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Review

Characterizing Islandscapes: Conceptual and Methodological Challenges Exemplified in the Mediterranean

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Abstract: Islands across the world have evolved at the interface between land and sea, thus comprising landscapes and seascapes. Many islands have also been influenced by anthropogenic factors, which have given rise to mosaics of anthromes (*sensu* Ellis and Ramankutty). These elements of landscapes, seascapes, and cultural impacts in varied proportions, generate unique environments which merit a unique term: islandscapes. The use of the term islandscape is advocated as the only term which encompasses all of the constituent components of an island, in a holistic manner. The aim of the paper is to evaluate the applicability of existing landscape and seascape character assessment methodologies in an island context, and to propose a methodological framework for mapping the space which defines the term 'islandscape'. The challenges and opportunities stemming from the use of the term are exemplified with reference to the Mediterranean islands.

Keywords: anthromes; islands; landscape character assessment; mapping; seascape assessment; typology

1. Introduction

Island classifications across the globe are mainly based on an island's origin [1], and its location within an inhospitable matrix, *sensu* landscape ecology theory [2]. Some of the existing island classifications rely on the geomorphological characteristics, size, coastline shape, and altitudinal profile [3,4], whilst others focus on the components of insularity (distance from mainland, nearest island, clump/group) [5]. Another distinction is that between offshore islands separated from the mainland by deep sea (>120 km), and land bridge islands separated from the mainland by shallow sea [2]. Whereas the main factors used in these classifications exert an indisputable influence on an island's character, there are very few suggestions as to how we should classify the landscape and seascapes within these islands, and which of those factors have the potential to account for differences with their mainland counterparts.

Sea, coast, and land all contribute to an island's character. The terrestrial component of an island may not be sufficient to support a human community, and so recourse to coastal and/or sea resources becomes essential. The very nature of an island reflects a degree of isolation; this could be an advantage where competition for resources is concerned, or it might constitute a disadvantage if confinement on the island is necessitated. Often, islands are examined in isolation from the sea which surrounds them (and the distance to the mainland or other islands). The sea has the role of the conduit, but can also be an obstacle in colonization, settling, movement, communication, and exchange (to and from

the wider world), facilitating the importation of ideas and innovations from neighbouring islands or the continent. Such links often lead to the importation of plants and animals, both deliberately and accidentally, and result in changes in, and even the extinction of, island flora and fauna [1].

On any island, the importance/dominance of the seascape over the landscape, or vice versa, usually depends on the size of the island and is manifested by nature and culture. Compared to the mainland, islands are physically bounded, more susceptible to externalities, and, depending on the size of the island, the human imprint, i.e., the anthrome (*sensu* Ellis and Ramancutty [6]) is more evident. Therefore, every attempt to characterize an island's landscapes should reflect the above elements. In addition, as is the case with any land- or seascape, their islands' counterparts are also a product of physical attributes and cultural imprints. While the first are relatively easily mapped and information is usually readily available, this is not the case for the latter. This is a result of different mapping traditions, disciplines, and the availability of datasets [7]. Can the contribution of the constituent elements of an island and their influence on its character (e.g., landscape and seascape, and its neighborhood) be assessed? In order to test this, it is necessary to either develop new tools or adapt existing ones, for improving our understanding of the processes that operate at the scale of an island (land + sea). In particular, there is a need to understand the interplay between marine, coastal, and hinterland zones, to define the spatial boundaries of islandscapes, and to identify the critical variables for developing a classification which includes an island's reach, beyond its immediate boundaries. Equally important is the conceptual framework within which characterization should take place.

Islands across the globe have always held a particular fascination, and those of the Mediterranean are no exception. Due to their position, Mediterranean islands are among the most visited, studied, and exploited. Overall, there are c. 5000 Mediterranean islands, and although the largest islands dominate (Table 1), all have a special place in human and environmental history. Unlike isolated oceanic islands, Mediterranean islands are located adjacent to the mainland of three different continents, with which they share many similarities in relation to the biotic and abiotic environments. Indeed, they host large numbers of biota, and are characterized by exceptional cultural elements, while at the same time, are subject to intense environmental and socio-economic pressures. The latter have transposed wildscapes/landscapes into anthromes of varied types (*sensu* Ellis and Ramankutty [6]), which are themselves dynamic.

Most of the islands in the Mediterranean are biodiversity hot spots which have provided refuge for many plant species, including endemics, several wild relatives of crops [8,9], and contributed to evolutionary differentiation [10,11]. The large Mediterranean islands "shared" some common elements before the arrival of humans, such as dwarf elephants and hippopotamuses [10], but also had distinct differences [12]. Apart from being biodiversity refuges, Mediterranean islands provided the backdrop for some of Europe's early civilizations. Mediterranean island landscapes have great symbolic value; prehistoric and historical monuments, and mediaeval cities, are preserved on most islands and signify their culturally varied past. Moreover, new archaeological findings are constantly being unearthed. The Taulas and Talayots of the Balearics, the Nuraghi and Torri of Sardinia and Corsica, the Neolithic stone Temples of Malta and Gozo, and the Minoan Palaces of Crete, are all evidence of southern Europe's ancient fabric. They also reflect the islands' importance to ancient civilizations and the role of the sea. Modern practices, e.g., tourism and land abandonment, are amplified on the islands, due to insularity and their specific constraints, which often threaten the islands' sustainable future [13].

The idea that islands extend beyond their physical boundaries is not new [14–16]. However, classification and characterisation attempts so far, which rely on conventional mapping, have not adequately captured island space, and this is also the case in the Mediterranean. The aim of this paper is to review and evaluate the applicability of existing landscape and seascape character assessment methodologies in an island context. The paper employs the term islandscape, as proposed by Broodbank [15], and examines its potential for island character mapping, drawing examples from

the Mediterranean. As such, it is not a literature review on the aspects of insularity, as debated by different disciplines [1,3,5].

Table 1. Characteristics of the major Mediterranean islands [9].

Island	Country	Size (km^2)	Population (1000)	Density (Inhab/km^2)
Sicily	Italy	25708	5097	198
Sardinia	Italy	24090	1661	69
Cyprus	Cyprus	9241	784	85
Corsica	France	8681	272	29
Crete	Greece	8261	559	68
Balearics	Spain	5014	768	153
Maltese Archipelago	Malta	316	400	1266

2. Setting the Scene: Landscapes, Seascapes, and Islands

The European Landscape Convention (ELC) defines landscape as, " . . . . . an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" [17], while an analogous definition to the ELC was proposed by Briggs and White [18] for the term seascape: ' . . . an area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land and sea, by natural and/or human factors'. The character of the island results from the interaction of land, sea, and their ecotone, i.e., the coastal area. The differences in an island's character can be divided into three constituents: environmental, cultural, and visual. The origin of the island gives rise to distinct differences in two of the principal physical factors of landscape character i.e., landform and geology, but also sea depth and tides. Geology in particular may reflect links with the mainland or other surrounding islands, demonstrating a degree of physical "dependence". In addition, the sea depth and tides exert an influence on an island's character and associated human activities. The tidal range of coastal waters, although an important factor in describing the nature of coastal landscapes, is probably less important in the Mediterranean context, where the typically micro-tidal regime has had a limited impact on the evolution of coastal landscapes.

All Mediterranean islands have different colonization histories and relationships with the mainland andsurrounding islands. This has led to very different cultural settings throughout their history, not only between islands, but also on the same island, usually expressed as a series of overlaying structures on land. Therefore, many, varied anthromes are testament to the human imprint. At a crossroad of civilizations, islands have been centers of great civilizations during prehistoric times, places to conquer because of their inability to resist invaders, and today, many remain powerless in political terms because they have little autonomy from mainland governments [13]. In some cases, they have retained their distinctiveness, whereas in others, uniformity with the associated mainland has been imposed [19,20]. This is also true in an archipelago for the relationship between large islands and their satellite islets, which are either a derivative of a 'parent landscape' of the largest island, or a completely different one with very distinctive and dominant activities (i.e., island prisons or grazing islands).

The visual aspect is an important component of the landscape and an inherent part of landscape character assessment, particularly at a more detailed level of mapping. The views of the sea from an island can vary and comprise four main classes: views to the sea only, views to the mainland and the sea, views to one or more neighboring islands, and views to other islands and the mainland. Coastal areas on the mainland differ from those on islands, since they are not isolated. Undoubtedly though, island landscapes are principally coastal landscapes. However, while on small and middle-sized islands every place is a coastal zone, on the larger Mediterranean islands such as Sicily, Sardinia, Cyprus, Corsica, and Crete, upland areas are located, and have developed, away from the influence of the coast (almost land-locked). In other words, larger islands have inland populations that, even today, do not engage

with the coast or sea [21]. This is also reflected in the cultural traditions and mentalities of many highland islanders in the Mediterranean, which resemble those of continental highlanders.

What defines an island is perhaps the barrier or conduit (depending on perspective or time) which lies between itself and the mainland (or another island), i.e., the sea. Therefore, emphasis should be placed on the sea, this being the most distinctive feature of island societies, and it should be an explicit component in any landscape characterization attempt. However, more often than not, this is neglected, and a piece of land on an island is characterized in the same manner as if it belonged to a mainland. For example, in many groups of islands in the Aegean, e.g., the Cyclades, or the Dodecanese, any neighboring island is part of the seascape of another island. In 2000, in his book on the archaeology of Cyclades, Broodbank introduced the concept of an islandscape. Broodbank [15] argued that island cultures stretch beyond their terrestrial limits and embrace the 'islandscape', which encompasses the island itself, the nearest mainland, and/or other islands, as well as the intervening sea. The term islandscape combines the physical environmental conditions and the human imprint i.e., the anthrome past and present; the term is relevant for any time period i.e., prehistory, history, and present. Islandscape is similar to the term islescape, proposed by Peil [14], but has a wider use, particularly in the Mediterranean, encompassing all islands irrespectively of their size (see review in Renes [16]). There are also common features with the term 'hinterland', a term originally defined as the land behind a coast or the shoreline of a river, but which is also now used to define the area of land required to support a population (there are parallels with the concept of the ecological footprint which was first defined by Rees [22]). Islandscapes reflect people-environment interdependence, since, for past and present human communities, coastal waters and open oceans have contributed to human subsistence and development on islands. Although the term was coined in archaeology and has been much debated since [21], it appears to have witnessed a limited adoption elsewhere [23,24]. In addition to the theoretical discourses on the validity of the term in archaeology, which is beyond the scope of the paper, in practical terms, the question is whether 'islandscape' could be used for the mapping, characterization, and management of island spaces, and how. This merits particular consideration as it includes many more parameters than the ones currently incorporated in conventional landscape mapping schemes.

3. Mapping Island Character

3.1. Defining the Mapping Space

Prior to any mapping attempts, there is a need to define the space to be mapped and its components. Given the interaction of land and sea, and the role of the coast as the edge/interface and a link between these two fundamentally different environments, there is a need to delineate and map these three components in an island context, using a common spatial framework. In other words, if Broodbank's definition of an islandscape (land-scape, sea-scape, and surrounding space) is accepted, to what extent can it be mapped? Landscape delineations follow the application of Landscape Character Assessment (LCA): "a set of techniques and procedures used to classify, describe and understand the evolution and physical and cultural characteristics of landscape" [25].

However, despite various characterization attempts in the Mediterranean, islands have never been addressed separately [17]. In some cases, they are part of a wider classification, whilst in other cases, they are too small to be considered in regional mapping (Table 2). For example, in Portugal, there is a typology and mapping of the whole country (including the Azores) as a 2-level hierarchical set of unique landscape character units [26]. A recent classification in the Azores used slope, slope direction (i.e., aspect), land cover, building density, and land suitability [27].

In the atlas of the Spanish landscapes [28], the characterization of the Balearic and the Canary Islands followed the overall methodology, and the only difference was that of the mapping scale. This is also the case in Italy, where the two largest islands, Sicily and Sardinia, are represented with 19 and 20 landscape types respectively in the national typology [29]. Cyprus and Malta, the only island states in the Mediterranean, have implemented a full characterization exercise. In the typology, developed in Malta, the classification was based on the predominant landscape elements, topography, and visual influence, and resulted in 61 landscape units for Malta and 35 units for the island of Gozo [30]. In Cyprus, the landscape description units were defined by a series of definitive attributes, including physiography (combined geological structure and landform), ground type (combined geological rock type and soils), land cover, and cultural pattern (settlement), from topographic maps. The typology resulted in the identification and characterization of 32 landscapes types [31].

Table 2. Examples of Mediterranean island landscape characterisations.

Island	No of Landscape Types	Factors Used	Source
Sicily	19	Climate, Landform, Geology, Land-use, Vegetation	Ciancio et al. 2004 [29]
Sardinia	20	Climate, Landform, Geology, Land-use, Vegetation	Ciancio et al. 2004 [29]
Cyprus	32	Landform, Geology, Land-cover, Settlements	Vogiatzakis et al. 2016 [31]
Azores * San Miguel	17	Slope direction, Slope, Elevation, Soil, Land-cover, Building density	Oliveira and Guiomar 2016 [27]
Azores, San Jorge	11	Slope direction, Slope, Elevation, Soil, Land-cover, Building density	Oliveira and Guiomar 2016 [27]
Balearics	5	Climate, Landform, Geology, Land-use	Mata Olmo & Sanz Herraiz 2003 [28]
Malta	35	Landform, Geology, Visual influence	MEPA 2004 [30]

* Although not a Mediterranean island is part of Portugal considered Mediterranean.

Similarly, and since landscape assessments place little emphasis on the distinct nature of coastal areas and sea, seascape assessment seeks to describe, classify, and map the seascape character. There have been several definitions for the limits of the coastal zone which use seaward or coastal limits for delineation [32] (Table 3). In the case of an island, the sea/marine component extends well beyond the terrestrial boundary of the island. This can be delineated in an objective manner by employing Seascape Assessment. To this end, the three components of the seascape unit (land, sea, and coastal edge) are divided into areas of distinct, recognizable, and common seascape character, and their distribution is then mapped [33]. For demonstration purposes, Figure 1 shows the delineation of the various components of island spaces in Cyprus, based on a synthesis of two methodologies (landscape assessment and seascape assessment). The analysis has treated the seascapes and landscapes (beyond the seascapes) of the island as separate components. Their characterization relied principally on LCA and Seascape Assessment. For details of the methodology employed, see Vogiatzakis et al. [34]. Based on Seascape Assessment, the island was divided into coastline segments, and seascape units were defined, describing the relationship between the sea, the coastline, and the landscape (for methodological details see Hill et al. [33]). For the island's hinterland (i.e., beyond the seascape units), landscape characterization was used, which included information on both natural and cultural elements [35].

Table 3. Common terms used in the text and their definition.

Term	Definition	Discipline	Source
Landscape	An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.	Geography	European Landscape Convention (2000) [17]
Seascape (1)	An area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land and sea, by natural and/or human factors.	Geography	Hill et al. 2001 [33]
Seascape (2)	"Seascapes are large, multiple-use marine areas, defined scientifically and strategically, in which government authorities, private organizations and other stakeholders cooperate to conserve the diversity and abundance of marine life, with the ultimate goal of promoting human well-being".	Marine Conservation	Bensted-Smith & Kirkman (2010) [36]
Protected landscape/seascape	Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.	Conservation	Council of Europe & UNEP 2004 [37]
Islandscape	"sea and land combine to create islandscapes which are seldom congruent with unitary islands" (Broodbank, 2000: 33). Moreover, the islandscape comprises "land, coast, sea, horizon and sky", or, as Broodbank explains, "three bands and two liminal zones", which are likely to be reflected in the islanders' cosmology' (ibid: 23).	Archaeology	Broodbank 2000 [15]
Coastal Area	Coastal areas are commonly defined as the interface or transition areas between land and sea, including large inland lakes.	Coastal Planning	See review in Christian & Mazzilli 2007 [38]
Coastal Zone	(a) the seaward limit of the coastal zone shall be the external limit of the territorial waters of States Parties (b) the landward limit of the coastal zone shall be the territorial limit of local coastal administrative units.	Coastal Planning	UNEP/MAP 2005 [32]

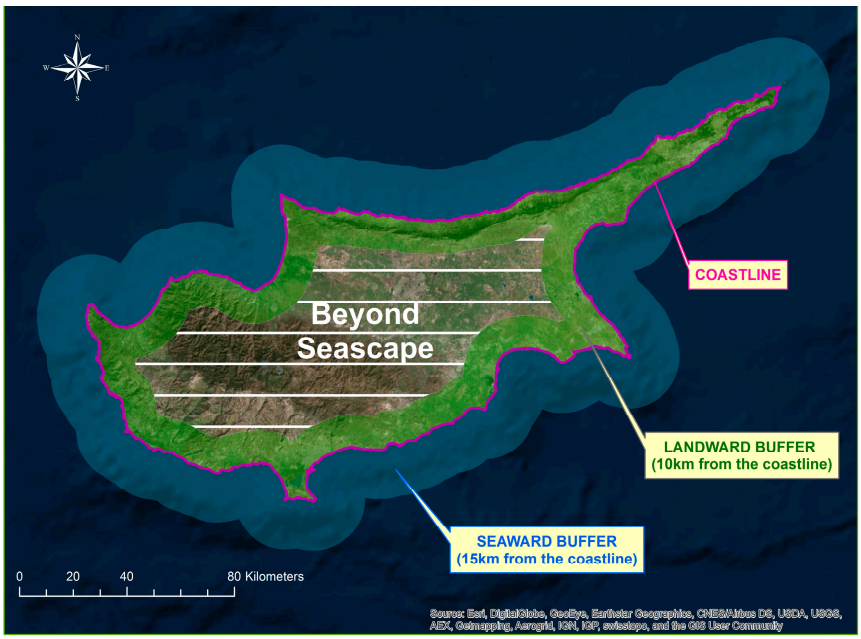

Figure 1. Zones in island character assessment in Cyprus.

What can be deduced from the above is that land and coastal zones are easy to define, and that, in order to account for some of the specificities of islands, elements can be borrowed from seascape and landscape assessments. But what about the neighboring space (*sensu* Broodbank [15])? In many cases, the neighborhood, whether another island, mainland, or both, constitutes what can be seen within the horizon line (field of view). A seascape assessment incorporates viewshed analysis in GIS, to define the units of assessment, while in the case of the Maltese archipelago, the same technique was used to define the visual influence of other islands on the identified landscape types [30]. However, as already pointed out, the actual distance to the horizon line is dependent on the viewer's position/elevation and the atmospheric clarity; therefore, this presents a challenge [33]. In addition, with respect to the culture, any single island might have developed ties with other islands and mainlands, either within or beyond the field of view [39], and these ties might have changed historically and in relation to advances in technology. This presents an additional challenge when defining and mapping such a space.

The cartographic representations of islands in a paper or digital format, underlining the schemes described herein, remain conventional, since mapping space is delineated by its natural boundary, i.e., the sea, rather than looking at the island as 'one point on a spectrum from which islanders construct their world' [15]. Therefore, what is currently missing is the inclusion of more people when producing the map (*sensu* Ellis and Ramankutty [6]). Mental map exercises are common practice in ethnographic research and have been used in participatory and qualitative geographic information systems to develop cartographies of group and individual spatial narratives [40]. This could be a useful approach in mapping island spaces beyond the islands' physical boundaries. Incorporating the time, direction, landmarks, and linkages between people and places, with the help of GIS, could be linked to real-world locations, collating and displaying them in meaningful ways [41,42].

3.2. Integrating Physical and Cultural Attributes within a Common Framework

The integration of physical and cultural attributes within a common spatial framework is not unique to islandscapes. However, it has to be addressed in this context, since islands are cultural landscapes where the human imprint is generally more evident than that of the mainland. Any land- or sea-scape is the product of the interaction between natural and cultural processes. Since there is a plethora of cultural elements (tangible and intangible), cultural typologies are usually based on the tangible elements which have resulted from anthropogenic activities (e.g., farming practices, built structures such as terraces, settlement patterns) [35]. Whereas the use and integration of physical elements in a landscape/seascape assessment is relatively straightforward, this is not the case with cultural intangible elements and/or perceptions of a map, which is the end product of these assessments.

Many elements may play a role in shaping an island's space, but are all of these elements important for island characterization? There are only a few elements (environmental and cultural) which meet the following criteria: (a) dominate the landscape; (b) are visible (and therefore people can relate to them) and (c) are mappable. Therefore, these could be used for islandscape characterization. This view is contested by some landscape-related disciplines, which suggest that perception, as stemming from the European Landscape Convention's definition, should be an integral part of island characterisation. However, one could argue for parsimony in mapping, as is usually the case in most known classification schemes. The visualisation techniques currently at hand, including mental mapping in a GIS environment [42], could assist with mapping all of the important variables, before deciding on a selected few.

When shifting from coarse to finer scales, it becomes apparent that cultural elements dominate over natural ones, in a landscape. Some of these are tangible, such as the churches and mosques in Cyprus, or intangible, such as the languages/dialects of Sardinia. It could be argued that both of these cultural elements dominate in the respective islands and that they are mappable, but of the two, only the first one is evident in the landscape (i.e., to the naked eye). Even though many aspects of culture, like music, costumes, or language can be mapped and display geographical patterns, they have no discernible relation to the landscape [2]. The integration of physical and cultural elements, even in countries with a long tradition of landscape mapping, has not been achieved. Usually, characterization moves in a unidirectional manner, towards physical or historical/cultural mapping. Maps (particularly cultural ones) are more abundant for mainlands than islands. However, Sardinia has very good digital datasets of mapped cultural assets compared to other Mediterranean islands [43].

By mapping islandscapes, distinct components of their landscapes and seascapes are described/recorded. Conceptually, a framework which brings together all island-related spaces, is illustrated in Figure 2. An additional challenge is to formulate a framework that will also facilitate the creation of an islandscape typology, i.e., the nomenclature. The typology necessarily precedes the classification, requiring the sampling of the whole range of land- or seascape units, in order to identify the attributes that discriminate between the full complement of landscape types. A typology should act as a visual summary and generally present the most important qualities of the landscape/seascape in a mapped format. Although many of the intangible cultural elements are important elements of landscapes, their inclusion in a seascape/landscape typology is perhaps not informative, if these are not visible to the observer. In addition, mapping is difficult for many intangible elements, mainly due to the restrictions imposed by cartographic conventions/traditions. The development of an island-scape typology is a necessary basis for management, and a prerequisite for the evaluation and risk assessment of losses or changes to island-related resources.

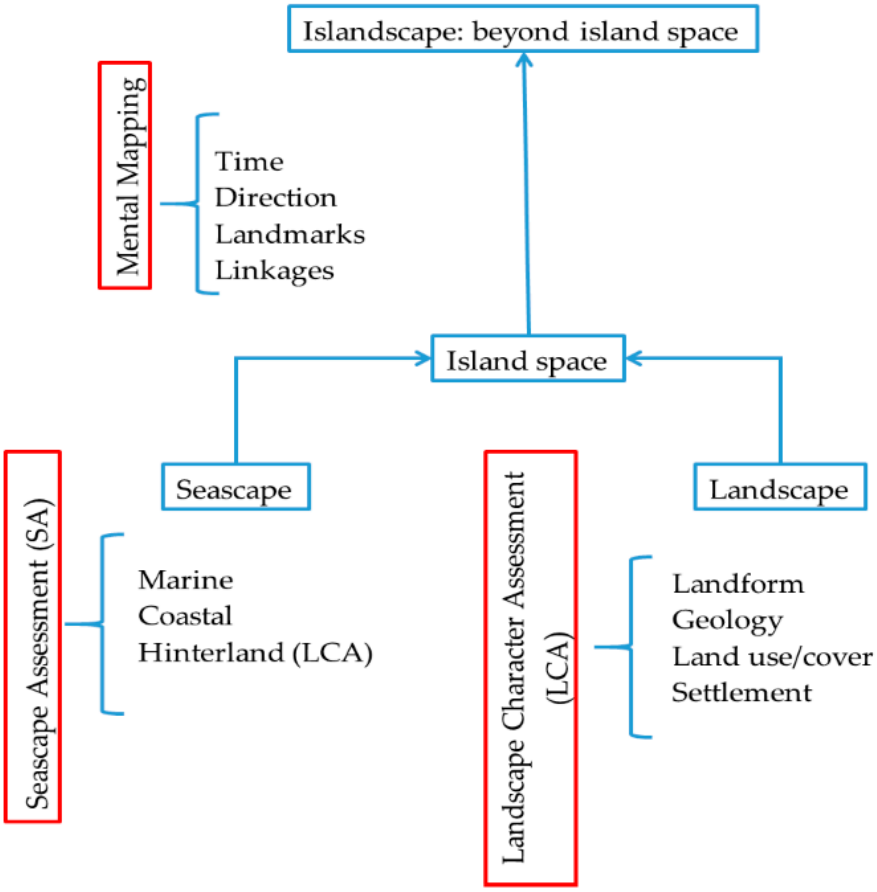

Figure 2. A conceptual framework for islandscapes mapping. Red boxes correspond to existing methodologies/techniques which could be employed to map the respective space.

4. Islandscape Characterisation, Assessment, and Conservation

Landscapes and seascapes are subject to multiple, and often conflicting, uses, which need to be weighed against each other. Protected landscapes/seascapes belong to IUCN Category V [44], and are advocated as an effective way of achieving holistic conservation and sustainable rural development. The definition of a Protected Landscape/Seascape [37] is closer to the use of the terms in landscape and seascape assessment (Table 3), while in marine conservation, the term seascape has recently been used in (a slightly) different context [36] (see Table 3). Managing the dynamic landscapes/seascapes of Mediterranean islands is a challenge and any external policies which are not sensitive to the nature of these islandscapes may have serious repercussions, particularly for smaller islands. Island population dynamics and settlement distribution have changed rapidly in the last 50 years, following changes in life style, tourism patterns, and economic directions [1,24]. Island peculiarities have been long recognised, along with the need to formulate and implement policies that reconcile island particularities with a global scale economy and competition i.e., an improved island development policy [19]. However, these policies should not ignore the importance of the islandscape as the fabric that meshes socio-economic, ecological, and cultural processes. In landscape and seascape assessment, evaluation and decision making follows the characterization stage [25,33]. There is a plethora of examples from nature conservation to quality of life, where this set of techniques provide planners with informed judgments about the state and condition of a land- or seascape, with the view to create new or feed existing policies [17]. An islandscape character assessment may be employed in a similar fashion. There are many global examples where an island's designation as a nature reserve includes its

surrounding marine area [36]. In the Mediterranean, this includes the archipelago of La Madallena in Sardinia, Italy, and the Northern Sporades islands in Greece.

Particularly in the case of small islands, adopting an islandscape approach to conservation and management is the most appropriate and meaningful approach for dealing with natural and cultural resources. The islandscape approach is analogous to a landscape approach [45]. As such, it should also incorporate geographical/biophysical and socio-economic components, and their interactions, in a holistic approach for managing the land, water, and broader space with the view to enhance and balance ecosystem conservation and sustainable livelihoods. Similar to a landscape approach, an islandscape approach would also be multiscale and multifunctional. However, the following considerations should be addressed. At the governance level, at least in the Mediterranean, this is complicated, because the island scale (i.e., the unit of resource production) may coincide with three different administrative levels. Islands may fall below the regional administration level, be a region, or even an island state. Therefore, the extent and effectiveness to which islanders are managing their resources depends on the status of their island and the 'political' distance from national capitals or Brussels, the EU power centre [20]. In addition, what makes the approach quite distinct and challenging, compared to a landscape approach, is that it extends into different realms i.e., sea and land, island and mainland, and their interactions. These interactions can only be addressed with a deep knowledge and understanding of the interrelationships between island space and its components (sea, land, neighborhood) in time (time-depth). Elements of how such a holistic approach in a similar setting could work can be identified in case studies of Integrated Coastal Zone Management [46], but also in examples of conservation theory, practice, and policy [47–49], where landscapes and seascapes go hand in hand.

5. Conclusions

The use of the term landscape has gained ground among planners and policy makers, particularly in Northern Europe, for realizing nature conservation objectives [50,51], monitoring change [52], and evaluating sustainability [53]. The term landscape still means different things to different people and this often adds confusion to its adoption and implementation on the ground. In the context of an island, there is a need for a term which can encompass terrestrial and marine elements, and their interface with cultural elements. In other words, landscapes, coasts, (including neighboring ones) and the sea are inextricably linked in a network of relationships, and therefore, the interpretation and mapping of an island's character need to take these attributes into account. This is the reason why this paper advocates the use of the term islandscape. It can be argued that, given the perceptual complexities of the term landscape or seascape, the introduction of a new term might be adding confusion. However, in island studies, the cross-fertilisation between island biogeography and island archaeology has a long history [5,54,55]. Therefore, adopting the term islandscape has a twofold importance: (a) it continues along the same theoretical inter/trans-disciplinary path; and (b) it employs perhaps the only concept which is holistic enough to account for all of the elements that constitute and influence an island's character. Equally important, the conceptual framework outlined herein (Figure 2) goes beyond a simple mapping of anthropogenic influence, incorporated in current schemes, to mapping human interactions in islandscapes, and therefore, moves closer to the concept of anthromes, as proposed by Ellis and Ramankutty [6].

The review of landscape character assessment (LCA) studies in the Mediterranean reveals that landscape assessments place little emphasis on the distinct nature or culture of the islands, and there is a complete absence of any Seascape assessment efforts. Most of the existing studies move along the lines of established LCAs, produced for mainlands. Nevertheless, the existing characterization techniques, despite their differences, may act as complementary, towards an islandscape assessment, although the integration of methods for different purposes needs refinement and testing on the ground, i.e., in an island context. Following this necessary ground testing, islandscape characterization may have a distinct role to play in developing island policy objectives for a range of sectors, since it recognises

the unique character of an island and therefore the need for a holistic approach. Island landscape characterisation should expand beyond the island and include the surrounding sea and neighbouring islands or mainland. Since characterisation (of a landscape, coastal area or seascape) is about culture as much as about nature, there are two challenges: (a) define the space, its components, their interrelationships within that space, and its surroundings; and (b) map it. This is in line with the European Landscape Convention, which advocates the identification of the 'unit' of study prior to systematically studying the places concerned from a holistic perspective. In the case of islands, the traditional unit of research does not coincide with the unit of analysis [56]. There have been various criticisms of territorial planning approaches at the EU level, which is of immediate concern to Mediterranean islands (see EUROISLANDS review [57]). More often than not, territorial planning is conceptually developed with mainland areas in mind. What seems to be missing is an explicit spatial dimension where island spaces are recognized throughout the process, from data gathering and statistical analysis, to mapping, policy formulation, and implementation [19,20]. Only once the space is adequately defined and mapped can islandscape strategies be developed and integrated into territorial and sectoral policies and instruments.

Admittedly, the transferability from one discipline to another of a term coined for specific purposes and in a specific context, is always challenging. This in itself points to an even greater challenge i.e., bringing together all of the landscape-related disciplines in the same arena. Although the emphasis in this paper has been the Mediterranean, the conceptual framework proposed herein can be tested in a wider geographical insular context.

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References

1. Whittaker, R.J.; Fernandez-Palacios, J.M. *Island Biogeography*, 2nd ed.; Oxford University Press: Oxford, UK, 2007.
2. Rackham, O. Island Landscapes: Some preliminary question. *J. Mar. Island Cult.* **2012**, *1*, 87–90. [CrossRef]
3. Royle, S.A. *Islands: Nature and Culture*; Reaktion Books: London, UK, 2014.
4. Mitchell, N.C. Characterising the irregular coastlines of volcanic ocean islands. *Geomorphology* **1998**, *23*, 1–14. [CrossRef]
5. Patton, M. *Islands in Time: Island Sociogeography and Mediterranean Prehistory*; Routledge: Abingdon-on-Thames, UK, 1996.
6. Ellis, E.C.; Ramankutty, N. Putting people in the map: Anthropogenic biomes of the world. *Front. Ecol. Environ.* **2008**, *6*, 439–447. [CrossRef]
7. Vogiatzakis, I.N. Mediterranean experience and practice in Landscape Character Assessment. *Ecol. Medit.* **2011**, *37*, 17–31.
8. Heywood, V.H. The Mediterranean flora in the context of world biodiversity. *Ecol. Medit.* **1995**, *21*, 11–18.
9. Hopkins, L. *IUCN and the Mediterranean Islands: Opportunities for Biodiversity Conservation and Sustainable Use*; International Union for Conservation of Nature: Gland, Switzerland, 2002.
10. Blondel, J.; Aronson, J.; Bodiou, J.-Y.; Boeuf, G. *The Mediterranean Region: Biological Diversity in Space and Time*; Oxford University Press: Oxford, UK, 2010.
11. Médail, F.; Diadema, K. Glacial refugia influence plant diversity patterns in the Mediterranean Basin. *J. Biogeogr.* **2009**, *36*, 1365–2699. [CrossRef]

12. Vogiatzakis, I.N.; Mannion, A.M.; Sarris, D. Mediterranean Island Biodiversity and Climate Change: The Last 10,000 Years and the Future. *Biodivers. Conserv.* **2016**, *25*, 2597–2627. [CrossRef]
13. Vogiatzakis, I.N.; Pungetti, G.; Mannion, A. *Mediterranean Island Landscapes: Natural and Cultural Approaches*; Landscape Series; Springer: Dordrecht, The Netherlands, 2008; Volume 9.
14. Peil, T. *Islescapes: Estonian Small Islands and Islanders through Three Centuries (Acta Universtatis Stockholmiensis Stockholm Studies in Human Geography 8)*; Almqvist and Wiksell: Stockholm, Sweden, 1999.
15. Broodbank, C. *An Island Archaeology of the Early Cyclades*; Cambridge University Press: Cambridge, UK, 2000.
16. Renes, H. Islandscapes: Isolation and Pressure. *Landscapes* **2014**, *15*, 44–58. [CrossRef]
17. Council of Europe. *European Landscape Convention*; European Treaty Series—No 176; Council of Europe: Florence, Italy, 2000.
18. Briggs, J.; White, S. *Welsh Seascapes and Their Sensitivity to Offshore Developments: Method Report*; Countryside Council for Wales: Bangor, UK, 2009.
19. European Islands System of Links and Exchanges (EURISLES). Off the Coast of Europe: European Construction and the Problem of the Islands. Report for the Islands Commission of the Conference of the Peripheral and Maritime Regions (CPMR). Available online: https://europeansmallislands.files.wordpress.com/2016/04/off-the-coast-of-europe.pdf (accessed on 14 February 2017).
20. Vogiatzakis, I.N.; Papayannis, Th.; Mannion, A.M. Political Landscapes of Mediterranean Islands. In *Mediterranean Island Landscapes: Natural and Cultural Approaches*; Vogiatzakis, I.N., Pungetti, G., Mannion, A., Eds.; Landscape Series; Springer: Dordrecht, The Netherlands, 2008; Volume 9, pp. 100–114.
21. Fitzpatrick, S.M.; Erlandson, J.M.; Anderson, A.; Kirch, P.V. Straw boat and the proverbial sea: A response to "Island Archaeology: In search of a new horizon". *Island Stud. J.* **2007**, *2*, 229–238.
22. Rees, M. Ecological footprints and appropriated carrying capacity: What urban economics leaves out. *Environ. Urban* **1992**, *4*, 121–130. [CrossRef]
23. Frieman, C. Islandscapes and 'islandness': The prehistoric Isle of Man in the Irish seascape. *Oxford J. Archaeol.* **2008**, *27*, 135–151. [CrossRef]
24. Fitzpatrick, S.M.E. *Voyages of Discovery: The Archaeology of Islands*; Greenwood Publishing Group: Santa Barbara, CA, USA, 2004.
25. Warnock, S.; Griffiths, G.H. Landscape Characterisation: The Living Landscapes approach in the UK. *Landsc. Res.* **2015**, *40*, 261–278. [CrossRef]
26. Pinto-Correia, T.; Cancela D'abreu, A.; Oliveira, R. Landscape Units in Portugal and the Development and Application of Landscape Indicators. In Proceedings of the NIJOS/OECD Expert Meeting on Agricultural Landscape Indicators, Oslo, Norway, 7–9 October 2002.
27. Oliveira, R.; Guiomar, N. Landscape Character Assessment and Regional Landscape Strategy in the Azores, Portugal. In *Island Landscapes: An Expression of European Culture*; Pungetti, G., Ed.; Routledge: Abingdon, UK; New York, NY, USA, 2017.
28. Mata Olmo, R.; Sanz Herráiz, C. *Atlas de los Paisajes de España*; Secretaría General Técnica; Ministerio de Medio Ambiente-Universidad Autónoma de Madrid: Madrid, Spain, 2003; p. 778.
29. Ciancio, O.; Corona, P.; Marchetti, M.; Chirici, G.; Barbati, A.; Travaglini, D. *Carta Degli Aspetti Paesistici D'italia*; Relazione Tecnica Finale; UniversitÒ degli Studi di Firenze: Firenze, Italy, 2004.
30. Malta Environment & Planning Authority (MEPA). *Landscape Assessment Study of the Maltese Islands*; Malta Environment & Planning Authority: Maltese Islands, Malta, 2004.
31. Vogiatzakis, I.N.; Manolaki, P.; Trigkas, V. *LCA Training and Implementation*; Medscapes WP5 Final Report; Open University of Cyprus: Nicosia, Cyprus, 2016.
32. UNEP/MAP. *Draft Protocol on the Integrated Management of the Mediterranean Coastal Zones*; UNEP/MAP: Nice, France, 2005.
33. Hill, M.; Briggs, J.; Minto, P.; Bagnall, D.; Foley, K.; Williams, A. *Guide to Best Practice in Seascape Assessment*; Food and Agriculture Organization of United States: Rome, Italy, 2001.
34. Vogiatzakis, I.N.; Zomeni, M.; Trigkas, V. Characterising Islandscapes: The Case of CYPRUS. In *Island Landscapes: An Expression of European Culture*; Pungetti, G., Ed.; Routledge: Abingdon, UK; New York, NY, USA, 2017.
35. Symons, N.P.; Vogiatzakis, I.N.; Warnock, S.; Griffiths, G.H.; Vassou, V.; Zomeni, M.; Trigkas, V. Geospatial tools for Landscape Character Assessment in Cyprus. *Proc. SPIE* **2013**, *8795*. [CrossRef]

36. Bensted-Smith, R.; Kirkman, H. *Comparison of Approaches to Management of Large Marine Areas*; Publ. Fauna & Flora International: Cambridge, UK; Conservation International: Washington, DC, UK, 2010; p. 144.
37. Council of Europe; United Nations Environment Programme Mediterranean Action Plan. *Marine and Coastal Biodiversity*; Report Presented at the Eighth Meeting of the Council for the Pan-European Biological and Landscape Diversity Strategy; United Nations Environment Programme Mediterranean Action Plan: Madrid, Spain, 2004.
38. Christian, R.R.; Mazzilli, S. Defining the coast and sentinel ecosystems for coastal observations of global change. *Hydrobiologia* **2007**, *577*, 55–70. [CrossRef]
39. Conkling, P. On Islanders and Islandness. *Geogr. Rev.* **2007**, *97*, 191–201. [CrossRef]
40. Curtis, J.W. Transcribing from the Mind to the Map: Tracing the Evolution of a Concept. *Geogr. Rev.* **2016**, *106*, 338–359. [CrossRef]
41. Knapp, A.B. *Prehistoric and Protostoric Cyprus. Identity, Insularity and Connectivity*; Oxford University Press: Oxford, UK, 2008.
42. Havas, J.; Saito, O.; Hanaki, K.; Tanaka, T. Perceived landscape values in the Ogasawara Islands. *Ecosyst. Serv.* **2016**, *18*, 130–140. [CrossRef]
43. Sardegna Geoportale. Available online: www.sardegnageoportale.it (accessed on 14 February 2017).
44. IUCN. *Guidelines for Protected Area Management Categories*; CNPPA with the Assistance of WCMC; IUCN: Gland, Switzerland; Cambridge, UK, 1994.
45. Steiner, F.R. *The Living Landscape: An Ecological Approach to Landscape Planning*; Island Press: Washington, DC, USA, 2012.
46. Vogiatzakis, I.N.; Griffiths, G.H.; Cassar, L.; Morse, S. *Mediterranean Coastal Landscapes: Management Practices, Typology and Sustainability*; Project Report, UNEP-PAR/RAC; United Nations Environment Programme Mediterranean Action Plan: Madrid, Spain, 2005; p. 50.
47. Pittman, S.; Kneib, R.; Simenstad, C.; Nagelkerken, I. Seascape ecology: Application of landscape ecology to the marine environment. *Mar. Ecol. Prog. Ser.* **2011**, *427*, 187–302. [CrossRef]
48. Pressey, R.L.; Bottrill, M.C. Approaches to landscape-and seascape-scale conservation planning: Convergence, contrasts and challenges. *Oryx* **2009**, *43*, 464–475. [CrossRef]
49. Falconer, L.; Hunter, D.C.; Telfer, T.C.; Ross, L.G. Visual, seascape and landscape analysis to support coastal aquaculture site selection. *Land Use Policy* **2013**, *34*, 1–10. [CrossRef]
50. Griffiths, G.H.; Vogiatzakis, I.N.; Porter, J.R.; Burrows, C. A landscape scale spatial model for habitat expansion in Wales. *J. Nat. Conserv.* **2011**, *19*, 43–53. [CrossRef]
51. Swanwick, C. *Techniques and Criteria for Judging Capacity and Sensitivity*; Topic Paper 6; Countryside Agency & Scottish Natural Heritage: Inverness, UK, 2004.
52. Haines-Young, R. *Tracking Change in the Character of the English Landscape 1999–2003*; Catalogue Number NE42; Natural England: Worcester, UK, 2007.
53. Morse, S.; Vogiatzakis, I.N.; Griffiths, G.H. Space and sustainability. Potential for landscape as a spatial unit for assessing sustainability. *Sustain. Dev.* **2011**, *19*, 30–48. [CrossRef]
54. MacArthur, R.H.; Wilson, E.O. *The Theory of Island Biogeography*; Princeton University Press: Princeton, NJ, USA, 1967.
55. Depraetere, C. The Challenge of Nissology: A Global Outlook on the World Archipelago. Part I: Scene Setting the World Archipelago. *Island Stud. J.* **2008**, *3*, 3–16.
56. Olwig, K.F. Islands as places of being and belonging. *Geogr. Rev.* **2007**, *97*, 260–273. [CrossRef]
57. EUROISLANDS. *The Development of the Islands-European Islands and Cohesion Policy*; Final Report of a Targeted Analysis; ESPON & University of the Aegean: Mytilene, Greece, 2011.