

## Cultural Ecosystem Services (CES): A Keywords Manual

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Note: This Keywords Manual is one of the outcomes of an ‘Additional Cultural Values Work’ assignment conducted by Peter Coates (with the assistance of Marianna Dudley, who wrote the first draft) as part of the UK National Ecosystem Assessment follow-on phase (UK NEAFO). In addition to providing the arts and humanities (AH) sector with a general introduction to the world of Ecosystem Services (ES) and to the notion of Cultural Ecosystem Services (CES) in particular, we also hope that seasoned ES researchers will see it as an opportunity to reexamine familiar concepts and reconsider meanings that may appear self-evident.

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## 1. Introduction

Cultural Services (CES) are one of the four pillars in the conceptual framework (typology) for Ecosystem Services (ES). The various individual ‘services’ that ecosystems provide (also referred to as ‘goods’ and ‘benefits’, as well as end-products of nature) are routinely grouped into four categories: *supporting* services - which underpin the other three categories - include functions such as nutrient recycling, photosynthesis, pollination and soil formation); *regulating* services (such as climate regulation, carbon sequestration, water purification, groundwater recharge and flood protection); *provisioning* services (notably supplies of food, drinking water, fibre and timber); and *cultural* services. This fourth category embraces the benefits people derive from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, aesthetic experience and creative inspiration. Benefits associated with cultural identity, heritage<sup>1</sup> and sense of place (belonging) are also included in this fourth category, which has been characterized as the ‘joint product’ of natural and human/cultural capital.<sup>2</sup>

These four categories of ES are by no means mutually exclusive. It is more, however, than a question of overlap. Given that culture and human input informs the first three categories of service, it might be argued that the edifice of ES is constructed on just three pillars. After all, supporting services include the input of human labour, while regulating services encompass practices such as trade, agricultural systems and consumer preference. Nonetheless, every Ecosystem Assessment (EA) exercise conducted since 2000 has rested on these four categorical foundations.<sup>3</sup> The UK National Ecosystem Assessment (UK NEA, 2011) explained that ES are ‘the environmental settings that give rise to the cultural goods and benefits that people obtain from ecosystems’. As this definition suggests, ES operates in a world of expert language and specialized discourse, in which terms that have multiple, complex, wide-ranging and overlapping meanings – words such as culture, ecosystem and environment – are employed with a specificity that those accustomed to exploring and challenging understandings of nature, environment, culture and society can find difficult to accept or adjust to. Moreover, without further clarification of what is meant by cultural goods and benefits, environmental settings and ecosystems – a cluster of specialist terms in one sentence - the layperson is no closer to understanding what ‘ecosystem services’ are.

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<sup>1</sup> The notion that the stock of heritage is invariably finite - the Anglo-Saxons are not building any more churches, Beethoven is not writing any more symphonies and no more Lake Districts are being created - is challenged by the identification of a moving frontier that constantly creates ‘new heritage’, the view that heritage is a process as much as a product, and the emphasis on heritage management as the management of change (which creates heritage) as well as straightforward preservation (Fairclough, 2009).

<sup>2</sup> Roy Haines-Young and Marion Potschin, ‘Methodologies for defining and assessing ecosystem services: final report, August 2009’ (University of Nottingham, Centre for Environmental Management Report No. 14/Joint Nature Conservation Committee), 81.

<sup>3</sup> UK National Ecosystem Assessment, *UK National Ecosystem Assessment: Technical Report* (UNEP-WCMC: Cambridge, 2011) [hereafter UK NEA]; Rashid Hassan, Robert Scholes and Neville Ash (eds.), *Millennium Ecosystem Assessment, Ecosystems and Human Well-being Vol. 1: Current state and trends* (Washington DC, 2005) [hereafter MEA]; Joachim Maes, Maria Luisa Paracchini and Grazia Zulian, *A European Assessment of the Provision of Ecosystem Services* (Luxembourg: European Union, 2011) [hereafter EAES]; Comision Nacional para el Conocimiento y Uso de Biodiversidad (CONABIO), *Capital Natural y Bienestar Social* [Natural Capital and Social Welfare], (Mexico City, 2006).

The global Millennium Ecosystem Assessment (MEA, 2005) explained that an ecosystem is ‘a dynamic complex of plant, animal and microorganism communities and the nonliving environment acting as a functional unit’.<sup>4</sup> Ecosystem services, in turn, are the goods and benefits people obtain from ecosystem functions. ES, as a system of knowledge, works to categorize and measure these benefits in order to integrate ecosystem-related goods and benefits, and concerns over the impairment of ecosystem services, into policy and decision making. ES research aims to evaluate and articulate societal dependence on ecological life support systems, and to reflect this in our choices and actions, which, hitherto, have largely taken the existence and continued provision (flow) of these services for granted. The cultural benefits and the values associated with ecosystems and environmental settings are considered just as fundamental to the relationship between human wellbeing and ecosystems as provisioning, regulating and supporting services, and it is widely agreed that they must be better accounted for in future decision making.<sup>5</sup>

To assist this process, those at the forefront of advancing our understanding of the interactions between humans and the rest of nature and their socio-cultural implications have joined a discourse originating in ecology and economics. Arts and humanities (AH) perspectives are essential to reveal the full complexity and depth of human relationships with ecosystems and environmental settings. As the Arts and Humanities Research Council (AHRC) explains on its website, the arts and humanities sector ‘covers an immense range of subjects: ancient history, modern dance, archaeology, digital content, philosophy, English literature, design, the creative and performing arts, and much more’. These subjects, AHRC emphasizes, ‘encompass all aspects of our lives - our experiences, identities, languages, histories, values - in fact, all those things that make us what we are. And they all play a vital role both in maintaining and improving our quality of life and the well-being of our economy’. The participation of AH researchers is particularly important because it has been argued that theorists and practitioners of ES have developed an ‘essentially economic worldview’, and by doing so, may have ‘simultaneously closed the door to other social perspectives – those more fully representative of the vicissitudes of human behavior and less tangible ethical and social concerns’.<sup>6</sup>

An overview of the emergence of ES as a way of thinking and as a pursuit highlights its disciplinary roots in the fields of environmental and ecological economics.<sup>7</sup> The notion of natural capital that now underpins the ES approach held a core position in the classical economics of the eighteenth century, not least as a physical constraint to growth (the best known example being Malthus’ now infamous theories of population growth). But whereas land had traditionally been valued as the primary source of value, classical economics emphasized labour as the major force in the production of wealth (Adam Smith, Karl Marx). As industrialization accelerated, the economic focus shifted from the value of land to the accumulation of capital. This altered the economic paradigm, facilitating treatment of nature in terms of commodity values, and the substitutability of natural resources with

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<sup>4</sup> MEA, vii.

<sup>5</sup> Erik Gómez-Baggethun, Rudolf de Groot, Pedro L. Lomas and Carlos Montes, ‘The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes’, *Ecological Economics* 69:6 (April 2010), 1209.

<sup>6</sup> Kai M.A. Chan, Terre Satterfield, and Joshua Goldstein, ‘Rethinking ecosystem services to better address and navigate cultural values’, *Ecological Economics* 74 (2012), 8.

<sup>7</sup> For an account of environmental concerns in classical and neoclassical economics, see Gómez-Baggethun *et al.*, ‘History of ecosystem services in economic theory and practice’.

human-made capital.<sup>8</sup> By the late nineteenth century, the role of nature in economic systems had been diluted, if not entirely divorced from human productivity.

In the later twentieth century, economics sought to ‘get back to nature’. As environmentalism in its modern form gathered strength during the 1960s and drew attention to the often damaging environmental consequences of human activities, the standard approach of economic science proved inadequate for addressing accumulating environmental problems. Specialized economic subdisciplines emerged that developed methods to value and integrate economic impacts on the environment into decision making. Environmental economics and ecological economics, though intersecting to some degree (the differences remain disputed), developed specific techniques to measure sustainability and the environmental, as well as social, costs of economic performance (and the costs in economic terms of environmental degradation), employing monetary and non-monetary valuations.<sup>9</sup> These subdisciplines (arguably driven by the prevalent spirit of environmental activism) placed the emphasis on informing policy and decision-making. The integration of environmental concerns and economic impacts with decision-making is a recognizable precursor to the ES approach as currently understood.

Since the 1970s, greater stress, academic, popular and political, has been placed on societal dependence on natural systems, and the importance of biodiversity. The idea of ecosystem services itself was introduced by Ehrlich and Ehrlich, in their 1981 study, *Extinction: The Causes and Consequences of the Disappearance of Species*.<sup>10</sup> The concept rose up the research agenda through its uptake by various international bodies – notably the United Nations Environment Programme’s 1993 Convention on Biological Diversity (UNEP-CBD; opened for signature at the Rio ‘Earth Summit’ in June 1992); and UNEP’s subsequent biodiversity programmes.

Ecosystem services as an approach to policy and decision-making today retains the connection with biodiversity conservation and the monitoring of environmental change that defined its emergence as a subfield of environmental and ecological economics.<sup>11</sup> Governments and NGOs have invested in it as a systematic and globally-relevant framework with which to meet the future (unknown) challenges of climate change and habitat loss. In 2012, for example, an independent international body open to all United Nations member countries was established: the Inter-Governmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Nonetheless, what launched the ES approach into the mainstream was a focus on its economic potential. A team of scholars led by Robert Costanza undertook a massive, widely publicized effort to impose a monetary value on ecosystem services. Costanza’s team

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<sup>8</sup> Baggethun *et al.*, ‘History of ecosystem services’, 1212.

<sup>9</sup> Baggethun *et al.* and Turner provide lucid analyses of the differences between these two subdisciplines: Baggethun *et al.*, ‘History of ecosystem services’, 1214; R.K. Turner, ‘Environmental and Ecological Perspectives’, in J.van der Bergh (ed.), *Handbook of Environmental and Resource Economics* (Northampton, Mass.: Elgar, 1999), 1001-33.

<sup>10</sup> See also: Paul Ehrlich and Harold A. Mooney, ‘Extinction, substitution, and eco-system services’, *Bioscience* 33 (1983), 248-54.

<sup>11</sup> C. Perrings, C. Folke and K.G. Mäler, ‘The ecology and economics of biodiversity loss: The research agenda’, *Ambio* 21 (1992), 201-11; Secretariat of the Convention on Biological Diversity, *Global Biological Diversity 3* (Montreal, 2010), available as PDF and e-book at <http://www.cbd.int/gbo3/>; V.H. Heywood and R.T. Watson (eds.), *Global Biodiversity Assessment* (Cambridge: UNEP/Cambridge University Press, 1995).

hazarded a range estimate of the collective annual value of the entire global package of ES: between US \$16 and 54 trillion, with a minimum estimated average of US \$33 trillion per annum. The team placed a precise total range value on the entire global package of ecosystem services: a minimum of \$33 trillion per annum.<sup>12</sup>

The potential to attach monetary value to ES that Costanza's team demonstrated attracted increasing attention from academics and policy makers (debates on the monetary valuation of nature persist – and critiques of its resulting commodification continue to appear, and will be discussed further: see entry for **Nature**). The *Millennium Ecosystem Assessment* (MEA) (commissioned by the UN in 2001, and published in 2005) further cemented the ES approach as an integral part of the policy agenda, and remains a defining text.<sup>13</sup> MEA expressed not only human dependency on ecosystems but also articulated the contribution from ecosystems to human wellbeing (broadly defined: see entry for **Wellbeing**), opening the door to better understandings of the less 'tangible', so-called non-material benefits that people obtain from ecosystems.<sup>14</sup>

Following MEA's report, the ES approach quickly became widely embraced internationally by environmental scientists, social scientists and policymakers. Large combined forces of natural and social scientists as well as planners have hitched their wagons to ES approaches to environmental research and management. Efforts to devise a classification system more suitable for valuation efforts have produced one that distinguishes between basic ecosystem processes/structure/components (intermediate services) and the goods and benefits derived from their consumption and utilization (final services). Hence, ES are 'the aspects of ecosystems utilized (actively or passively) to produce human well-being'.<sup>15</sup> Developed to avoid 'double-counting' errors in future valuation exercises - by restricting valuation to what is directly consumed or used by a beneficiary, as the value of the structures and processes that contribute to the service are already included in the estimate - the UK National Ecosystem Assessment adopted this approach through its 'Ecosystem Services Framework'.

Another prominent example of ES research and activity post-MEA is the Natural Capital Project (NCP) at Stanford University's Woods Institute for the Environment. Since its launch in 2007, this project (in partnership with the University of Minnesota, the Nature Conservancy and the World Wildlife Fund) has devised a set of computer-based models known as the Integrated Valuation of Environmental Services and Tradeoffs tool (InVEST). Initially applied to Oregon's Willamette Basin and the Amazon, the areas to which the software (freely downloadable) has since been applied include Belize, Columbia, Canada, China, Ecuador, Indonesia, Mexico and Sumatra.

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<sup>12</sup> R Costanza *et al.* 'The value of the world's ecosystem services and natural capital', *Nature* 387 (15 May 1997). 253, 259.

<sup>13</sup> UNEP provided overall coordination for MEA, whose budget was approximately \$24 million, of which \$7 million was supplied by in-kind contributions for the MEA sub-global studies. Major donors included: the Global Environment Facility (GEF), the UN Foundation, the David and Lucile Packard Foundation, and the World Bank. Additional support was provided by Consultative Group on International Agricultural Research (CGIAR), the UN's Food and Agriculture Organization (FAO), the Government of Norway, Rockefeller Foundation, UNDP, UNEP, and the US National Aeronautic and Space Administration (NASA): UNEP, 'Overview of the Millennium Ecosystem Assessment', <<http://www.unep.org/maweb/en/About.aspx>>

<sup>14</sup> MEA: *Current State and Trends*, 29.

<sup>15</sup> Brendan Fisher, R. Kerry Turner and Paul Morling (2009) 'Defining and classifying ecosystem services for decision making', *Ecological Economics* 68, 645; J. Boyd and S. Banzhaf (2007) 'What are ecosystem services? The need for standardized accounting units', *Ecological Economics* 63, 616-626

NCP wants InVEST to serve as a systematic tool for governments, corporations and non-profits that is applicable generally and consistently to ‘spatially-explicit’ natural resource use and conservation decisions world-wide, with particular relevance to choosing between management options in a way that is ‘easy’ and ‘replicable’ in ‘policy contexts around the world’ (mission: ‘to align economic forces with conservation’; ‘integrate the values of nature into all major decisions affecting the environment and human well-being...to improve the state of biodiversity and human well-being by motivating greater and more cost-effective investments in both’ by developing scientifically-rigorous approaches and tools to ‘incorporate natural capital into decisions’).<sup>16</sup>

As economics has become the main disciplinary basis for the ES approach, it is not surprising that economic terms dominate its language. Moreover, with three of the framework’s four pillars – the provisioning, regulating and supporting services – lending themselves more readily to scientific and economic analysis and data compilation, to expand the language and conceptual framework of the ES approach to the category of cultural services and to integrate AH approaches is no simple task. And yet, because ecosystems and environmental settings are inseparable from ‘nature’ and given that nature and culture are also inseparable, the treatment of things cultural within a separate category is problematic, and the inclusion of more interpretative (and ruminative) AH approaches and the more qualitative research findings they generate remains an essential undertaking.

Cultural and societal constructions and perceptions of nature and the natural world colour every interaction between humans and ecosystems (at least, as they are understood by humans) and so cultural considerations run through all aspects of ES. As such, as Fish observes, many AH researchers (as well as social scientists) are more likely to regard the notion of Cultural Ecosystem Services (and the worldview investing it) as ‘an object of critique rather than a concept to be embraced’. Fish argues for consistency of treatment of ecosystems (nature) and culture. ‘Given the presumed importance of “ecosystems” to all services’, there is a case for placing “culture” on an equally foundational footing’. In fact, ‘it would not be implausible to think of the framework as really one of ecosystem-cultural services’, or perhaps more elegantly, “culture-nature” services’.<sup>17</sup>

The MEA acknowledged the omnipotent reach of cultural influences over environmental matters. Though identified as one of the four categories within ES typology, it recognized that ‘they [cultural issues] cannot be treated independently’.<sup>18</sup> Culture influences how we view other ecosystem services. Food provides a telling example. Food production is a provisioning service, but, as Fish point out, it is also ‘central to the reproduction of culture in

<sup>16</sup> Natural Capital Project, ‘About the Natural Capital Project: Our Mission’, <<http://www.naturalcapitalproject.org/about.html#mission>> ; ‘Demonstration of InVEST: A decision-support tool for valuing nature’, 10 December 2012, pp. 1-2, <http://conference.ifas.ufl.edu/aces/Workshop%20-%20Demonstration%20of%20InVEST.pdf> InVEST exemplifies the ‘top down’ approach to ES modelling. Other, more ‘bottom up’ approaches within the Natural Capital Project aim to gather spatially explicit empirical data instead of depending on ‘look up’ tables. ‘Valuing the Arc’, for example, employs the ‘bottom up’ approach to examine the biodiversity value of Tanzania’s Eastern Arc Mountains: <http://naturalcapitalproject.org/where/tanzania.html>; Fisher, B., Turner, K., Burgess, N.D., *et al.*, ‘Measuring, Modelling and Mapping Ecosystem Services in the Eastern Arc Mountains of Tanzania’, *Progress in Physical Geography* 35/5 (October 2011), 595-611.

<sup>17</sup> Rob D. Fish, ‘Environmental decision making and an ecosystems approach: Some challenges from the perspective of social science’, *Progress in Physical Geography* 35:5 (2001), 674-75.

<sup>18</sup> MEA, 457.

highly specific and material ways'.<sup>19</sup> An orchard produces apples. Yet it is not simply a question of producing fruit; which varieties are planted and how those apples are harvested, processed and consumed (as well as the scale and character of the orchard itself, not to mention the quality of the site's biodiversity) reflects local historical and cultural traditions as well as wider socio-economic forces and also produces new connections between community and place.<sup>20</sup> Likewise, the provision of a cultural service, like a provisioning service, depends on supporting and regulating services. A healthy orchard needs good drainage and suitable soil, a temperate climate and pollination.

In the spirit of 'culture-nature', the term 'cultural space' has been proposed as an alternative to both ecosystem and environmental setting. Whether this term denotes more effectively than the more traditional term, landscape (see separate entry for **Landscape**), the diverse spectrum of places and localities in which people interact with the natural environment and each other, as individuals and collectively, is open to debate. What is clear, though, is that, regardless of our preferred term - ecosystem, environment, places, cultural space or landscape - these material settings host cultural practices (expressive, symbolic and interpretative interactions between people and natural environments). These practices, such as gardening, walking, painting and watching wildlife programmes, yield cultural benefits which are the dimensions of human wellbeing that have come to be associated with these interactions between people and the natural environment (see entries for **Benefits** and **Wellbeing**).<sup>21</sup>

The pervasiveness and deeply rooted character of the culture-nature connection (though the configurations of the relationship itself are often highly mutable) indicates that cultural services deserve a place of parity within the framework that reflects their significance at all levels of human-ecosystem interaction and decision-making. The problem is not that cultural services have not been assigned a lower value in principle than the other categories of service in ES research. Regardless of the scale at which the Ecosystem Assessment is conducted - global, regional, national or local - assessors have identified cultural services as an area where (to cite the MEA) 'better information is needed...[for] the importance of cultural services and values is not currently recognized in landscape planning and management'. The problem is how to account for CES and do them justice in evaluation exercises. The MEA's authors also readily acknowledged that 'these fields could benefit from a better understanding of the way in which societies manipulate ecosystems and then relate that to cultural, spiritual and religious belief systems.'<sup>22</sup> The 'subjective' elements of services whose components are frequently referred to as 'non-use', 'non-monetary', 'intangible' and 'ill-fitting'<sup>23</sup> have posed a challenge for those who have tried to incorporate them into the ES framework (as the negative terminology suggests).<sup>24</sup>

Just as economists and scientists may struggle to do justice to these 'intangible' goods and benefits within inherited accounting systems, AH scholars and practitioners may balk at the terminology of ES literature and discourse. Nonetheless, as SueEllen Campbell points out,

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<sup>19</sup> Fish, 'Environmental decision making', 675.

<sup>20</sup> See Marianna Dudley, 'Fallen Fruits: Mapping Orchard Decline in the Quantock Hills AONB', University of Bristol/Quantock Hills Area of Outstanding Natural Beauty (AONB) Service, 2012.

<sup>21</sup> Rob D. Fish and Andrew Church (2013) 'A conceptual framework for cultural ecosystem services' (Exeter: Centre for Rural Policy Research, University of Exeter).

<sup>22</sup> MEA, 457.

<sup>23</sup> Chan, 'Rethinking ecosystems', 8; Terry C. Daniel *et al.* 'Contributions of cultural services to the ecosystem services agenda', *Proceedings of the National Academy of Sciences* 109 (2012), 8812.

<sup>24</sup> UK NEA, 639.



AH researchers ‘have important work to do’, ‘given [their] greater comfort level [than scientists and social scientists] with tough-to-test-or-quantify matters like complicated human emotions, attitudes, values, languages, cultures, imaginations, and creativities’.<sup>25</sup> The MEA set out the challenge. For a new perspective on ES to emerge, and ‘to ensure that human well-being and cultural identity remain linked to ecosystem services, there needs to be a reconciliation’ between ecology, economics, and the arts and humanities.<sup>26</sup>

This Keywords Manual aims to play a part in this process of reconciliation by easing the entry of AH researchers into the ES field and helping to shape a common ground on which a range of disciplines can meet on equal footing. The language of expert discourse contributes to and sustains the perceived disjuncture between the ES approach and AH involvement. There is frequent disparity in how the public, academic and governmental spheres handle words such as ‘ecosystem’, highlighting the potential for multiple understandings (and misunderstandings) of terms in common usage.<sup>27</sup> Nonetheless, the effort is worthwhile. An Arts and Humanities Working Group (AHWG) that was specially convened (2012-13) with Arts and Humanities Research Council (AHRC) funding to consider how AH perspectives can contribute to deeper and broader discussions of cultural ecosystem services (CES) concluded that:

Arts and humanities researchers cannot afford to abandon the field to scholars who are more at ease and conversant with the assumptions, language and objectives of ES. To revel in (and retreat into) the immeasurability of CES values would be to marginalize and effectively disenfranchise ourselves in ES discussion, increasing the risk that CES are undervalued and underpriced relative to the other forms of ES.<sup>28</sup>

By guiding those new to the ES approach through the assumptions, language and objectives that deter the uninitiated, this handbook encourages AH thinkers and practitioners to engage with ES and the challenges it poses to their own assumptions and methodologies. As ES continues to develop as a research framework and becomes a sharper and more refined decision-making tool, AH approaches can foster the inclusion of rich and productive understandings of human engagement with the natural environment – not least by ensuring that these understandings are more clearly (and therefore more meaningfully) articulated. At the same time, we hope that researchers already operating within the field of ES will profit by consulting this Manual.

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<sup>25</sup> Quoted in Peter Coates, *et al.*, ‘Arts and Humanities Perspectives on Cultural Ecosystem Services: Arts and Humanities Working Group (AHWG): Final Report’, Arts and Humanities Research Council, April 2014 (hereafter, Coates Report).

<sup>26</sup> MEA, 460. MEA in fact stipulated ecology, economics, and *ethics* (our italics) as the areas to reconcile. Featuring as it does within discussions that take a much broader view of cultural services – specifying, for example, heritage, traditional knowledge systems, amenity provision and inspirational services as important considerations – this call for reconciliation has been taken to infer a more inclusive rapprochement with AH as a general school of thought and endeavour that includes ethics as well as areas such as the aforementioned, and more besides.

<sup>27</sup> Kate Wild and Diana McCarthy, ‘A Corpus Linguistics Analysis of Ecosystems Vocabulary in the Public Sphere (CLAEVIPS)’, (a report for the UK NEA), 29 June 2010.

<sup>28</sup> Coates Report.

## 2. The Keywords Manual

This Keywords Manual takes ten terms – nine of them frequently encountered in ES literature and the tenth the emergent term of Environmental Humanities - and offers concise discussions of their meanings and usages to provide an accessible introduction to CES, primarily, but by no means exclusively, for researchers in the AH community. It recognizes that the ES approach has grown from disciplinary roots beyond AH, and that the resulting specialist discourse can be disconcertingly impenetrable to the non-expert. ES poses substantial challenges to established AH approaches to and understandings of matters of environment, culture and society, challenges that the scholarly community should address. Because AH perspectives are indispensable to a complete Ecosystem Services Framework, this Manual encourages wider participation in ES debates and knowledge production by clarifying - rather than simplifying - key words and concepts.

The reader can approach this manual as a single text and read it from start to finish. Or the reader can dip in and out of the keywords, as and when required. It is a reference work, an introduction to the area, even a modest manifesto for AH participation in ES (as well as an opportunity for seasoned ES researchers to reexamine familiar concepts and reconsider meanings that may appear to be self-evident to them). It is not comprehensive, makes no claims to be definitive, and even aspires, in decades to come, to render itself obsolete, in that ES as a framework and approach will have become more accessible to and more inclusive of core AH approaches. In the meantime, it follows a tradition of texts. Most famously, there is the precedent of cultural commentator and literary critic Raymond Williams' *Keywords: A Vocabulary of Culture and Society*, which remains a landmark work nearly forty years after publication. Williams' astute inquiry into the vocabulary of culture and society remains relevant, and the clarity of *Keywords* continues to bring areas of specialist knowledge, as intended, 'into general availability'.<sup>29</sup>

A more recent influence is a small volume (*Anticipatory History*) published by the 'Anticipatory Histories of Landscape and Wildlife' research network (2010-11), funded by AHRC through the cross-Council (RCUK) 'Living with Environmental Change' (LWEC) initiative. This handbook of sorts reintroduced the format of using keywords as entry points, this time into discussions of past, present and future environmental change.<sup>30</sup> The 'Anticipatory Histories' network was fueled by the belief that, in various ways, the past has much to contribute to preparations for the future, and that the stories that we tell to communicate ecological and landscape histories constitute an intellectual tool that can help shape perceptions of plausible environmental futures. As DeSilvey, Naylor and Sackett explain: 'We often do not have the cultural resources to respond thoughtfully, to imagine our own futures in a tangibly altered world'.<sup>31</sup>

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<sup>29</sup> Raymond Williams, *Keywords: A Vocabulary of Culture and Society* (London: Fontana, 1976; reissued 1988), 17. Of particular relevance to ES discourse are the entries on Aesthetic, Country, Culture, Ecology, Nature and Wealth.

<sup>30</sup> Caitlin DeSilvey, Simon Naylor and Colin Sackett (eds.), *Anticipatory History* (Axminster, Devon: Uniformbooks, 2011). De Silvey *et al.*, in turn, acknowledge the influence of Stephan Harrison, Steve Pile, and Nigel Thrift (eds.), *Patterned Ground: Entanglements of Nature and Culture* (London: Reaktion, 2004).

<sup>31</sup> DeSilvey *et al.* *Anticipatory History*, cover, 9.

The subject matter of the resultant volume, *Anticipatory Histories*, speaks to the futures concern of ES; moreover, its format renders an emerging conceptual tool coherent and readily accessible. Though this CES Manual contains far fewer entries (*Williams' Keywords* consists of 129 while *Anticipatory History* contains 50) and only one entry overlaps with any of those in these two precursors – Williams' on 'Nature' – it has kept these two models in mind as it works to elucidate the vocabulary of CES.

### 3. The Keywords:

**BENEFITS · BIODIVERSITY · CULTURE · ECOSYSTEM · ENVIRONMENTAL HUMANITIES · LANDSCAPE · NATURE · SERVICE · VALUE · WELLBEING**

#### 3.a. Benefits

*n. 3(a) advantage, profit, good (b) a natural advantage or 'gift'*

*v. trans To do good, to be of advantage or profit to; to improve, help forward* (OED)

The recognition that humans benefit from ecosystems (or 'nature') is not only integral to the notion of ES. It is the very definition of the MEA approach: 'ecosystem services are the benefits (goods) people obtain from ecosystems'.<sup>32</sup> A single ecosystem or particular environmental setting or natural-cultural space can provide various benefits, that fall under one, multiple or all four service categories – provisioning, regulating, supporting and cultural – and the fundamental purpose of the ES framework is to provide a knowledge base from which to secure and enhance the sustainable use of ecosystems so that we continue to reap the benefits from the goods they provide.

Benefits are all of the things that we need and value which we take from ecosystems, environments, landscapes and 'nature'. They are as numerous and obvious as that definition implies. Benefits are material. Basic provisions like food, water, fibre and timber are goods relied on to sustain life. Being able to breathe clean air and to exercise and recuperate in an open green space are other benefits drawn from environmental settings. The air and the park represent the services that provide them.

Benefits are also immaterial, in the philosophical sense of the word, that is, which is far removed from this adjective's other meaning of unimportance and irrelevance. Artistic inspiration drawn from aesthetically appealing landscapes, spiritual solace from sacred places, a sense of heritage, identity, belonging and community derived from particular places, for example. These things are hard to quantify but they are nonetheless real and no less important and tangible than so-called material benefits in terms of their contribution to human wellbeing (see entry for **Wellbeing**).

How are benefits measured? That is the main challenge facing the ES approach. Many benefits can be counted, weighed and measured, and visualized in data sets and mapping techniques. To date, this way of describing and demonstrating benefits has been geared toward provisioning services, such as food and timber production.<sup>33</sup> Spatial information for regulating and cultural services is more difficult to generate, though several recent projects in the UK have successfully deployed geo-spatial approaches to articulate benefits and the richness and complexity of human-environment relationships. (The recent Working Group on Arts and Humanities Perspectives on CES (Coates Report, 2014) has proposed digital cultural mapping as a keystone activity for future CES research). Some scholars advocate

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<sup>32</sup> MEA, vii. MEA chose the word 'obtain', in contrast to the EUEA, which favoured 'receive', as in 'the benefits people receive from nature'. We prefer MEA's choice of verb, which infers that these benefits (aka advantages, profits and gifts) – are sought out rather than passively or automatically received. More often than not, it is a matter of active taking or acquisition, frequently with costs to the ecosystem functions from which services are extracted.

<sup>33</sup> EUEA, 4-5.

more precise units of ES measurement, to make the approach more standardized, replicable and useable by economists, markets, natural resource managers and governments.<sup>34</sup>

Cultural benefits derived from ES, often shifting and intertwined, do not lend themselves to rigid overarching structures of measurement. Those who work on aspects of CES argue that the benefits conventionally described as intangible, non-use, non-monetary, and ‘ill-fitting’ are not immeasurable in principle, but demand different, more flexible approaches and modes of communication. To exclude or oversimplify these kinds of benefits to facilitate tidier accounting threatens the integrity of the ES approach. The most productive role that AH expertise can play in ES research is to develop improved ways of understanding and communicating all the benefits we draw from ecosystems, in particular those ‘immaterial’ benefits. They may be routinely assigned to the ‘non-use’ category of value, but are far from useless, and often lie at the heart of why humans invest heavily culturally and emotionally in ecosystems.

(See also: **Value; Service; Ecosystem**)

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<sup>34</sup> James Boyd and Spencer Banzhaf, ‘What are ecosystem services? The need for standardized accounting units’, *Ecological Economics* 63 (2007), 616-26.

### 3.b. Biodiversity

#### ***n. Diversity of plant and animal life, esp. as represented by the number of extant species (OED)***

Biological diversity (usually abbreviated to biodiversity), broadly speaking, denotes the variety of life on planet Earth that has developed over billions of years of floral, faunal and micro-organism evolution. Entering the professional discourse of ecological science and environmental management in the 1980s, it has now become virtually a household term (though a study conducted as recently as 2007 indicated that many respondents related it to 'bio' washing powder, alternative energy forms, organic food, recycling and anti-pollution measures ['is it a process, like cleaning up unleaded petrol?']<sup>35</sup>). Despite this near-ubiquity, many people still struggle to define it in terms of genetic variation, species variation, ecosystem variation and the co-existence of animals, plants and micro-organisms.

Levels of biodiversity are shaped by habitats, natural forces and (thousands of years of) human activity.<sup>36</sup> But is biodiversity essentially about numbers? So far, humans have identified 1.75 million species. The Convention on Biodiversity reckons that a total of 13 million species inhabit the planet, though estimates range wildly from 3 million to 100 million.<sup>37</sup> As the fate of the dodo foretold, the expansion of the human race into new biophysical environments – and our alteration of habitats and climates - has put pressure on other species' survival. The International Union for the Conservation of Nature (IUCN) lists 801 recognized animal and plant species (mostly animal) known to have become extinct since 1500.<sup>38</sup> The IUCN's Red List is the most comprehensive inventory of extinct, endangered and threatened species. With 19,187 species listed in 2012 as being under varying levels of threat, cultural preference prioritizes selected species: charismatic megafauna (a term that first appeared in print in 1985) such as the giant panda, polar bear, black rhino and Sumatran tiger possess what has been dubbed the 'cute factor' and encourage an emotional reaction that the critically-endangered Mediterranean shrub, Akamas Centaury, or the zoologically-important – but far-from-cuddly – Coelacanth (a fish), do not. As such, they do not benefit in terms of the expenditure of conservationist time, energy and cash.

Species loss is an emotive issue that can promote individual and societal feelings of guilt, remorse and responsibility, spur preventative action, and is closely linked to how we identify objectives for wildlife protection (the widely recognized symbol of the World Wildlife Fund (WWF) is a giant panda, and has been the organization's iconic logo since its establishment in 1961). Early conservation movements were driven by concern for dwindling numbers of animal and plant life (organizations such as the RSPB, founded 1889 in response to the millinery fashion for the feathers of exotic bird species) as well as for threatened places of high scenic value (the National Trust).

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<sup>35</sup> Defra, 'Public understanding of the concepts and language around ecosystem services and the natural environment' (SID 5: Research Project Final Report), 2007, 39.

<sup>36</sup> Convention for Biological Diversity (CBD), 'Sustaining Life on Earth', [www.cbd.int](http://www.cbd.int)

<sup>37</sup> CBD, 'Sustaining Life on Earth', [www.cbd.int](http://www.cbd.int)

<sup>38</sup> Estimating changes to biodiversity is an inexact science, however, as the estimations of total species numbers suggests. By 2012, the IUCN had assessed 61, 914 of the 1,728, 408 known species of vertebrates, which is a mere 4% of the total: Rodríguez *et al.* 'IUCN Red List of ecosystems', *S.A.P.I.EN.S.*, 5:2 (2012), 63.

To ‘future proof’ against further damage to biodiversity, the Millennium Seed Bank at Kew Gardens and the Frozen Ark Project at Nottingham University collect the seeds, DNA and ‘viable cells’ of endangered species as a genetic insurance policy against future species loss. Biodiversity is a word that also carries suggestions of a broader concept that situates humans within a bigger system of life, with responsibilities to guard against damage to other parts of that shared system.

Biodiversity refers to more than just the number of species (and sub-species): it also indicates the condition of habitat health. It presents a holistic view of planetary life, and the imperative of maintaining the richness of life through an abundance of living things, which is embedded within the notion of ‘ecosystem’, and, as such, biodiversity is central to the rationale for ES. It was primarily to increase public interest in biodiversity conservation in the 1970s that ES was conceived, as a utilitarian means to assess and implement environmental protection.<sup>39</sup> By imposing economic values on biodiversity and habitat, ES was able to communicate their importance to governments and policy makers. The forecast of continued loss of biodiversity, alongside the future impacts of climate change, remains central to the rationale for full-scale incorporation of ES into decision-making. The *European Assessment of Ecosystem Services* (EAES, 2011), for example, introduces the ES framework through a discussion of biodiversity. ‘Together with climate change’, it warns, ‘biodiversity is the most critical environmental threat we face, and entails substantial economic and welfare losses’.<sup>40</sup> In 2001, the European Union (EU) set targets to halt biodiversity loss in the EU by 2010. The targets were not met, and, as a result, the EU is introducing ES as a way to integrate the consideration of biodiversity into other policy areas, including fisheries, agriculture, forestry, and regional development - sectors which, it is now argued, depend on biodiversity.<sup>41</sup>

That biodiversity provides benefits across the four categories of ES underpins the ES approach. Biodiversity-rich oceans, for example, ensure the provision of food services (fish supplies) and provide innumerable cultural services (fishing is significant culturally and in terms of community identity and cohesion as well as economically important); idioms and customs are closely connected with marine abundance; and the oceans and their creatures are linked to spirituality, indigenous beliefs, recreational activities and artistic and creative endeavour). Marine biodiversity contributes to provisioning and regulating services (nutrient levels and fish stocks), but is also influenced by increasingly frequent vagaries such as shifting sea temperatures and currents.

Examples of the importance of biodiversity are readily supplied - among them are medical and genetic resources, pollination of crops, biological pest control, and urban gardening. They are less easy to examine, though, as they require vastly different techniques of analysis and conceptual approaches. This challenge runs through ES, and requires imaginative responses in terms of data capture and modeling, and academic study. Software such as the Natural Capital Project’s InVEST technology enables large-scale analysis of biodiversity and ecosystems in terrestrial and watery environments. However, in addition to large-scale regional/ecosystem-wide studies, it has been argued that the study of biodiversity within an

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<sup>39</sup> Baggethun *et al.* ‘History of ecosystem services’, 1209.

<sup>40</sup> Joachim Maes, Maria Luisa Paracchini, and Grazia Zulian, *A European Assessment of the Provision of Ecosystem Services: Towards an Atlas of Ecosystem Services* (Luxembourg: EU, 2011), 4.

<sup>41</sup> EAES, 63.

ES context must be co-developed with local decision makers and communities to produce knowledge that is credible and relevant.<sup>42</sup>

This is pertinent to CES as it encourages smaller-scale, locally-focused projects that articulate biodiversity's unarguable importance to a range of activities and services. The UK NEA, for instance, highlights studies that have investigated the positive effects of higher biodiversity levels on the psychological wellbeing and physical activity of communities, placing biodiversity concerns at the heart of CES.<sup>43</sup>

To employ biodiversity to measure ecosystem health invests it with value. If biodiversity is good, though, does it follow that more species is automatically better? Do we pursue biodiversity for its own sake? For Steve Trudgill, the numerical argument does not hold up: seven species may be better than six, but what if that meant there were four predators instead of three, or just one predator but six prey? He recommends that we adopt a cultural preference for richness.<sup>44</sup> The value we place on biodiversity, he argues, draws on other values of integrity, balance and beauty that we locate in biotic communities. These values contribute to moral and ethical arguments against the destruction of biodiversity that are as powerful (in Trudgill's eyes) as the approach of some, if not all, ES advocates that assigns monetary value to nature.<sup>45</sup>

This need not be seen as a direct challenge to the ES approach. However, it does encourage wider cultural understanding of issues and values of biodiversity, in addition to scientific data. The valuation of nature and biodiversity for its own sake is not incompatible with ES, and in some scenarios, as when traditional knowledge places spiritual value on nature, is more useful than attaching monetary value to places and species and their associated services.<sup>46</sup> While the protective impulse of environmentalism may be instinctual and/or culturally learned, by placing biodiversity at the heart of its mission, ES offers a method of ensuring its inclusion in decision-making. And by attaching value to nature through an approach with biodiversity at its heart, ES communicates the truth propounded by biodiversity conservationists – and that no amount of DNA banks can offset – that once lost, species cannot be purchased back at any price.

Biodiversity is about numbers. Yet it is also about society, culture, values, places, pasts and futures. And it is always about the other living things with which we share the planet.

(See also: **Ecosystem; Nature; Value**)

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<sup>42</sup> Mary Ruckelshaus, *et al.* 'Notes from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions', *Ecological Economics* (in press, available on-line 23 August 2013), 2.

<sup>43</sup> UK NEA, 648, 662, 681; see also: W. Bird, 'Natural Fit: Can Green Space and Biodiversity Increase Levels of Physical Activity?' RSPB (2007); R. Fuller, , K. Irvine, P. Devine-Wright, P. Warren & K. Gaston (2007), 'Psychological benefits of greenspace increase with biodiversity', *Biology Letters*, 3, 390–394.

<sup>44</sup> Steve Trudgill, 'Psychobiogeography: Meanings of nature and motivations for a democratized conservation ethic', *Journal of Biogeography* 28 (2001), 683.

<sup>45</sup> Trudgill references Costanza *et al.* and Daily's 1997 works. Others – Chan *et al.* Ruckelshaus *et al.* - advise a less utilitarian approach that makes room for 'less tangible' and non-monetary valuations.

<sup>46</sup> Ruckelshaus *et al.* 'Notes from the field', 8.



### 3.c. Culture

It is telling that the first dictionary definition of culture is ‘the cultivation of land, and derived senses’. In some areas of ES research, agriculture is indeed a subject preferred to the broad and complex ‘culture’ that emerges from human-nature interactions. Agriculture has the advantage of being far more ‘tangible’. Crops can be tested, weighed, harvested, traded and consumed. But even as people work the land, they are engaged in deep and meaningful relationships with the soil, its plants and animals, and its terroir (as well as with each other). The culture they produce is inscribed in material products, in songs and language, in customs and rituals, and even in the land itself, through the ‘taskscape’ (or workscape) that the daily rhythms of work and play create.<sup>47</sup> There is no avoiding of culture in nature, and ES recognizes that the distinctive ideas, customs, social behaviour, products, or way of life of a particular nation, community or group of people - and the arts and other manifestations of human creative achievement regarded collectively - are embedded in the environments we inhabit.

As is now widely recognized by advocates and critics of ES alike, however, culture as an interpretive category of investigation has not been adequately and appropriately represented to date in ecosystems research. The UK NEA emphasized that there are ‘knowledge gaps’ related to CES, while the MEA also acknowledged that ‘the importance of cultural services and values is not currently recognized in landscape planning and management’, and that ‘these fields could benefit from a better understanding of the way in which societies manipulate ecosystems and related that to cultural, spiritual and religious belief systems’.<sup>48</sup>

As noted by an Arts and Humanities Working Group, specially convened in the UK to discuss AH perspectives on CES, until quite recently, much of what passed for ‘more interpretive’ ‘social and cultural’ research on ES did not include AH input or perspectives.<sup>49</sup> The UK NEA points out that many sources of environmental data are not designed to examine key aspect of cultural services, goods and benefits, and that new approaches are needed. Until recently, however, a major role for AH researchers in the task of accumulating additional qualitative data has not been envisaged.<sup>50</sup> This area of the ES framework clearly presents an ‘operational problem’ for scientists and economists ‘faced with translating a rich concept such as culture into a programmatic and observable set of accounting units’.<sup>51</sup>

The tendency to frame cultural contributions in terms of economic values and scientific data is a legacy of the framework’s origins. The palpable existence of CES is an invitation to AH researchers to contribute their knowledge of culture-nature interactions, and engage with more interpretive ideas of matters related to natural resources, biodiversity and environmental and climate change. In practice, however, the ES approach has continued to rely largely on cultural interpretations incorporated into studies of ecosystems pursued without major involvement from the AH research community. As suggested by Fish (who combines the perspectives of social science and the arts and humanities), the reduction of

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<sup>47</sup> Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill* (Routledge: London, 2012).

<sup>48</sup> UK NEA, 638; MEA, 457.

<sup>49</sup> Coates Report.

<sup>50</sup> UK NEA, 638; Coates Report.

<sup>51</sup> Fish, ‘Environmental decision making’, 674.

culture to a 'service' provided has contributed to the disjuncture between an ES approach and an AH outlook.

To communicate the importance of environmental considerations in decision-making, to both local and global audiences, and to factor in the implications of biodiversity loss and climate change – two of the driving impetuses behind the ES approach - ES discourse and research needs the array of narrative, creative and analytic tools that AH approaches can provide. The Arts and Humanities Working Group highlights the role AH scholars can play in developing approaches fit for purpose, and warns against pigeon-holing AH contributions as the provision of an approachable narrative and translational tool for communicating scientific approaches. At the same time, the Working Group upholds the story-telling strengths – visual, material, linguistic, musical, etc. – that AH can contribute to the ES discourse. 'Cultural phenomena potentially possess greater transformative power in terms of values and behaviour,' the group's report argues, 'than scientific data'.<sup>52</sup> Organizing questions and findings into a compelling and accessible narrative potentially offers a more potent educational device and communication aid than any number of computer-generated models.<sup>53</sup>

Better communication of the ES agenda's aims and concerns – particularly with regard to biodiversity and climate change priorities – is essential to advance closer towards environmentally responsible and cost-effective decision-making. The recent AHRC initiative, 'Landscape and Environment' (2005-10) provided - and the current programmes 'Living with Environmental Change' (a cross-research council scheme with over twenty funding partners), 'Care for the Future: Thinking Forward through the Past' and 'Connected Communities' continue to provide - financial and institutional support for projects to investigate from AH perspectives aspects of environmental transformation, not least climate change. As a direct result, a range of approaches are developing the conceptual tools for envisioning, articulating and responding to current and future environmental and climate change. The 'Anticipatory History' research network (2010-11), for example, identified the problem that 'we often do not have the cultural resources to respond thoughtfully, to imagine our own futures in a tangibly altered world'.<sup>54</sup>

Through this 'Anticipatory History' network, academics, land managers, artists, film makers, museum curators, conservation professionals and local government representatives worked towards thought-provoking responses to local landscapes and the impact (real and imagined) of climate change. 'Anticipatory Histories' found that there is a 'clear role for the creative arts' in negotiating the sometimes provocative tensions between the communication of scientific knowledge, and the recording and acknowledgement of intimate attachments to place.<sup>55</sup>

(For further detail and other approaches: see also: **Environmental Humanities**)

Direct and indirect connection with CES themes is by no means restricted to the sphere of academic research. In recent years, the National Trust (the UK charity established in 1895 that works to preserve and protect historic buildings and places of natural beauty) has recognized that 'Spirit of Place' resides at the heart of how people feel about and experience particular places, and that this notion encapsulates what makes them relevant. The Trust

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<sup>52</sup> Coates Report.

<sup>53</sup> Coates Report.

<sup>54</sup> DeSilvey *et al.* *Anticipatory History*, 9.

<sup>55</sup> DeSilvey *et al.* *Anticipatory History*, 13, 15.

defines ‘Spirit of Place’ as a combination of the tangible qualities of a place (comprised of its scenery, buildings, land uses, colours, textures and smells) and the ‘intangible’ cultural elements of history, aesthetic value, spiritual significance, emotions and traditional activities. This is cultural services by another name, and demonstrates the awareness of a multi-million member national organization of the importance of understanding the responses and values of the people who visit (or live in) a place, to improve its capacity to manage and protect that place. The Trust explains that:

Spirit of Place refers to the unique, distinctive and cherished aspects of a place. It is thus as much in the invisible weave of culture (stories, art, memories, beliefs, histories, etc) as it is in the tangible physical aspects of a place (monuments, rivers woods, architectural style, pathways, views and so on) or in its interpersonal aspects (the presence of family, friends, and kindred spirits).<sup>56</sup>

The National Trust has taken the concept of ‘Spirit of Place’ (which draws on the Quebec Declaration on the Preservation of the Spirit of Place issued by the International Council on Monuments and Sites [ICOMOS] in 2008) and injected it into the core of its ethos. A short written statement, declaring the spirit of place, arrived at through consultation with stakeholders including representatives from local community organizations and government, and of heritage and nature conservation agencies, is required for all properties. Given that ES researchers, such as Denise Dillon, stress the importance of respect for cultural connections with the environment in ES studies, the National Trust’s adoption of spirit of place as a priority across its properties demonstrates the opportunity for this sort of understanding to become part of the large scale operational management of environments on a landscape scale.

For inspiration in its adoption of ‘Spirit of Place’, the National Trust looked to the eighteenth-century poet and landscape designer, Alexander Pope, who expressed the idea that sensitivity to spirit of place would always give the best advice in matters of design:

Consult the genius of the place in all;  
That tells the waters or to rise or fall;  
Or helps th’ambitious hill the heavens to scale,  
Or scoops in circling theatres the vale;  
Calls in the country, catches opening glades,  
Joins willing woods, and varies shades from shades,  
Breaks, now directs, th’intending lines;  
Paints as you plant, and as you work, designs.<sup>57</sup>

This Manual takes the view that critiques of mainstream ES approaches to culture and nature from AH perspectives are constructive, and that AH approaches can – and should – play a more active role in CES research to help move the discourse beyond discussions based on outmoded concepts of ‘culture’. AH researchers are developing innovative and important approaches to matters of culture and nature that may not yet fit neatly into an ES approach. But they offer potentially useful applications of cultural-environmental knowledge in real-world case studies. The Coates Report identifies a number of projects in the UK that feature research questions that intersect with CES objectives. Though they do not explicitly

<sup>56</sup> National Trust, ‘Spirit of Place: Guidance and Recommended Practice’ internal document (February 2013).

<sup>57</sup> Alexander Pope, *Epistles to Several Persons: Epistle IV to Richard Boyle, Earl of Burlington* (1731) as quoted in the National Trust’s ‘Spirit of Place’ internal document.

locate themselves within the ES paradigm, there are shared interests and common ground between projects such as these and CES research, and the potential for case studies of this sort to inform future collaborations with ES research is clear. As the MEA notes, for a new perspective to emerge that ensures that human wellbeing and cultural identity remain linked to ES, disparate scholarly disciplines need to meet on neutral territory to engender fruitful future collaboration.<sup>58</sup>

A fully integrated and sensitive approach to CES advances the ES approach by enabling a research and decision-making framework that reflects the pervasive reciprocities of culture and nature. This will allow for awareness and inclusion of cultural considerations and all manner of connections between people and ecosystems as researchers work across the full range of ecosystem services.

As Pope also remarked in his admonition to ‘consult the genius of the place’:

‘To build, to plant, whatever you intend,  
To rear the column, or the arch to bend,  
To swell the terrace or to sink the grot;  
In all, let Nature never be forgot’

(See also: **Environmental Humanities; Nature**)

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<sup>58</sup> MEA, 460.

### 3.d. Ecosystem

***n. Biol. A biological system composed of all the organisms found in a particular physical environment, interacting with it and with each other.(OED)***

The notion of the ‘ecosystem’ is fundamental to ecosystem services, and therefore an indispensable handbook entry. The MEA offered a clear working definition: ‘an ecosystem is a dynamic complex of plant, animal and microorganism communities and the non-living environment as a functional unit’.

In some ways, ‘ecosystem’ is one of the more straightforward words within the ES corpus. OED and MEA definitions both convey the inherent meaning of coexisting, co-reliant life forms within a shared biophysical space. The MEA and UK NEA are careful to include people as integral parts of ecosystems, stating that a dynamic interaction exists between them and other ecosystem components. The recognition that humans belong to ecosystems, and that damage to ecosystem parts directly impacts on human welfare, too, fuel the drive to incorporate an ES approach across all areas of decision-making. If a worldview may be deduced from a single word, ‘ecosystem’ conveys one defined by sustainability, balance, and natural order.<sup>59</sup> Rooted in the term ‘ecology’, coined in the 1860s by the German polymath, Ernst Haeckel, and with roots (like economy) in the ancient Greek concept of oikos, meaning home or household,<sup>60</sup> the term has since become applied in various fields beyond ecological science, with sociologists, for example, referring to the sociology of urban ecosystems.

Nonetheless, thinking about ‘ecosystems’ raises points of language and understanding to be mindful of when using ES terminology. The CLAEVIPS Report (2010; commissioned by UK NEA) took ‘ecosystem’ as the term on which was hinged the hundred or so words investigated. But the authors found that ‘ecosystem’ itself is a term with varied uses and understandings. Based on the UK Web as Corpus (UKWaC), a body of over 1.5 billion English words in the public domain, the study found that key collocates included adjectives and nouns indicating location and environmental setting (marine, aquatic, forest); adjectives which denote vulnerability (fragile, threatened, endangered, delicate); verbs indicating harm done to ecosystems (degrade, disrupt, damage, harm, threaten, upset, suffer); and verbs referring to the protection and regeneration of ecosystems (conserve, preserve, protect).<sup>61</sup> The most salient verb collocate of ecosystem was ‘degrade’, though it was predominantly employed in the passive voice – a linguistic technique prevalent in environmental writing, as it allows description of environmental damage without directly allocating responsibility or blame.

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<sup>59</sup> Though the concept of a balance of nature - and the related notion of a climax community - has been contested, it endures in modern Western environmental thinking, particularly at a popular level. Trudgill (‘Psychobiogeography’, 681-2) points to a number of key texts that unpick fond notions of natural balance: S.L. Pimm, *The Balance of Nature? Ecological Issues in the Conservation of Species and Communities* (Chicago: University of Chicago Press, 1991); Donald Worster, *The Economy of Nature: A History of Ecological Ideas* (Cambridge: Cambridge University Press, 1994); D.G. Sprugel, ‘Disturbance, equilibrium and environmental variability: What is “natural” vegetation in a changing environment?’, *Biological Conservation*, 58 (1991), 1-18. For a strong case against the predilection among economists for a state of equilibrium, see Richard Norgaard, ‘Ecosystem Services: From eye-opening metaphor to complexity blinder’, *Ecological Economics* 69 (2010), 1220, 1224.

<sup>60</sup> Williams, *Keywords*, 210-11.

<sup>61</sup> Wild and McCarthy, ‘CLAEVIPS’, 10.

Significantly, the CLAEVIPS study revealed that ‘ecosystem’ featured twice as frequently in the specialized academic corpus as in the government and public corpora, and that it was used across all three domains in the phrases ‘ecosystem approach’, ‘ecosystem services’ and ‘ecosystem functioning/functioning ecosystem’.<sup>62</sup> The word most comparable to ecosystem in terms of its use in the overall UKWaC was ‘habitat’, indicating a correlation in our understanding between ecosystem and ‘environmental setting’ that UK NEA itself reflects, with its frequent references to ‘environmental settings’ and ‘natural environments’ as the locations of (cultural) ecosystems services.<sup>63</sup> The previously conducted MEA acted to prevent this conflation of meaning by using ‘systems’ to describe broad categories of landscape or seascape (including their human systems) – such as ‘Forest and Woodland systems’, ‘Mountain systems’, and so forth – noting that ecosystems, ‘on the other hand, are theoretically defined by the interactions of their components’.<sup>64</sup> The distinction between ecosystem and environmental setting is useful, for it is more inclusive of deeply entrenched and culturally resonant, if less scientifically rigorous notions such as place and landscape. However, the addition of ‘system’ as a sub-set of ecosystems may be confusing.

The differences of language use between academic, government and public corpuses that CLAEVIPS unearths, as well as those between key ES studies, reminds us that the lucid communication of key ideas constitutes an ongoing concern for researchers. Fish points out that, in the UK, historically, the language of ES has been found obfuscatory, to the extent that the Department for Environment, Food and Rural Affairs (Defra) has identified that the language of ES may have to be recast in terms that people will find easier to understand.<sup>65</sup> ‘Ecosystem Services’ is a phrase not yet fully integrated into the English language, and remains a predominantly academic concept (with use within academic circles more than three times as frequent as in the public or government corpora).

(See also: **Biodiversity; Value**)

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<sup>62</sup> Wild and McCarthy, ‘CLAEVIPS’, 10.

<sup>63</sup> UK NEA, 634, 637, 646, 647.

<sup>64</sup> MEA, xvii.

<sup>65</sup> Fish, ‘Environmental decision making’, 676; Defra, *Public Understanding of the Concepts and Language around Ecosystem Services and the Natural Environment* (London: Defra, 2007).

### 3.e. Environmental Humanities

The Environmental Humanities is an emerging concept within the wider field of the humanities (and the arts, with some more overtly inclusive references to the Environmental Arts and Humanities). It aims to bring those working across individual disciplines on matters of nature, place, landscape, environment, culture and society together as a cohesive research community, encouraging collaboration, knowledge-sharing, and engagement with policy, publics and researchers beyond the humanities. Some AH scholars prefer the term 'Ecological Humanities' because substantial progress has already been made in various fields with the prefix of 'eco' - notably ecofeminism, ecolinguistics, ecopoetics, social ecology, political ecology and human ecology. Nonetheless, Environmental Humanities is the term that has caught on (and though the Arts are not explicitly included the within this concept, they usually are by default.)

As noted by various sources within ES scholarship, more and improved work on cultural services is needed to do justice to the reality that culture pervades human interactions with ecosystems. AH scholars have the conceptual and methodological toolkits to hand. In addition to raising awareness in the wider world of what the AH community has already achieved, the task for ES researchers, and those within the AH community who are already engaging with the ES approach, is to encourage further engagement, collaboration, critique and relevant research within the AH community. The Environmental Humanities offers an example of an engaged community of scholars already working on the very topics that fall within the province of CES.

The concept and practice of Environmental Humanities is most developed in North America and Australasia. Stanford University is home to the Environmental Humanities Project, established in 2007, while a growing number of US universities host environmental humanities centres and operate courses (University of Utah [Salt Lake City], UCLA, and Virginia Tech, to name just three). In Europe, the Environmental Humanities has taken hold in Germany (in the shape of the Rachel Carson Center for Environment and Society, established in 2009) and Sweden (Royal Institute of Technology, Environmental Humanities Laboratory; operational since 2012). In the UK, the recently launched (2013) Centre for Environmental Arts and Humanities at the Environmental Sustainability Institute (Exeter University, Cornwall Campus) (note the explicit inclusion of the Arts in this instance) and the MA/MSc in Environmental Sciences and Humanities at the University of East Anglia are signs that the Environmental Humanities is gaining an institutional foothold.

A new journal, *Environmental Humanities* (2011), promises to provide a forum for researchers in the field, and its objective parallels the aims of ES research from a cultural perspective. The journal sets out to publish 'outstanding scholarship that draws humanities disciplines into conversation with each other, and the natural and social sciences', in response to growing global interest in the many questions of high societal urgency that are arising in this era of particularly rapid environmental and social change.<sup>66</sup> While ES assessments state that there are 'knowledge gaps' in the area of CES, this is not attributable to wholesale lack of interest in environmental issues within the AH community, from scholars representing disciplinary areas such as social anthropology, human geography, history, linguistics, literature, performance, philosophy and ethics and religious studies. Introducing the Carson Center to the academic community of Ludwig-Maximilians

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<sup>66</sup> *Environmental Humanities* homepage, <<http://environmentalhumanities.org>>

Universität (Munich), in 2009, Christof Mauch, the Center's director, indicated that in the new configuration of the Environmental Humanities, it is 'the bigger ideas which are at stake. And these bigger ideas are linked by their common recognition of nature as a cultural challenge, focusing on the role played by human agents in the natural environment, the cultural consequences of natural change, and the way nature is portrayed'.<sup>67</sup>

The questions that drive the Carson Center and the community of researchers that it supports are the same that impel ES researchers regardless of location, disciplinary approach or training. What will happen if we do not address environmentally unsustainable human interventions in the world's ecosystems in the name of progress? Where will humanity be in hundred years' time if we do not expose how human decisions and interactions cause environmental problems? What can we gain from insights into the fluctuations, power and agency of nature – and do we have an alternative to apocalyptic, end-of-nature narratives?<sup>68</sup>

This particular Manual entry sits somewhat apart from the rest, by not investigating (as the others do) meanings and inferences of terms and concepts already common currency in ES discourse. Instead, it highlights an emerging area of academic scholarship with much to offer to – and, indeed, learn from – the ES approach. The Environmental Humanities represents an area receptive to ES and attuned to accompanying scholarly debates. They occupy fertile ground for future research that addresses in innovative ways the cultural 'services' of nature and the human responsibility for sustainable, informed, environmentally aware, decision-making.

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<sup>67</sup> Christof Mauch, 'Notes from the Greenhouse: Making the Case for Environmental History', *RCC Perspectives* 6 (2013), 9.

<sup>68</sup> Mauch, 'Notes from the Greenhouse', 16.



### 3.f. Landscape

Landscape, is a term steeped in subjectivity and preference, both individual and societal. It is derived from *landschap*, a term applied by Dutch and Flemish painters to rural scenery in the sixteenth century. This painterly association, and emphasis on viewing and capturing the landscape, accompanied its uptake in the Anglophone world and has endured in some respects: ‘a landscape’ can still describe a painting. Just as, or even more commonly, it denotes a view. This view (or prospect, to use an older term) does not have to be of the countryside, but the ‘pictorial codes’ of rural scenes expressed in the paintings of van Ruysdael, Hobbema, Lorrain, Constable (and others) have lasted (see, too, David Hockney’s recent work).<sup>69</sup> CLAEVIPS reports that the majority of uses for ‘landscape’ refer to a physical area of land, and are interchangeable with ‘countryside’.<sup>70</sup>

With regard to our sensory engagement with place, the word landscape, understood in these terms, often privileges visual and surface attributes. But landscape is also applied much more widely nowadays, and with greater versatility. This revitalized and more inclusive concept of landscape is encapsulated in the non-hierarchical definition that informs the Council of Europe’s European Landscape Convention (adopted in Florence in 2000 and signed by the UK government in 2006), which embraces the non-picturesque, the ordinary, the urban and the industrial without prejudice: ‘an area perceived by people, whose character is the result of the action and interaction of natural and/or human factors’.

Not least, the ‘new’ landscape is something that is experienced in a multisensory fashion, involving hearing, touch, taste and smell as well as engaging the eye. When we refer to heritage landscapes, national landscapes, iconic landscapes, therapeutic landscapes, natural landscapes, cultural landscapes, memorial landscapes and political landscapes (to name just a few) – and introduce distinctions such as riverscape, waterscape, mountainscape, animalscape, workscape and soundscape - we move far beyond ‘landscape’ as a terrestrial environment and a narrowly visual entity. The arts and humanities have created and disputed many of these uses, established and more recent, to the point where ‘landscape’ is an enormously versatile word that can productively complicate our understandings of human-nature-creature interactions.

Take, for example, Simon Schama’s explorations in *Landscape and Memory*. He argues that landscape tradition, whether in the developed or developing world, is the product of a shared culture, and, by the same token, is built by myths, memories and obsessions. Thinking about landscape in this way can reveal to the western world ‘the cults which we are often told to seek in other native cultures - the primitive forest, the river of life, the sacred mountain – [which] are in fact alive and well and all about us, if we know where to look for them’.<sup>71</sup> AH research has challenged the understanding of ‘landscape’ as a passive environmental canvas on which natural processes and human agents leave their marks and promoted its active role. Environmental historians invest landscape with agency; cultural geographers and nature writers explore its narrative power; and artists such as Adam Buick allow landscape and the elements to shape the artistic process and final object.<sup>72</sup> In all

<sup>69</sup> Stephen Daniels, *Fields of Vision: Landscape Imagery and National Identity in England and the United States* (Cambridge: Cambridge University Press, 1993), 5; Gordon G. Brittan, Jr, ‘Wind, energy, landscape: Reconciling nature and technology’, *Philosophy and Geography* (2001) 4:2, 169-84, 171.

<sup>70</sup> Wild and McCarthy, ‘CLAEVIPS’, 51.

<sup>71</sup> Simon Schama, *Landscape and Memory* (New York: Vintage, 1995), 14.

<sup>72</sup> Buick’s film ‘Earth to Earth’ captures the wearing/weathering away of an unfired jar placed at the top of Carn Treliwyd, Pembrokeshire, over ten days in October, 2011 < <http://vimeo.com/31076634>>

these approaches, landscape retains a physicality and remains connected critically to terms like land, place, space, scenery, nature and environment. This lends the term a 'creative range and depth of meaning' to which those in the AH community are particularly responsive.<sup>73</sup> A term in constant flux, handled carefully and meaningfully, is a powerful tool for linking deep-seated past understandings with present uses, and future possibilities. Landscapes conjure 'moments of recognition' where, and when, a place exposes these connections across time.<sup>74</sup>

Landscape, importantly, also functions imaginatively. More than just a place or category of land, it is also a way of seeing and feeling. Across the arts and humanities, thinkers have used landscapes as a way of examining the self. Macfarlane proposes that humans construct 'topographies of self' that we carry within us, [navigating] these interior terrains by maps of our own making.<sup>75</sup> Schama asserts that 'landscape is a work of the mind. Its scenery is built as much from strata of memory as from layers of rock'. 'Landscape' is an especially human way of describing land that requires a process of vision, thought and creative engagement. Arts and humanities approaches encapsulate the tension between the external and the internal worlds in 'landscape', and acknowledge historical processes in the construction of the term's complexities and the making of the material landscape itself.

ES work brings a range of disciplines together, and not everyone will agree with all these usages of 'landscape', which embrace strict as well as loose constructions. To take one example, Landscape Character Assessment (LCA) employs a discrete methodology and particular set of tools and rules to assess landscape as a material reality that can be quantified and objectively valued. AH involvement in ES does not seek to undermine one approach to advance another. Instead, it encourages recognition, within the framework that ES offers that multiple conceptions of terms such as 'landscape' enrich the corpus of work. Certainly, in its placement of human thought and activity at the heart of 'landscape', AH perspectives share common ground with LCA, and similar approaches. The protection of national parks and Areas of Outstanding Natural Beauty in Britain enshrined certain landscape ideals and values in law, inscribed them in land, and recognized (in the words of a Landscape Assessor) that 'all the landscapes of England are influenced by human activity... [natural beauty] cannot imply pristine or completely natural landscapes or there would be no land in England that could meet the Natural Beauty criterion... cultural influences on the landscape should be taken into account'.<sup>76</sup> Her words echo those of nineteenth-century American naturalist and thinker Henry David Thoreau (Journal entry, 30 August 1856), which provide Schama with his preface:

'It is in vain to dream of a wildness  
distant from ourselves. There is none such.  
It is the bog in our brains and bowels, the  
primitive vigor of Nature in us, that inspires  
that dream.'

Landscape may be, in some senses, a 'flatter' term than 'ecosystem', which encapsulates an entire, dynamic system of environments, inhabitants, and interactions between them. But

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<sup>73</sup> Stephen Daniels, 'What Landscape Means to Me', *Landscapes* (2011), 2, 92.

<sup>74</sup> Schama, *Landscape and Memory*, 16.

<sup>75</sup> Macfarlane, *The Old Ways: A Journey on Foot* (London: Granta, 2012), 26.

<sup>76</sup> Quoted in Paul Selman and Carys Swanwick, 'On the meaning of natural beauty in landscape legislation', *Landscape Research* 35:1 (2010), 22

AH perspectives offer - in fact demand - a depth of meaning in its use that includes smell, taste and sound as well animate elements such as fauna. ('Living landscape', denoting a 'wildlife-rich, ecologically functioning landscape that can adapt to pressures such as climate change...and give people a place to live, work and play', receives an entry in *Anticipatory History*.<sup>77</sup>) Used carefully and to its full potential, 'landscape' extends beyond the surface of the land and our eyes, refusing to rest on assumptions of aesthetics, use, history and identity that often mask the dynamism of place. For this reason, it is a term that (as Daniels and Cowell argue) can help those working in ES 'gain purchase on practical as well as interpretive problems, as a matter for both action and reflection, for appreciating and managing everyday places as well as iconic sites and scenery'.<sup>78</sup>

(See also: **Culture; Ecosystem; Environmental Humanities; Nature**)

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<sup>77</sup> DeSilvey, Naylor and Sackett (eds), *Anticipatory History*, 44-45

<sup>78</sup> Stephen Daniels and Ben Cowell, 'Living Landscapes', in J. Bate (ed.), *The Public Value of the Humanities* (London: Bloomsbury Academic, 2011), 105-117.

### 3.g. Nature

As ‘perhaps the most complex word in the language’ (according to Williams’ *Keywords* listing) and with an OED entry that reads like a litany of *rare*, *Colloq.* and *Obs.* meanings we have given the word over time, the reader of this Manual will be spared a lengthy and intricate definition of ‘nature’. Williams distinguished three main areas of meaning that cover most of the ways that nature features in modern language: i) the essential quality and character of something; ii) the inherent force which directs either the world of human beings or both; iii) the material world itself, taken as including or not including human beings.<sup>79</sup>

Nature, a truly protean entity, is sometimes included in definitions of ecosystem services, as in, for example: ‘ecosystem services are the benefits people derive from nature’.<sup>80</sup> Far more common, though, is the replacement of the word nature with ‘ecosystems’ or ‘the environment’. These words are strewn liberally through the ES literature, along with the terms environmental settings, green spaces, blue spaces, biodiversity, species, and landscapes. Apart from in certain key texts, to be discussed below, nature is noticeably absent from the discourse on how humans interact with and benefit from the biophysical world around them. What is the problem with nature?

The problem may lie with common intuition of the word’s complicated meanings and multiple uses. One person’s ‘nature’ can have a different meaning from another’s, invariably influenced by that other ‘complex’ word, culture. Nature may just be too complicated and loaded a term – a term simply with too much history – to prove serviceable for an emerging discourse. Nature is ambiguous, leaving the inclusion of humans in its metaphorical embrace entirely up to the individual speaker or writer. The idea of nature has evolved with human thought over centuries, and its meaning varies according to social, cultural, spatial and temporal context. Ecosystems include all living things within their dynamic embrace. Humans play a functioning part, but are not fundamental to the concept. Ecosystem services is a multifunctional, inherently interdisciplinary approach and yet it mainly speaks the language of science and economics.<sup>81</sup> Though the flagship scholarly journal for the sciences as a whole is (simply) entitled *Nature*, such a fluid (and perplexing) term as nature has no real advantage within a scientific discourse – not when ecosystem, environment and biodiversity can clarify what we mean when we think of ‘nature’.

But nature is significant in ways that ‘ecosystem’ cannot be, thanks to the aforementioned wealth of its meanings. Spirituality is a vital dimension of CES – yet people tend to identify, commune with, and cultivate spiritual relationships with nature and particular places (small and large), not ecosystems. As a term, nature can encapsulate the complex human relationship with the world around them in a way that a more precise and scientific term cannot. AH scholars are comfortable with the word ‘nature’ – in fact, some of them devote their research to the investigation of its cultural baggage, and relationships with history, society and creative practices. It is the kind of word that embodies the complexities and ambiguities of their inquiries, and is part and parcel of the language traditionally used to discuss aesthetic, inspirational, recreational, therapeutic, experiential, educational and

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<sup>79</sup> Williams, *Keywords*, 219. See also: Peter Coates, *Nature: Western Attitudes since Ancient Times* (Berkeley: University of California Press, 2004 [1998]).

<sup>80</sup> Christian Layke, ‘Measuring Nature’s Benefits: A Preliminary Roadmap for Improving Ecosystem Service Indicators’, WRI Working Paper (World Resources Institute: Washington DC, 2009), 1.

<sup>81</sup> Marion B. Potschin and Roy H. Haines-Young, ‘Introduction to the special issue: Ecosystem services’, *Progress in Physical Geography* 35 (2011), 573.

identity and heritage-related benefits of engaging with the world around us (in other words, those things now referred to, collectively, as cultural ecosystem services).

In Britain, the major heritage, conservation and land management agencies, such as the National Trust and Natural England, also routinely refer to nature, alongside place and landscape, in their literature. This is probably because these terms acknowledge that humans have shaped the natural environment and left material evidence of that role; and that people have attributed personal and collective meanings to environmental settings. Nature is also a more common ingredient of lay language, and though this may confer a certain vagueness on its use at times – the CLAEVIPS study identifies a predominant (72%) use of the ‘basic qualities of something’ meaning and a 28% use of ‘the physical world and living things’ meaning in British public discourse – it also renders it a flexible word that transcends lay, academic and governmental boundaries. As such, it is a powerful word for communication purposes.

The relative invisibility of ‘nature’ within ES discourse is partly a product of the origins of ES discourse in environmental science and environmental/ecological economics. Yet it is also a telling reflection of the difficulties the discourse has encountered in engaging with cultural terms and approaches. The construction of an expert language with a specific vocabulary, as this Manual has identified, has assisted with its adoption by governments and decision-makers. Yet the technocratic connotations of ‘ecosystem services’ also expose the concept and approach to critique and skepticism on the part of organizations and individuals who do not readily engage with this language.<sup>82</sup> Clear and cogent communication must be a priority within a decision-making framework. So, too, and particularly relevant to CES, is the ability to generate fresh ideas, connections and discussions to further the achievements and possibilities of the approach. There may yet be a place for ‘nature’ in ecosystem services, as UK NEA hints.

UK NEA repeatedly refers to human-nature relationships in its ‘Cultural Services’ chapter, and includes nature in its definitions of CES: The ‘concepts of “cultural services” and “cultural goods” are designed to provide a framework for understanding human benefits from nature and the consequent social, economic and environmental changes that arise’.<sup>83</sup> Its report contrasts nature as a word with a ‘history as old as human thought’ with environment as one of a family of new ‘eco-words’ that emerged in the nineteenth and twentieth centuries to express a scientific agenda.<sup>84</sup> The ease with which the report’s authors employ the term nature may reflect its established use among land, nature and heritage bodies, statutory and non-statutory. CLAEVIPS records that ‘nature’ is used twice as frequently in the government corpus as in the other two specialized corpora. Key phrases are *nature conservation* and *nature reserve*, with *nature interest* and *nature value* also salient terms.<sup>85</sup>

UK NEA’s inclusion of ‘nature’ is not a knee-jerk product of cultural conditioning, however: there is a demonstrable awareness of the semantic subtleties of use-orientated meaning and their differences for lay and specialist societies that is rare among ES literature. Furthermore, the report recognizes that ‘whether humankind is regarded as part of nature or as separate from it continues to be a fault line between different philosophical, moral,

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<sup>82</sup> Fish, ‘Environmental decision making’, 676.

<sup>83</sup> UK NEA, 639.

<sup>84</sup> UK NEA, 641.

<sup>85</sup> CLAEVIPS, 14.

ethical and communicative traditions'. These are the very intersections and points of friction where cultural ecosystem services research is pursued.

UK NEA quotes the thoughts of leading US environmental historian, Donald Worster, on the development of environmental understanding:

Every generation...writes its own description of the natural order, which generally reveals as much about human society and its changing concerns as it does about nature. And these descriptions linger on in bits and pieces, often creating incongruous or incompatible juxtapositions. ... The 'New Ecology' that had emerged by the middle of the twentieth century saw nature through a different set of spectacles: the forms, processes and values of the modern economic order as shaped by technology.<sup>86</sup>

The inference is that, though ecosystem services operates as a constitutive part of the new ecology, its discourse is not unreceptive or closed off to philosophical reflection about how we use language to communicate understandings and experiences of nature, ecosystems, landscapes, places, and environments (choose your preferred term). This is encouraging for AH researchers who want to discuss nature in addition to – and as a part of – ecosystems.

(See also: **Culture; Biodiversity; Value**)

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<sup>86</sup> Worster, *Nature's Economy: A History of Ecological Ideas* (New York: Cambridge University Press, 1994), as quoted in UK NEA, 641.

### 3.h. Services

‘Service’ merits a notably lengthy entry in the *Oxford English Dictionary*. Though its meanings and usages are numerous, most stem from the meaning of servitude (the word in English has etymological roots in the Latin *servitius*, *service*, and *servus*, slave). To serve a master, sovereign or state; to be a slave or servant; a military engagement or experience of warfare; a ritual or ceremony ...Not until number 19 (of 36 entries) does a definition approach the type of ‘service’ that ecosystems provide. 19 a. The action of serving, helping, benefiting; conduct tending to the advantage of another ...21a. Assistance or benefit afforded by an animal or thing (or by a person as an involuntary agent); the work which an animal or thing is made to do ... 23. To supply the needs of (person, things).

Even so, most laypersons still find the terminology of ecosystem services confusing at best (‘Building a forest or lake?’; ‘Is it green electricity or wind power?’). At worst, the terminology is considered baffling and off-putting, tarnished by what a report for Defra on public awareness and understanding of the language of ecosystem assessment and services referred to as ‘inappropriate associations’. (The alternative notion of ‘nature’s services’ appears to be much easier to grasp.)<sup>87</sup>

Ecosystem services, in plain English, are the benefits people obtain from ecosystems. They are split into four categories of service within ES typology:

1. Provisioning services (food, water timber etc.)
2. Regulating services (affecting climate, floods, disease, wastes, water quality)
3. Supporting services (soil formation, photosynthesis, nutrient cycling – services that underpin the other three categories)
4. Cultural services (cognitive development, recreational, aesthetic, spiritual, heritage and identity values).<sup>88</sup>

The classification system adopted by the UK NEA’s Ecosystem Services Framework introduces a further refinement by distinguishing between basic ecosystem processes/functions/structure/components (referred to as intermediate services) and the goods and benefits derived from their consumption and utilization (known as final services). Functions supply the raw materials for services but are converted into services only if a beneficiary exists.<sup>89</sup> Ecosystem services are therefore ‘the aspects of ecosystems utilized (actively or passively)’ to support human life and produce human well-being’ (see entry for **Wellbeing**). They benefit us by sustaining life, and are undoubtedly put to work on our behalf, often at the cost of their degradation (devaluation). But let us be clear. There is little choice in the human-ecosystem relationship: we draw on nature’s services or we perish. With reference to the dominant current mode of extracting service in the developed world - which, needless to say, is not the only one available, but precisely the one that has engendered the ES approach, and might, if not radically overhauled, lead to our demise regardless - the meaning of a slave serving a master is perhaps most redolent and apposite. Is this sense of service and servitude worth pondering in our work? Is there also a possibility

<sup>87</sup> Defra, ‘Public understanding of the concepts and language around ecosystem services and the natural environment’ (SID 5: Research Project Final Report), 2007, 40, 2, 41.

<sup>88</sup> MEA, vii.

<sup>89</sup> Roy Haines-Young and Marion Potschin, ‘Methodologies for defining and assessing ecosystem services: final report, August 2009’ (University of Nottingham, Centre for Environmental Management Report No. 14/Joint Nature Conservation Committee), ii, 10, 12, 14, 16, 81, 82..

of reciprocation, in that, by working towards sustainable, informed and light-touch ecosystem uses, we can create opportunities for us to serve ecosystems?



### 3.i. Value

#### ***n. Worth or quality as measured by a standard of equivalence***

#### ***v. to estimate the value of (OED)***

ES discourse is peppered with the word value, perhaps because ‘value’, ‘benefit’, ‘goods’ and ‘services’ are often conflated. Services produce benefits, which are of value to people.<sup>90</sup> How we value nature, and the ways in which we can use that value as a means of protecting ecosystems and safeguarding the benefits we draw from them, has been the focus of the ES approach since its emergence in the 1970s. One mode of valuation that ES has developed is to place monetary value on the benefits we gain from nature. This results from a utilitarian framing of ecological concerns by those concerned to raise the profile of environmental issues and ensure that decision-makers take due account of ecosystems in the decision-making process. There was a strong sense, argues Norgaard, ‘that, however revolting for those who intrinsically value nature, the use of market metaphors was necessary to awaken a public deeply embedded in a global economy and distant from natural processes’.<sup>91</sup>

This approach applies economic valuation techniques to assign value to components of ecosystems and the benefits they provide.<sup>92</sup> Values vary from the all-encompassing – like Costanza’s range estimation (1997) that the annual global worth of ecosystems was \$33 trillion (minimum) – to the specific, such as the Morton Arboretum’s calculation that for every dollar spent annually in Chicago on tree care, each tree gives back \$2.7 in benefits.<sup>93</sup> Payments for Ecosystem Services (PES) schemes have been developed by governments, NGOs and private companies and offer financial rewards for managing ecosystems to maximize the services they provide. The simplified dictum of this approach is that it pays to look after nature. In other words, it costs less to look after nature than not to care for it.

This kind of valuation exercise is ES at its most direct and controversial. Attachment of monetary value to natural objects and services is a useful technique for garnering the attention of those disciplines and organizations that are themselves concerned with money and markets, and reflects the economic background of the ES framework. But it does not articulate the full range of values considered by ES researchers, or indicate the debate among practitioners that economic valuation has created.

The all-encompassing ambition of the ES approach – to evaluate and communicate societal dependence on ecosystems and embed ES considerations in decision-making – necessitates deployment of a range of values and valuation techniques. A fuller understanding of what ‘value’ means to ES is offered by Chan *et al.*, who affirm that ‘the broad term can refer to both underlying ideals (held values, such as bravery, fairness, happiness) and also the

<sup>90</sup> Chan *et al.* ‘Rethinking ecosystem services’, 2.

<sup>91</sup> Richard B. Norgaard, ‘Ecosystem Services: From eye-opening metaphor to complexity blinder’, *Ecological Economics* 69 (2010), 1219.

<sup>92</sup> Baggethun *et al.* ‘History of ecosystem services’, 1; Chan *et al.* ‘Rethinking ecosystem services’, 8. See also: Farber *et al.*, ‘Economic and Ecological Concepts for Valuing Ecosystem Services’, *Ecological Economics* Special Issue: The Dynamics and Value of Ecosystem Services: Integrating Ecological and Economic Perspectives 41 (2002), 375-392.

<sup>93</sup> The National Tree Benefits Calculator ([www.treebenefits.com/calculator](http://www.treebenefits.com/calculator)) allows you to calculate your own tree’s benefits, taking information such as zip code (it is US based), tree type and size to estimate values that include contributions to property values, air quality, natural gas and storm water run-off interception.

relative importance of things (assigned values, such as [but not restricted to] the monetary value of goods)<sup>94</sup>. This does not mean that CES are exempt from monetary valuation. While the values that conform least well to economic assumptions tend to be ‘lumped together’ with/as CES, and some areas of CES resist valuation in monetary terms, others lend themselves to the same type of accounting that more quantifiable areas of ES are subject to. Calculations of tourism revenue through activities focused on certain species of animal (like that trio of ‘box office birds’, the osprey, golden eagle and sea eagle) have been ventured in rural Scotland, for example.<sup>95</sup>

Aesthetic and inspirational values attached to landscape are core cultural services and also subjective, culturally-constructed and responsive to many contributory factors. Yet house prices within protected areas such as national parks and Areas of Outstanding Natural Beauty are consistently and measurably higher than comparable properties outside their boundaries, demonstrating that we are willing to place monetary value on a beautiful view or heritage setting.<sup>96</sup> The monetary and non-monetary valuation of ecosystem services can be closely related.

A problem arises when economic value is sought in areas that do not align with this specific lens of valuation. A criticism of the ES approach is that it looks to ‘fit’ everything into a single framework, so that the different services provided by ecosystems can be compared and traded off against each other as ‘more or less important, more or less valued, or more or less subject to protection, loss or gain.’<sup>97</sup> But values are not fixed, a consideration sometimes forgotten by those assigning them. In the ideal scenario, ‘valuation of an ecosystem service should represent all those who have a stake in the resulting decision’. When that includes, for example, communities that collectively value the cultural integrity or spiritual ambience of an environmental setting, attempts to assert monetary or individual values are inappropriate and ineffective at articulating the full range of, and interconnection between, values.

A further danger of imposing economic value on ecosystems is that it does not account for the perspectives of those who cannot express valuations, or are denied the opportunity to do so. Care must be taken to ensure that disadvantaged groups, and those who must or choose to function outside normal social parameters and have historically been denied a voice in decision-making (ethnic and racial minorities, the poor, the mentally disabled, and, in different contexts, both the native-born and immigrants), are not further disadvantaged by the placement of values that do not relate to their wellbeing or experiences. As UK NEA spells out, ES has the potential to increase understanding of the role of human-nature

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<sup>94</sup> Chan *et al.* ‘Rethinking ecosystem services’, 11. Kerry Turner also argues, from an environmental economics perspective, that nature’s value is a multidimensional concept. Borrowing a four-cell typology from the literature of environmental philosophy, that distinguishes between instrumental and intrinsic value and between anthropocentric and non-anthropocentric values, Turner reviews the concepts of ‘total economic value’ (the conventional environmental economics concept that distinguishes between ‘use’ and ‘non-use’ values), ‘primary/glue value’ (those related to structure and functioning properties of ecosystems that bind up everything) and ‘intrinsic value’, paying substantially attention to ‘non-use’ values such as existence and bequest values: R. Kerry Turner, ‘The place of economic values in environmental evaluation’ in Ian J. Bateman and Kenneth G. Willis (eds.) (2000) *Valuing Environmental Preferences: Theory and Practice of the Contingent Valuation Method in the US, EU, and Developing Countries* (Oxford: Oxford University Press), 17-41.

<sup>95</sup> Ian Jardine, ‘The role of natural heritage in driving tourism’, in Heritage Lottery Fund, *Investing in Success: Heritage and the UK tourism industry* (London: HLF/Visit Britain, March 2010), 24.

<sup>96</sup> UK NEA. 636.

<sup>97</sup> Chan *et al.* ‘Rethinking ecosystem services’, 9.

interactions in mental (and physical) ill-health and to assist practically with future treatment approaches.<sup>98</sup> A CES approach is crucial in widening the focus of research and communicating it beyond the expert sphere, and if monetary values do not fit the case study, there is risk entailed - not benefit - in forcing them to conform.

Another area of ES in which assignment of monetary value is at odds with the item of valuation is the belief that nature, species and ecosystems have intrinsic values. Intrinsic value, the value of something in and for itself, irrespective of its utility for someone else, is a core principle for many environmentalists and wildlife conservationists (see also: **Biodiversity**).<sup>99</sup> Immanuel Kant's moral philosophy of intrinsic worth recognized in the eighteenth century that there are qualities which human valuation cannot replace with equivalents. Such value has a 'dignity' beyond market price.<sup>100</sup> While the amount of revenue received as a result of tourist visits to endangered species reserves is accountable, the intrinsic value of the endangered species themselves is beyond measure. The contribution of these animals and plants to human knowledge and experience, their role in ecosystems rich in biodiversity, and their unknown potential contribution to medicine are all valuable in multiple and complex ways. But belief in their intrinsic value, irrespective of utility – do we *need* the red squirrel, blackbog ant, marsh fritillary, creeping marshwort or Lundy cabbage? – is something that unites people to work for their protection across social and – in the case of charismatic megafauna such as the giant panda, black rhino and polar bear - international boundaries.<sup>101</sup>

Meting out value to things, ideas and aspects of ecosystem services is, on one level, a practical act. Valuation sets worth, which can then be used to enhance the conservation and sustainable use of ecosystems and their contributions to human wellbeing. But placing value is also a philosophical act that reflects conscious choices and unconscious prejudices, thoughtfulness and instinct. Values are not fixed, and change with context and time. AH approaches, in particular, possess the range of techniques needed to match the diversity of values placed on human-ecosystem interactions. Instead of simply measuring and recording them, AH approaches can also play a more active role and help shape new values for hitherto un- or under-appreciated environmental settings, and understandings of why we create them.

(See also: **Benefits; Biodiversity**)

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<sup>98</sup> UK NEA, 636.

<sup>99</sup> MEA, vii.

<sup>100</sup> Dillon, 'People, environment, language and meaning: values in nature and the nature of 'values', *Language and Ecology* 3:2 (2010), 3.

<sup>101</sup> Harmon, 'Intangible Values', 9, 19.

### 3.j. Wellbeing

***n. The state of being or doing well in life; happy, healthy or prosperous condition; moral or physical welfare (of a person or community)***

The link between human wellbeing and functioning ecosystems is a strand that runs throughout the ES concept (see also: **Ecosystem**). Wellbeing stands alongside biodiversity and climate change as a major concern for the future, that demands considered action now, and therefore encourages the expansion of the ES approach. Ecosystems Services is presented as the framework within which to make decisions that will improve human wellbeing through wise use of ecosystems and the services they provide.

The grounds for placing human wellbeing at the heart of ES are clear. Ecosystems are, unequivocally, ‘indispensable to the health and well-being of people everywhere’.<sup>102</sup> They provide the basic sustenance for life, and deleterious changes to them affect livelihoods, political stability, physical and economic security, social relations and freedoms of movement and choice. Though increases in food production and health care improvements mean that the proportion of malnourished people has lessened while the overall population has risen, these gains have been made at the cost of ecosystem degradation.<sup>103</sup> Changes to ecosystems have also occurred unevenly, often exacerbating inequalities and aggravating poverty.<sup>104</sup> The implications of further ecosystem destruction and damage for human health – loss of access to clean water and consistent food supplies (growing food insecurity), exposure to the consequences of soil erosion, flooding and disease, to name but the most obvious – are dramatic.

The placement of human wellbeing at the heart of ES concerns underlines the holistic way of thinking about ecosystems that characterizes the ES approach. People are integral to ecosystems, responsible for much of the change that has transpired, and have much to gain from their sensitive management, as the range of services, goods and benefits demonstrates. The anthropocentric emphasis of the importance of *human* wellbeing concerns to the framework, however, is a move away from the original emphasis on ES as a pedagogical concept to promote biodiversity conservation and environmental protection. The *Millennium Ecosystem Assessment* (MEA, 2005) was pivotal in shifting the emphasis of the approach to include whole-heartedly human wellbeing as an ethical and practical core principle.

The UN commissioned the MEA in response to accumulating observations at the turn of the millennium that population growth and economic development were producing changes in global ecosystems that were unprecedented in terms of rapidity and extent. Between 2001 and 2005, through assessments that involved over 1,300 experts worldwide, the MEA evaluated the consequences of ecosystem change for human wellbeing.<sup>105</sup>

Locating human wellbeing at the heart of the discourse, crucially, expanded the scope of ES beyond the interests of environmental and nature conservation organizations. Linking

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<sup>102</sup> Carlos Corvalán, Simon Hales and Anthony McMichael, *Ecosystems and Human Well-being: Health Synthesis: A Report of the Millennium Ecosystem Assessment* (World Health Organization, 2005), 2.

<sup>103</sup> Corvalán *et al.* *Ecosystems and Human Well-being*, 6.

<sup>104</sup> Corvalán *et al.* *Ecosystems and Human Well-being*, 6.

<sup>105</sup> Corvalán *et al.* foreword.

human wellbeing to ES makes ES a major concern for humanity. Environmental issues can no longer be treated as externalities, but must instead be viewed as integral to human health, welfare and future prosperity. The emphasis on human wellbeing has undoubtedly empowered the ES discourse and extended its reach across international, national and regional governments and organizations. Since the MEA, the notion of wellbeing has remained central to ES and MEA's reports became keystone texts.

There remain, however, some aspects of wellbeing worthy of further consideration. Wellbeing, as articulated in ES discourse, is not above conceptual challenge. As MEA itself acknowledges, there are vital preconditions of wellbeing that are determined by constituents outside the realm of ES. While the life-giving links with water, food, materials for shelter, etc. are unquestionable, the inclusion of *freedom of choice and action* among the constituents of wellbeing influenced by ES, as defined by MEA, rests on less solid ground. There is no question of the importance of freedom of choice and action to wellbeing – only regarding the ability of ecosystems to contribute to them. The MEA states that 'freedom of choice and action is influenced by other constituents of well-being, as well as by other factors, notably education, and is also a precondition for achieving other preconditions of well-being, notably with respect to equity and fairness'.<sup>106</sup>

The claim that ES have a constitutive role in 'big' sociological and political matters such as 'social cohesion', 'mutual respect' and 'freedom of choice or action' is viewed by Fish as a product of the simplification of the general premise that, 'if we look after the services...well-being will take care of itself'.<sup>107</sup> This does ES a disservice by allocating a responsibility for matters that are beyond its capabilities to address. Though wellbeing has become a central ES concern, it is a broad one that would benefit from a more nuanced understanding of how it is implicated in the services that ecosystems provide.<sup>108</sup>

Wellbeing is relevant across the four ecosystem service categories, with many of the basic requirements being met by provisioning services. However, many of the other constituents of wellbeing fall under cultural services (though there is debate as to whether mental and physical health should be considered absolute essentials and therefore included under provisioning services). UK NEA sought a conceptual framework to help examine the link between wellbeing and cultural services, and chose the Human Scale Development Matrix (H-SDM), devised by Chilean development economist Manfred Max-Neef.<sup>109</sup> Max-Neef proposes that a relatively small number of human needs, with no rigid hierarchy, are needed for a 'good life', and that individuals and societies make trade-offs between the satisfaction of different needs. H-SDM employs a matrix consisting of four columns ('being', 'doing', 'having', and 'interacting') and nine rows that express a particular human need ('subsistence', 'affection', 'protection', 'understanding', 'participation', 'creativity', 'leisure', 'identity' and 'freedom').

The H-SDM has received international attention from academics and policy makers working on international development. UK NEA did not undertake new empirical research using the model, but instead employed it as a 'thought-experiment' to help articulate what cultural ecosystem services might be and look like. This Manual entry does not detail the workings of H-SDM nor critique its approach. Its significance to UK NEA resides principally in the

<sup>106</sup> MEA, vii.

<sup>107</sup> Fish, 'Environmental decision making', 673.

<sup>108</sup> Fish, 'Environmental decision making', 673.

<sup>109</sup> UK NEA, 644. Manfred A. Max-Neef, *Human Scale Development: Conception, Application, and Further Reflections* (New York: Apex/Council on International and Public Affairs, 1991).

sheer fact of its inclusion. This reflects an uncertainty regarding how to address cultural services as a component of ES, and a desire for a tried-and-tested working model to be adopted. As a developmental economics model, it lends structure and order to CES analysis and the contribution of CES to human wellbeing. Yet the matrix appears to offer little opportunity for narrative or visual or other representations of cultural services and benefits. Of all the types of ecosystem services, cultural services – with its diverse subject matter and intricate relationship to human wellbeing – seems the least suited to rigid models based on the premises of neo-classical economics.

Moreover, in view of the etymological proximity between health and wealth, and the close pre-modern relationship between notions of happiness and prosperity (as Williams noted, ‘wealth’ did not acquire a ‘definite association with money and possessions’ until the seventeenth and eighteenth centuries<sup>110</sup>), wellbeing is arguably the area of ES most in need of imaginative and critical techniques. For these may help ‘divert people away from costly and environmentally damaging pseudo-satisfiers and toward genuine cultural need satisfiers’.<sup>111</sup>

A final note on wellbeing: by promoting sustainable management of environmental resources, including wildlife protection, it can be argued that the concept of wellbeing in ES is not restricted in application to humans. An ES approach works to safeguard the wellbeing of the ecosystems and the communities, human and other, that they support. A commitment to sustainable development informs the entire approach, and, again, this impacts both on humans and other species, floral and faunal. The majority of references to wellbeing in ES literature, however, remain confined to a concern with strictly human wellbeing.

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<sup>110</sup> Williams, *Keywords*, 331-32.

<sup>111</sup> Arran Stibbe, in Coates Report.

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