than-humans, shaped by layers of history, practice, and meaning. The concept of a "cultural landscape", currently popular in the humanities, often downplays or obscures the role of nonhuman agency (Plumwood, 2006). It presents humans as the sole sources of creativity and control in creating what are referred to as "landscapes". This interpretation, nonetheless, reflects colonial and androcentric paradigms that depict the land as passive – a mere object of observation, control, and subjugation (Plumwood, 2006).

Thus, landscapes are not just material environments but rather lifeworld's influenced by perception, memory, and embodied interaction with the world. Both Heidegger's (1971) and Ingold's (2000) notions of dwelling further support this view, suggesting that landscapes reflect how people dwell in the world – physically and through traditions, narratives, and identity. Ingold's concept of "dwelling" suggests that humans cultivate their cultural forms – such as buildings and objects – in direct relation to their practical engagements with the surrounding environment. Rather

than viewing "building" as an external action imposed on a specific place, this perspective suggests that it emerges from within and reflects our intrinsic dwelling in the world (Hall, 2013). This idea resonates with Merleau-Ponty's (1962) concept of embodied perception, which highlights how individuals physically experience landscapes, from walking along the shore to engaging in traditional fishing practices. These landscapes are actively experienced through movement, ritual, and sensory engagement (Hall, 2013).

2.2. Coastalscapes: The Dynamic Interface of Land and Sea

Globally, 84% of nations are situated along coastlines – connected to open oceans, inland seas, or both (Martinez et al., 2007). This extensive geographic distribution yields a diverse range of weather patterns and geomorphological features, resulting in various coastal biomes. Terrestrial environments include forests – tropical, temperate, evergreen, and deciduous – as well as savannas and shrublands, while aquatic systems feature mangroves, salt marshes, estuaries, coral reefs, seagrasses, and the continental shelf (Martinez et al., 2007). In Europe, coastal regions house more than a third of the continent's population (Mikhaylov et al., 2018). Projections indicate that global coastal areas will accommodate over 1.3 billion people by 2060, significantly increasing from the 0.6 billion recorded in 2000 (Allan et al., 2023). Coastalscapes and their adjacent marine environments are among Earth's most productive natural systems. These areas attract a broad spectrum of users, including those who exploit their resources for consumption, such as fishing, and those who engage in non-consumptive activities, such as recreation, education, and scientific research (Crossland et al., 2005). Due to their dynamic social and physical characteristics, coastal areas have historically functioned as transition zones and catalysts for change (Juan Baztan et al., 2015; Jepsen, 2000). The Anthropocene is now widely recognised by environmental and social scientists as an epoch in which human societies have profoundly altered the biosphere (Steffen et al., 2007). Within this epoch, the dichotomy between the social and the natural becomes untenable, as landscape features are deeply interconnected and mutually influential. Thus, a critical and interactive interpretation of coastalscapes becomes urgent, one that acknowledges the inseparable relationship between nature and culture (Ingold, 1993). Failing to adopt such a perspective, risks perpetuating oversimplified and unidimensional conclusions.

As spaces where land and sea converge, coastalscapes present unique and ever-evolving challenges. The intensification of human activities exerts increasing environmental pressures, particularly as coastal areas remain popular tourist destinations due to their visual appeal and recreational opportunities (Ghermandi et al., 2011). However, beyond their aesthetic value, coastalscapes fulfil crucial ecological functions. They provide habitats for diverse marine and coastal species, contribute to shoreline stability, and offer protection against erosion and storm damage to inland areas (Cunha et al., 2021). Furthermore, coastal ecosystems act as vital carbon sinks, capturing atmospheric carbon dioxide and mitigating climate change (Liao et al., 2023). Their role extends beyond conservation; they also support local economies through tourism and resource-based industries while maintaining water quality that is indispensable for marine life and human health (Liao et al., 2023). Thus, preserving and managing these ecosystems is fundamental to sustaining human societies and ensuring their long-term sustainability (Liao et al., 2023).

We can establish more precise boundaries to avoid an overly abstract and subjective discussion regarding the definition and location of coastalscapes. This research considers coastlines encompassing large-scale interactions between aquatic and terrestrial environments, extending beyond the precise physical meeting point of land and water (Martinez et al., 2007). Terrestrial activities, such as upland erosion and pollution, significantly impact aquatic ecosystems, while marine events, such as storms and hurricanes, influence inland regions (Martinez et al., 2007). Coastal areas are therefore defined as including the intertidal and subtidal zones of the continental shelf (up to a depth of 200 metres), regions regularly inundated by saltwater, and the surrounding land extending up to 100 kilometres from the shore (Martinez et al., 2007).

However, examining the phenomenon of coastalisation in isolation, without considering other spatial elements, tends to oversimplify the diversity of coastal areas and disregards their unique developmental characteristics (Mikhaylov et al., 2018). These regions serve as repositories of historical narratives, reflecting ongoing struggles against the sea, land loss, and reclamation efforts through material practices such as diking and land reclamation (Walsh & Döring, 2018). These practices illustrate the evolving relationship between humans and the coast, embodying Ingold's (2000) concept of dwelling. This dynamic interaction highlights the challenges and adaptive strategies of coastal communities as they navigate their ever-changing coastalscapes.

A coastalscape encompasses more than just historically recognised landmarks or protected heritage sites; it embodies the essence of culture itself. Understanding coastalscapes as ecological phenomena requires acknowledging the intricate interplay between materiality, perception, and lived experience (Hall, 2013). By adopting this perspective, we recognise that coastalscapes are more than statistical and cartographic realities – they are spaces of meaning, memory, and identity – that are deeply embedded in the histories and practices of those who inhabit them – calling for collaborative and inclusive approaches to their understanding and governance.

2.3. Experiencing Coastalscapes: Perception, Emotion, and Sense of Place

We are not external to our unique, embodied, geographical, historical, or social context (Hall, 2013). Central to our comprehension of the coastalscape – our ecological environment, whether natural, social, or ideological – "is the place in the world we know it from - literally - our point of view" (Hall, 2013; p. 149). How we perceive and interact with our environment plays a pivotal role in shaping our emotions and sense of self. Our environment is not just a backdrop; it is a dynamic influence that helps define who we are and how we feel (Tuan, 1977).

The individual's experience of a particular situation places them in a heightened state of awareness, enabling them to perceive the various attributes that constitute the spatial, dynamic, and agentive elements of the coastalscape – actors, animals, technological devices, natural forces, and societal structures (Tuan, 1974). Each attribute carries distinct significance for the individual or group, contributing to their cognitive and perceptual constructions of reality. Living in a specific location, human communities must address the practical need to organise themselves spatially: to map resources and services and navigate their environment efficiently (Strang, 2010). This spatial organisation leads to a mental map, a cognitive representation of their surroundings that includes landmarks, paths, and areas of significance. Elements such as frequently used routes, important social or cultural meeting points, areas associated with specific memories or events, and natural features like rivers, hills, and parks become integral parts of this local spatial knowledge. "They act creatively upon their physical surroundings, producing landscapes composed of ideas, categories, knowledges, and values; social and spatial arrangements; economic and political practices; and religious and scientific cosmologies" (Strang, 2010, p. 133).

The coast can be measured and quantified in terms of area or weight. In contrast, coastalscape is inherently qualitative and diverse; it can be described but not easily quantified (Ingold, 1993). As the familiar realm of our existence, landscapes and coastalscapes are not an external entity that opposes us; instead, they coexist with us, simultaneously shaping and being shaped by our presence. Through our experience within it,

it becomes an integral part of us, just as we become entwined with it (Ingold, 1993). It is more than mere scenery; it represents the world as it is perceived by its inhabitants, influenced by movement and the relationships among places. It is perpetually in flux – neither entirely natural nor human-made – but always in the process of transfiguration (Descola, 2016). The traditional distinction between the "natural" and the "artificial" – or the "cultural"– fails to capture this dynamic reality, as the landscape is continuously formed through the very act of dwelling (Ingold, 1993).

This dwelling experience encompasses a learning approach rooted in a close and personal connection with existence, facilitating action and creativity (Tuan, 1974). Within this process, cognition and emotion emerge as integral components that actively shape the individual's adaptation and integration into the world. Self-knowledge cultivation is a fundamental basis for establishing meaningful relationships with others (Tuan, 1974). In line with this perspective, there is a growing recognition of the need to develop processes that capture and nurture collective knowledge and experiences, fostering the creation of spaces conducive to dialogical learning (Jepson, 2000).

3. From Maps to Meaning: Critical Cartography and Cultural Mapping

3.1. Critical Cartography: Challenging Traditional Representations

Mapping is never a neutral act. It is to represent space – and often, to claim it. Critical cartography challenges the belief that maps are neutral representations of reality, revealing them instead as ideological tools shaped by power and context. Influenced by broader critical theory traditions, critical cartography reveals the ideological functions of maps and encourages us to reconsider how knowledge is created and validated (Crampton & Krygier, 2010).

Rather than striving for idealised utopias, critique serves as a valuable guide for social change, engaging with grand visions and the nuanced, everyday contexts of inquiry (Restivo, 2011). Mapping can evolve into a collective sense-making practice in environments prioritising cooperation, diversity, and participation over hierarchy and control. This approach nurtures intellectual and emotional complexity rather than merely reducing spaces to static, measurable data. In this sense, maps are not just tools but texts: metaphorical, situated, and deeply entangled with the power structures of their time. As Harley (1990) famously argued, maps embody values, decisions, and exclusions. Influenced by Geertz's interpretive anthropology, Harley likened maps to rich cultural texts, arguing that their visual rhetoric deserves the same critical attention as literature or historical discourse (Seemann, 2010, citing Harley, 1990).

This critical lens gave rise to various alternative mapping practices – radical, deep, social, and participatory – all of which share a commitment to unsettling dominant narratives and making space for marginalised voices (Hazen & Harris, 2006; Kim, 2015). Kim (2015) calls for speculative mappings that bring cities and territories that are not yet fully seen or understood into view. Similarly, Duxbury (2019) expands the scope of mapping to include "other cultural resources and information recorded by alternative techniques" (p. 22) that goes beyond stereotypical cartographic conventions.

By rejecting the myth of objectivity and embracing multiplicity, critical cartography becomes a means to read and remake the world differently.

3.2. Cultural Mapping as a Methodological Framework

CM emerged from these critical traditions, gaining traction as a field in the 1980s and 1990s alongside the rise of critical cartographies influenced by the "critical spatial turn" in the arts and sciences (Cosgrove, 1999). Research in cultural studies, sociology, political science, anthropology, history, architecture, and biology increasingly adopted a spatial orientation (Warf & Arias, 2014). This spatial turn aligns with a process of hybridisation and intensive re-conceptualisation of space within geographical science (Cosgrove, 2008), extending beyond disciplinary boundaries to become transdisciplinary (Warf & Arias, 2014).

CM is often associated with mappings focused on the creative sector and art industries (Evans & Foord, 2008), establishing strong links between culture and artists, designers, and creatives (de Abreu Santos & van der Borg, 2023). It has gained prominence within artistic communities, encompassing design, drawing, photography, architecture, and the plastic arts, often aiming for more personal and visually creative representations of space. Scholars have applied CM to various case studies, from fostering artistic knowledge (UNESCO, 2007; Hadzic et al., 2015) to regional economic development (Kunzmann, 2004; Pillai, 2013; Freitas, 2016), tourism enhancement (Hadzic et al., 2015; Di Pasquale et al., 2013), creative tourism (Cabeça et al., 2019), and cultural planning (Redaelli, 2012).

CM projects can serve as foundations for community building and collective memory-making (Currie & Correa, 2022). The interpretation of maps and the act of mapping should be comprehensive, considering both visible phenomena and the invisible forces shaping landscapes (Seemann, 2010). CM facilitates transformational outcomes by opening pathways for the co-construction of new meanings. Visual representations such as maps, photographs, and audiovisual materials play a crucial role in contemporary landscape and environmental governance, significantly influencing how landscapes and resources are perceived and managed (Movik et al., 2021).

The literature describes CM as a form of action research that prioritises the active involvement of residents, users, and other stakeholders within the study area (Kingsolver et al., 2017). At its core, this methodology is grounded in citizens' perceptions (Ortega & Bayon, 2015), which are indispensable in research praxis (Merleau-Ponty, 1968), particularly within cultural geography, environmental studies, and sustainability research. Perceptions of place manifest in distinct ways: Tuan (1974) characterises them as either *topophilia*: marked by attachment, affection, and belonging, or *topophobia*: denoting detachment, aversion, and alienation. These perceptual dimensions are essential for revealing attitudes, preferences, and values associated with territories (Seemann, 2010), providing deeper insights into the lived experiences and meanings attributed to places.

Thus, CM must be rooted in bottom-up, community-based, and collaborative processes that uncover overlooked resources, co-construct knowledge, and articulate close and distant perspectives (Duxbury, 2019). These processes recognise diverse forms of knowing and foster meaningful engagement with place. To do so, CM draws on a wide range of creative and participatory methodologies, including mental and cognitive maps (Gould, 1973; Van Vliet & Veldkamp, 2010), walking and emotional maps (Strang, 2010; Weinreb, 2013), narrative cartography (Caquard & Cartwright, 2014), photography and video, visual analytics (Straumann et al., 2014), hand drawings (Lilley, 2000), and more complex digital tools such as Geographic Information Systems (GIS). These varied techniques reinforce CM as an inclusive and multidimensional practice that allows researchers and communities to explore, understand, and represent landscapes in more situated, affective, and creative ways.

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In practical terms, CM tends to follow two dominant paths: (1) as a tool for economic development, where cultural assets are catalogued and leveraged for infrastructure, tourism or creative industries, and (2) as a method for recognising and reinforcing place-based identities, emphasising lived experiences, memory, and non-economic values. This duality is particularly evident in coastal areas, where economic interests – such as fisheries, tourism, and the commodification of cultural heritage – frequently intersect or even clash with local traditions, ecological practices, and affective attachments to place. We propose a shift in how CM is framed and practised by bringing these perspectives together. Rather than an extractive tool that identifies cultural elements for external use or economic exploitation, CM can become a collaborative, community-driven methodology that supports sustainability from within.

3.2.1. Cultural Mapping in Policy and Planning

Most applications of CM have primarily associated culture with the arts and the creative sector, emphasising their interconnectedness with cultural planning processes. CM has often been used to identify and leverage cultural assets within specific contexts strategically (Evans & Foord, 2008). From a planning perspective, CM is described as a tool to foster more nuanced interpretations of space (Duxbury, 2019), particularly in areas experiencing population growth or land-use changes (Evans & Foord, 2008). It is also frequently positioned as a preliminary step in cultural planning, where local artists identify assets and produce maps to support planning initiatives (Duxbury et al., 2015; Duxbury, 2019; Evans & Foord, 2008). However, there remains ambiguity around the definition and scope of CM within this framework.

This ambiguity is partly shaped by shifts in cultural policy over the past few decades. In response to globalisation, digitalisation, and the merging of communication and cultural industries, the concept of culture has expanded beyond the traditional "high arts", with implications for how CM is understood and applied (Redaelli, 2015). In this context, CM has been used not only as a cartographic tool but also for economic measurement, geographic visualisation, and network analysis (Redaelli, 2015).

The UK was an early proponent of CM as a method to assess the economic value of cultural industries, significantly shaping policy discussions and influencing strategies on an international scale. It pioneered this field, producing reports like Mapping the Creative Industries (1998, as cited in Redaelli, 2015) and subsequent toolkits that have guided similar initiatives worldwide. In this sense, CM became closely tied to efforts to frame culture in economic terms.

A different orientation can be observed in Canada, where CM was incorporated into municipal cultural planning initiatives. Through platforms like the Creative City Network of Canada (CCNC), mapping was integrated into local planning with support from resources such as the Cultural Mapping Toolkit (2007, as cited in Redaelli, 2015). Here, the focus shifted toward spatial representation and local governance, though often still grounded in an inventory-based logic.

Further applications emerged that looked beyond spatial distribution. Some studies explored the potential of mapping to reveal relationships and collaboration patterns within cultural networks. Reports like Breaking New Ground: Spatial Mapping of the Creative Economy (2010, as cited in Redaelli, 2015) analysed how creative organisations connect and operate, highlighting not only structural gaps but also the dynamics of cultural production.

These developments illustrate diverse understandings of CM across planning and policy contexts, from asset-based inventories and economic indicators to spatial and relational analyses. The practice often focused on tangible cultural resources such as cultural industries, occupations, organisations, facilities, and events – whether in a Canadian (Jeannotte, 2015) or British context (Evans, 2008).

Recently, however, there has been a renewed interest in incorporating narrative elements into planning processes, reconnecting with early twentieth-century ideas such as those of Patrick Geddes. Geddes viewed culture and memory as integral to participatory planning (Jeannotte, 2015), an idea that resurfaces in some contemporary CM practices. Jeannotte (2015) offers two illustrative examples. In the Wawa municipality, residents contributed stories through online platforms and community meetings, leading to the identification of 310 cultural resources while facilitating local engagement. In the Chippewas of Georgina Island First Nation, the community created a living museum, open to contributions from all members, to honour their heritage and transmit Indigenous knowledge to younger generations (Jeannotte, 2015). These cases illustrate how CM has also been used to foreground narrative and identity within planning frameworks, albeit still within structured and often institutionally mediated processes.

3.2.2. Cultural Mapping as a Humanistic and Deep Mapping Approach

Deep mapping is a concept that is closely related and aligned with cultural mapping. Deep mapping, spatial storytelling, and spatial narratives aim to capture deeper, more reflective, and humanistic perspectives on space and place (Harris, 2015). These approaches challenge traditional, superficial representations of place, advocating for a thicker, more complex understanding of the local landscape ecology (Hall, 2013).

One of the key strengths of deep mapping is its capacity to incorporate an ethnographic perspective (Sherf, 2015; Goldschmidt Kiminami & Dunn, 2025). By prioritising human experience, deep mapping emphasises the importance of individual and collective narratives in shaping spatial understanding. It invites the inclusion of subjective experiences – emotions, sensory perceptions, and personal histories – that often elude more traditional forms of spatial analysis. This ethnographic approach allows deep mapping to move beyond objective measurements and data points, offering a thicker understanding of places (Sherf, 2015; Goldschmidt Kiminami & Dunn, 2025). Deep mapping captures the dynamic interactions between people and places through participatory methods such as interviews, storytelling (Sherf, 2015), and GPS tracking (Goldschmidt Kiminami & Dunn, 2025). Deep mapping, therefore, provides a powerful tool for place analysis, enabling researchers, planners, and communities to gain a deeper understanding of the complexities of space. By integrating sensory and emotional elements with biophysical aspects, deep mapping encourages a more comprehensive and humanistic approach to spatial research. This makes it an effective tool for projects focused on local sustainability, urban transformation, and community engagement (Sherf, 2015; Goldschmidt Kiminami & Dunn, 2025).

Unlike traditional topographical maps, which typically focus on physical features, deep maps capture the spirit of a place by intertwining diverse disciplines and temporal layers. For instance, deep maps might incorporate First Nations history, ranching or ski resort traditions, local botany, and geological, geographical, and autobiographical insights (Scherf, 2015). It enables the correlation of various data and analyses, creating a picture of the relationships that permeate local cultures. Like CM, it typically employs a mixed-methods approach, encompassing both collective and community data collection and analysis, as well as more complex GIS tools that integrate memory, imagination, land, and maps (Crawhall, 2007). A central part of both CM and Deep Mapping projects is the involvement of local communities through informal conversations, meetings, collaborative workshops, and field activities (Pillai, 2013).

4. Cultural Mapping and Sustainability: Living and Knowing in Coastalscapes

4.1. Pam Hall's Work: Towards an Encyclopedia of Local Knowledge

Hall's (2013) work aligns perfectly with our argument that CM should be more than a representational tool – it can actively engage communities, integrate artistic and participatory methodologies, and contribute to a more situated understanding of coastalscapes. Instead of critiquing or reinterpreting Hall's (2013) work, this section underscores its relevance as a precedent that supports our theoretical and methodological framework. We advocate for more initiatives like Hall's (2013), which reinforce the potential of CM for coastal sustainability.

Pam Hall's (2013) research emphasises the transformative potential of CM as a collaborative and inclusive process. Hall utilises CM's discursive representational forms to capture the cultural characteristics of coastal landscapes. This section showcases Hall's work, illustrating how CM can be a powerful tool for uncovering and valuing the repository of intangible cultural resources inherent to a place while supporting local sustainability initiatives. The work Towards an Encyclopedia of Local Knowledge, developed by Pam Hall (2013), is a pivotal example of how CM can reveal the intimate connection between communities and their coastalscapes. The project's origins are rooted in the communities of Bonne Bay and the Great Northern Peninsula on Newfoundland's west coast, Canada. These areas, rich in cultural and ecological significance, became the site of Hall's research, supported by the Community University Research for Recovery Alliance (CURRA) at Memorial University (Hall, 2013).

Hall's fieldwork spanned several years, during which she spent approximately five months in the region, engaging with over 80 collaborators from more than 20 communities. Through interviews, informal conversations, and participant observation, Hall gathered stories and local knowledge, exploring how people relate to their environment, particularly the local coastalscapes (Hall, 2013).

The Encyclopaedia created through collaborative efforts is an educational tool that showcases culturally significant assets, including stories, animals, and geographical locations within the coastal environment. This is illustrated in Figure 1, which identifies the location of lobster from Bonne Bay to Anchor Point in Newfoundland and Labrador. Here, Hall's CM approach transcends simply documenting tangible heritage; it centres on capturing the dynamic, intangible elements of culture that shape coastal landscapes.

Figure 1. On the location of Lobster from Bonne Bay to Anchor Point. In: Hall, (2013). Available at: https://encyclopediaoflocalknowledge.com/chapter1/on-the-location-of-lobster-from-bonne-bay-to-anchor-point/

By focusing on the role of the coastal landscape in local identity, the Encyclopaedia illustrates how CM can document the intricate relationships between people, their environment, and their histories. Hall's work reveals how this CM process contributes to understanding and valuing the deep-rooted connections of coastal communities to their environments (Hall, 2013).

Her background as an artist heavily influences Pam Hall's approach to CM. Many of her representations are not just maps in the traditional sense but somewhat layered collages of information, allowing for a more profound and holistic understanding of a place, as shown in Figure 2, which depicts the process of knitting heads for lobster pots. Hall's use of artistic practice in CM is intentional: it aims to transcend traditional

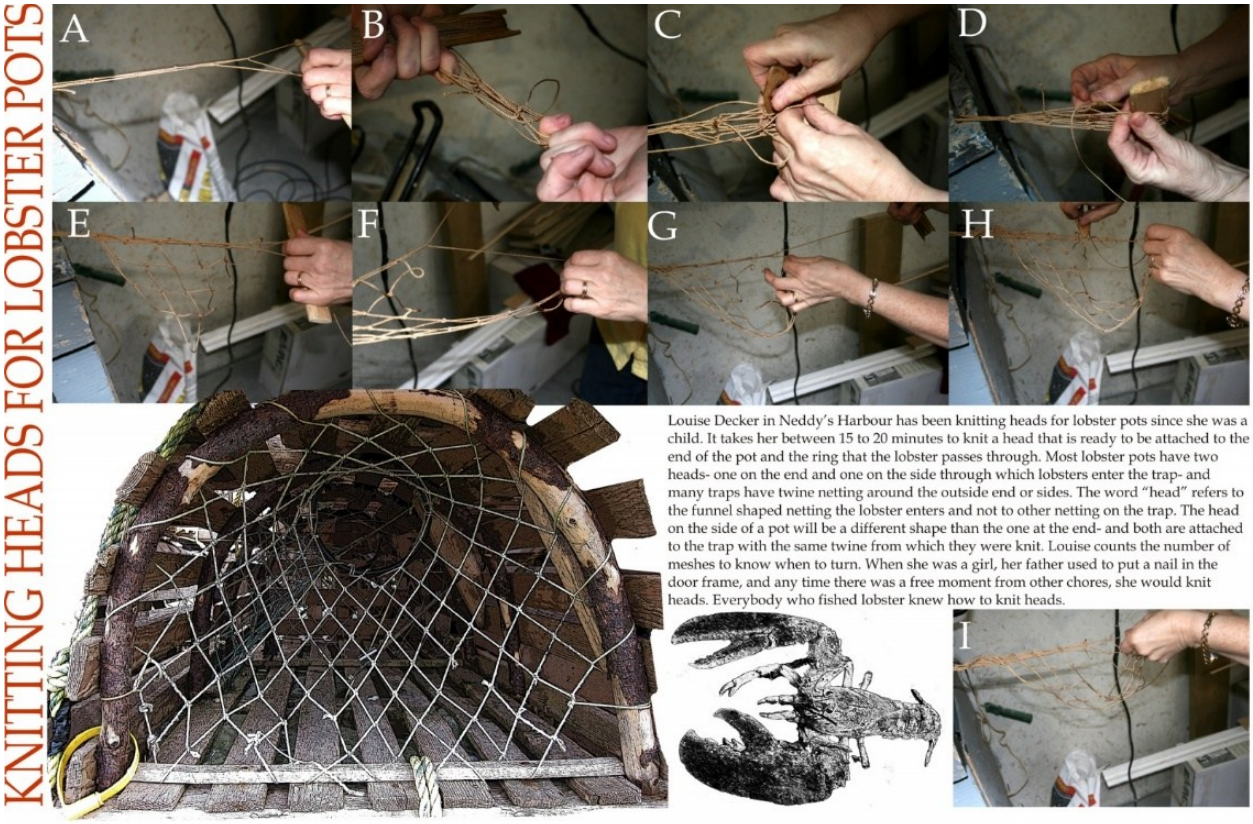

Figure 2. Knitting Heads for Lobster Pots. In: Hall, (2013). Available at: https://encyclopediaoflocalknowledge.com/chapter1/knitting-heads-for-lobster-pots/

cartographic methods and offer new ways of engaging with place. Her work challenges the notion that art and academia are separate domains, urging that the creative expression found in CM can offer valuable insights to academics, professionals, activists, and community collectives (Hall, 2013).

One of Hall's key contributions is her exploration of alternative sensory dimensions to represent place. Traditional maps tend to prioritise visual representations, but Hall pushes beyond this limitation. In her work, artistic practice incorporates sensory experiences such as smell and touch, capturing the essence of place in a more immersive way, as shown in Figure 3, which illustrates the process of skinning eel with a fork and knife (Hall, 2013). This multisensory approach encourages new forms of understanding, challenging the conventional and often reductive representations of landscapes.

Hall also engages with ecological consciousness in her work, confronting and exploring deep-seated misconceptions about the separation between humans and nature. As she illustrates, humans are not passive observers of the ecological narrative but active participants, as shown in Figure 4, which depicts the collaborative process of revealing commonplace knowledge. The sustainability challenge, therefore, involves embracing an ecological identity that nurtures the long-term health and functionality of the systems in which we live (Plumwood, 2006). In this context, CM becomes a tool for reimagining the relationship between people and their environment, capturing the essence of a place's cultural identity far beyond what a conventional heritage inventory could convey. It reveals individuals' subjective, sensory, and existential bonds with their coastalscapes.

4.2. Cultural mapping for the sustainability of coastalscapes

Sustainability studies must integrate the significance of citizens' and local communities' perceptions and experiential dimensions within their praxis. Furthermore, these studies should strive to explore alternative approaches capable of transforming human societies characterised by hierarchical relationships and marginalisation into authentically sustainable communities (Graeber & Wengrow, 2023). To cultivate a culture of sustainability, it is imperative to prioritise conscious-raising activities. Here, CM holds immense potential to generate positive impacts in local coastal areas by adopting a novel and collaborative approach to knowledge production (Hall, 2013), which diverges from the banking education model prevalent in the Anthropocene (Freire, 1980; Galafassi et al., 2018). CM represents an alternative educational praxis for sustainability, with its fundamental aim being the inclusion of citizens and their experiences in the process of place-making while simultaneously paving the way for dialogical learning and exploring new pathways for self-determination and self-governance.

Research on the social-cultural dimensions of how landscapes are perceived and interpreted constitutes a well-established interdisciplinary field encompassing geography, anthropology, and sociology. However, the study of coastalscapes remains relatively underexplored (Döring & Ratter, 2018). To date, coastal areas and the processes of coastal change have received limited attention within the extensive literature on place attachment, sense of place, and place belonging (Walsh & Döring, 2018). While much of the existing research focuses on responses to socioeconomic and demographic changes related to tourism and residential development in coastal locations, the exploration of coastal places as sites imbued with emotional, social, and cultural meanings and values is still in its early stages (Walsh & Döring, 2018). Coastal and marine regions are gateways

connecting land and sea with unique landscapes and seascapes and related tangible and intangible cultural heritage, such as underwater and coastal antiquities, coastal archaeological sites, traditional material cultures such as fishing, maritime communities, and traditional gear and instruments (Ounanian et al., 2021; Hall, 2013).

Figure 3. On skinning eel with a fork and knife. In: Hall, (2013). Available at: https://encyclopediaoflocalknowledge.com/chapter3/on-skinning-eel-with-a-fork-and-knife/

Figure 4. Working together: Revealing commonplace knowledge. In: Hall, (2013). Available at: https://encyclopediaoflocalknowledge.com/chapter2/working-together-revealing-commonplace-knowledge/

Closely observing these coastalscapes and illuminating previously unrecognised aspects is a valuable pursuit. It enables us to uncover and share insights that merit acknowledgement. The practice of active listening, especially when we remain open to new perspectives, demonstrates a commitment to being present (Hall, 2013). This level of attention is important and vital, as it underscores the value of the information we encounter. By valuing (or revaluing) overlooked or marginalised knowledge, we enhance our current dialogues and enrich our interactions with one another. This practice serves as documentation and highlights this knowledge as a vital contribution to our collective understanding (Hall, 2013).

Framing a question as simple as "What do you know about…?" does more than express curiosity – it acknowledges the presence of knowledge and conveys respect for it (Hall, 2013). Demonstrating a genuine willingness to listen and a desire to learn from another creates an opening for teaching, something most people naturally embrace. To make someone your teacher, first, become their student (Hall, 2013). This idea resonates with Paulo Freire's (1980) concept of dialogical learning, where knowledge is co-constructed through mutual exchange rather than imposed from above. This CM approach to dialogical learning is particularly relevant to the place's sustainability, as it fosters an inclusive exchange of knowledge that integrates scientific expertise and local, place-based understandings. Freire's pedagogy emphasises that learning is not a one-way transfer but a co-creation process, where different forms of knowledge – academic, traditional, and experiential – intersect (Freire, 1980). In the context of sustainability, this means recognising that local communities hold valuable insights into ecological balance, resource management, and historical environmental shifts (Stratoudakis et al., 2023). By engaging in dialogue, researchers, policymakers, and residents can collaboratively shape strategies that respect local identities and ecological realities, ensuring that sustainability efforts are not imposed but emerge from within. This collaborative approach turns sustainability into a socially consented way of being rather than an environmentally imposed imperative.

This conceptual basis highlights two fundamental features of the CM inquiry that contribute to constructing sustainability pathways: the process and the products. Both allow for new relationships and interpretations of the integral coastalscape – having a holistic and critical view of its characteristics – biophysical and sociocultural. It is a process in which they will be collectively built with the community that opens space for the meeting of the local spatial knowledge in a dialogical manner whereby locals co-construct narratives, cartographies, and geographies on and in place, which boosts not only their social-ecological literacy but also their feeling of identity, creativity, and innovation (Hall, 2013; Parker, 2006). Mapping processes represent moments of dialogical learning and collective empowerment. At first, the design and aesthetics of the products generated may not be as predominant as the process itself (Seemann, 2013). It is a product when materialising in multiple maps – capable of transmitting new data and experiences about the place through thematic and dynamic maps, images, audio, and videos, contributing to the projects' dissemination, reach, and social-ecological impact (Wood, 1993; Wood, 2010). On the other hand, the representation of the data collected through maps, graphs, diagrams, photographs, statistical databases, videos, and narratives makes CM a valuable praxis for information gathering. It contributes to developing strategies for territorial planning in an accurate and sensitive analysis of people, places, and environments (Cook & Taylor, 2013).

Regardless of its aesthetic quality or presentation, the visual element plays a pivotal and influential role in the processes of translation, interpretation, representation, and the mobilisation of meaning (Hall, 2013). It significantly contributes to the construction and comprehension of knowledge across various contexts. Visuals convey information and shape perceptions, influencing how audiences engage with and respond to ideas. As Hall (2013) emphasised, these dynamics underscore the importance of visuals in both individual and collective understanding, highlighting their capacity to communicate complex messages and facilitate the dissemination of knowledge. Additionally, it is important to recognise that CM generates more than just visual images; it frequently results in hybrid products that are enhanced by photography, video, film, GIS databases, digital media, and hypermedia (Strang, 2010).

Initiatives such as Pam Hall's project (2013) are vital in expanding knowledge beyond conventional academic boundaries. By fostering meaningful dialogue among diverse communities, these projects create dynamic and engaging intersections that connect various disciplines. Hall's work serves as an exemplar of how transdisciplinary efforts can blend perceptual, conceptual, critical, and creative forms of knowledge. This integration enhances understanding and lays the groundwork for fruitful partnerships and collaborations among various knowledge holders (Hall, 2013). Through its transdisciplinary and transcultural character (Balibar, 2011), CM enables a plural and multi-frame environment capable of encompassing the experiences and knowledge of different local actors that extend beyond an inventory of local assets (Duxbury et al., 2015; Hall, 2013).

Through this CM methodology, Hall's project showcases the potential for diverse groups to unite, share their unique perspectives, and co-create visual representations that illustrate their intricate coastalscapes. These cultural expressions can encapsulate structures of meaning and value specific to individual communities, reflecting the essence of the local coastalscape (Pillai, 2013). Additionally, such initiatives serve as compelling models for local sustainability efforts by fostering an ecological understanding of environmental, social, and economic issues. By engaging a wide range of stakeholders, from academic experts to community members, these projects can effectively address local needs and promote sustainable practices that resonate with a broader audience.

5. Final Considerations

The integration of social-ecological research for sustainability still falls short of its potential. Many studies in this field overlook integral dimensions such as experiences and cultural aspects (Guerrero et al., 2018). However, a growing recognition of the importance of social sciences and critical theory in understanding the complexity of social-ecological systems is gradually shifting this paradigm (Castillo et al., 2020). Critical praxis developed in research, activism, and policy emphasises the importance of collective constructions for a sustainable future (Hackmann et al., 2013). However, such a collective construction claims an integral view of coastalscapes and demands a transdisciplinary and transcultural approach (Balibar, 2011). It is imperative to move beyond the banking model of education (Freire, 1980) and embrace cultural and knowledge heterogeneity. CM carries this critical theoretical perspective with significant potential for a social-ecological-cultural turn, which leads to a key conceptual tension that underpins its practice: how we understand and frame the idea of culture itself.

As this paper has argued, how we conceptualise culture has significant implications for how coastalscapes are understood, mapped, and governed. Distinguishing between culture as an industry and as experiential and relational is fundamental for grounding CM in more inclusive and transformative frameworks. When culture is primarily framed as an industry resource to be leveraged through tourism, branding, or the creative economy, cultural mapping risks becoming a tool for commodification, privileging marketable assets while overlooking less visible yet deeply meaningful practices and relationships. By contrast, a lens of culture as experiential and relational allows for a more nuanced and situated en-

gagement with coastalscapes, emphasising memory, belonging, intergenerational knowledge, and more-than-human entanglements. This perspective supports CM as a method for inventorying cultural elements, surfacing lived experiences, contesting dominant narratives, and reclaiming spaces through collective storytelling and representation. The distinction is not merely conceptual. It directly addresses CM's role in promoting local sustainability and justice in coastal territories under pressure. Rather than reinforcing extractive logics, the approach proposed here insists on moving beyond instrumental mapping to embrace more critical, creative, and deep collaborative methodologies capable of revealing the complex cultural geographies that sustain coastalscapes.

As maritime and coastal activities diversify, implementing CM in sustainability initiatives does not come without difficulties. One of the key challenges lies in the multiplicity of power-knowledge systems that intersect in coastal spaces (Foucault, 1980). These areas are shaped by diverse actors, including fishers, policymakers, conservationists, tourists, scientists, and Indigenous groups, who hold differing and sometimes conflicting perceptions of sustainability. Bridging these perspectives requires careful facilitation to ensure that dominant interests do not overshadow marginalised voices. Despite these challenges, CM's potential to foster more inclusive, collaborative, and context-sensitive approaches to coastalscape sustainability makes it a crucial tool for navigating coastal change. By integrating diverse ways of knowing and valuing the coast, CM can collaborate to reframe management from a purely regulatory exercise to a more holistic, democratic, and belonging process, ultimately contributing to more resilient and meaningful coastal futures.

CM shares similarities with other geographic and social science methodologies, such as deep mapping, community mapping, social mapping, cultural ecosystem mapping, and participatory geographic information systems (PGIS). However, this article focuses on CM as an ethnographic method (Hall, 2013; Strang, 2010), allowing for an in-depth understanding of the local culture-praxis relationship through narratives and stories. This humanistic approach to CM does not seek to quantify attributes and perceptions but rather to understand the local culture in its context through creative thick representations and to delve into the intricate and evolving connections between individuals and their environments, both past and present (Strang, 2010). Such creative, thick representations – poetic, metaphorical, symbolic, iconic, and deeply personal – offer pathways for engaging with place in ways that analytical or quantitative approaches often struggle to achieve (Hall, 2013). These forms of expression are not superior but distinct, with the visual especially possessing the potential to transcend disciplinary divides, educational backgrounds, and even linguistic barriers. In the context of local sustainability efforts, embracing multiple modes of meaning-making becomes critical (Hall, 2013). In this sense of being creative, art can illuminate environmental challenges, convey the emotional and cultural significance of coastalscapes, and foster deeper connections between communities and their surroundings. By integrating artistic expressions into sustainability dialogues, we can create more inclusive and resonant ways of understanding and caring for the places we inhabit. From this perspective, mapping coastalscapes extends beyond cartographic representation to become a recognition practice – an acknowledgement of the entanglements between the organism-in-its-environment (Ingold, 2000).

By re-evaluating the fundamental principles of coastal development and adopting innovative tools such as CM, we can establish a pathway toward genuinely sustainable coastalscapes. This shift necessitates a collaborative and transdisciplinary approach that brings citizens, scientists, policy, and decision-makers to address the complex challenges of coastal social-ecological systems. Through inclusive and co-constructed science – built with local communities, listening to their stories, and valuing their ways of knowing, perceptions, and emotions – research is no longer enriched by community knowledge but made possible by it. There is no legitimacy without these lived, situated, and embodied experiences, which ground the very process of knowing and belonging. Rather than complementing science, local spatial knowledge constitutes it when rooted in shared histories, struggles, and place-based relations. Translating local narratives into actionable policies that consider social-ecological priorities allows these perspectives to be incorporated into policy and decision-making processes, and science can potentially drive the development of more equitable and locally resonant solutions.

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