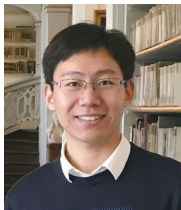


# Development of Cultural Ecosystem Services Contributes to a Plural Perspective for Human-Nature Studies —Interview With Tobias Plieninger



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## ABSTRACT

Tobias Plieninger has contributed to framing Cultural Ecosystem Services (CES) by his studies in Europe and Asia from forest to agricultural ecosystems. He introduced how the term of CES as a part of ecosystem services was raised by the *Millennium Ecosystem Assessment* but largely neglected at the beginning. From his projects, he explored how to set up indicators and the development of a method Public Participation Geographic Information Systems to map cultural values in landscapes for CES assessment. Because of the limitation of CES, the new inclusive concepts like Nature's Contributions to People arose. Plieninger gave us his perspective about the new tendency to use social media data to broaden the research scale, and shared his opinions about CES research in developing countries, like India and China. He suggested people should apply the methods not only in technocratic or purely in academic exercises, but to deal with real-world problems. He encouraged the young generation to further explore the frontier topics such as the role of CES in increasingly unstable times.

## KEYWORDS

Cultural Ecosystem Services;  
Nature's Contributions to  
People;  
Public Participation Geographic  
Information Systems;  
Cultural Landscape;  
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## HIGHLIGHTS

- How Cultural Ecosystem Services (CES) have become a substantial part of ecosystem services research
- Application of Public Participation Geographic Information Systems method in CES research
- New concepts, such as Nature's Contributions to People, refined the connotations and limits of CES
- Current development, new study trends, and future frontier topics in CES research

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## Introduction of Tobias Plieninger

Tobias Plieninger (PLIENINGER hereafter) is a Professor of the Chair for Social-Ecological Interactions at the University of Göttingen and the University of Kassel in Germany and is currently Vice Dean of Research at the Faculty of Organic Agricultural Sciences at University of Kassel. He is a sustainability scientist with a commitment to inter- and trans-disciplinary research at the social-ecological interface. In particular, he studies rural landscape change, ecosystem services, and sustainability transformations. His research focuses on the complex relationships between agriculture, forestry, nature conservation, and other sectors of natural resource management. He is one of the pioneers to assess Cultural Ecosystem Services (CES) at landscape scale, and he studied intensively on Public Participation Geographic Information Systems (PPGIS). He is the lead author in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)<sup>①</sup> *Transformative Change Assessment* and associate editor of *Landscape and Urban Planning, People and Nature*, and *Sustainability Science*.

**GUO Tianyu (GUO hereafter):** Until today, the literature on ecosystem services is numerous. As one of the pioneers, you have contributed greatly to the development of the framework of classic ecosystem services by developing CES as a branch. CES has gained more focus for the last decade and it has promoted human beings to rethink their role in ecosystems. Researchers have carried out various studies related to CES in different fields including landscape science, human ecology, human geography, ethnography, and sociology to enhance human well-being under the context of climate change and social transformation. Ever since you led the junior group in Berlin-Brandenburg Academy of Sciences and Humanities, you have spent years in the field of CES. Could you please draw a picture about your experience on CES studies?

**PLIENINGER:** My first use of the term CES, was almost twenty years ago. I came into the world of ecosystem services through the *Millennium Ecosystem Assessment* in 2005. It is an important global assessment of the state of ecosystems and the concomitant changes, which was published around the turn of the millennium and made the term “ecosystem services” prominent both in science and policy-making. CES was part of this concept from the very beginning. But when I got familiar with ecosystem services, I was surprised that there was so little dedication given to cultural ecosystem services in comparison to provisioning, regulating or supporting services. In other words, CES was somehow neglected.

For instance, the report of the *Millennium Ecosystem Assessment* detailly assessed all individual ecosystem services, but for most of the cultural categories, there was no sufficient data or some information was randomly embedded.

I have been educated as a forester and obtained my PhD degree in landscape management. Human-shaped landscapes where people and nature interact closely are always an interest of mine. We call such landscapes cultural landscapes, or “Kulturlandschaft” in German. It was somehow natural that I decided to focus more on the cultural side of ecosystem services. Since then, I have worked with CES, the term or the concept, in many different projects. We applied it initially into questions of management of a biosphere reserve in eastern Germany<sup>[1]</sup>. Later I was involved in a project that assessed CES of urban forests, agroforestry landscapes, and spiritual woodlands in Kurdish-inhabited regions, as well as many other ecosystems and landscapes in Europe<sup>②</sup> and other regions of the world, such like in Gansu Province, China, with my previous PhD student Xu Haiyun during the time in University of Copenhagen.

**GUO:** It is noticed that CES was in the proposal around 2008 when you were setting up your junior group. Why did you choose CES to implement your research? And what is the perspective the other scholars held towards CES or cultural values of landscapes at that moment?

**PLIENINGER:** That was, indeed, my first project dedicated on ecosystem services. It was called *Ecosystem Services in Cultural Landscapes*. With the idea to test and implement the power of the ecosystem services concept in agricultural and forest landscapes of Germany, and due to the strong roles of culture and landscapes in Germany, we naturally got into the field of cultural ecosystem services. The insight was about cultural values of land and landscapes are truly decisive for sustainable management of land. Many studies have proved that human well-being depends on a large part of cultural ecosystem services. And cultural values or cultural ecosystems services are also an important driver of land

① IPBES, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, is a framework formed by the United Nations Environment Programme to integrate the follow-up to the *Millennium Ecosystem Assessment* and the international mechanism for scientific knowledge on biodiversity. It was officially established in Panama in April 2012, with its secretariat in Bonn, Germany, and functions similarly to the UN Intergovernmental Panel on Climate Change.

② For more details, please see the EU project “Sustainable Futures for Europe’s Heritage in Cultural Landscapes”[HERCULES].

use decisions. Many farmers and owners of rangelands in western United States, for example, are now driven by cultural values rather than by profit interests, for sustainability. Understanding of the perceptions and uses of cultural ecosystem services can be quite important to improve both the management of agricultural offers and other remains. The same is true not only at individual farm or land level, but also at the society level. Many relevant studies have explored how cultural values have interests in recreation or harvesting wildlife resources and so on<sup>[2][3]</sup>. In fact, it also motivates people to actively engage in land stewardship and ecosystem and landscape conservation.

The early community of researchers investigating ecosystem services was quite dominated by two groups. On the one hand, ecologists and biologists were more interested in biophysical assessment of ecosystem services and mainly focusing on regulating services. On the other hand, economists who were interested in economic or monetary valuation of ecosystem services mostly focused on tangible products from ecosystems and marketable goods and services, whereas cultural services were neglected. Some scholars held that it was hard to find appropriate indicators to measure cultural ecosystem services<sup>[4]</sup>. Some even suggested in the early days to take cultural ecosystem services out of the ecosystem services list. Fortunately, that was not happened. The awareness has quite grown that cultural ecosystem services do matter. Indeed, it is difficult to assess cultural ecosystem services; but in some regards, it is also not that difficult if compared with other ecosystem services. At the same time, it became clear that we are missing important parts of the human-nature relationship if we simply skip cultural ecosystem services. Fortunately, a lot has happened in the past fifteen years. Nowadays, quite a rich set of studies or methods has been developed on assessing cultural ecosystem services. So, I would say both socio- and cultural valuation of ecosystem services are now on the equal level with biophysical modeling and economic valuation. And cultural ecosystem services are at an equal level with provisioning and regulating ecosystem services. For example, we conducted surveys in different places of Europe to probe into people's perception of ecosystem values in daily lives. What we found out consistently was that around 70% of the items people mentioned referred to cultural ecosystem services rather than the other ecosystem services categories<sup>[5][6]</sup>.

**GUO:** Cultural ecosystem services are so important but were neglected at the very beginning. Your projects and studies on ecosystem services in the cultural landscape led to the

construction of CES. Could you please describe some specific cases to help us better understand it?

**PLIENINGER:** It was an organic development over time and also driven by the specific settings of each research project I was involved in. Obviously, cultural values matter in a broad range of land use context. Each one is specific and requires corresponding approaches to assess them. I also have to say, the term of "culture ecosystem services" is contested. It has been introduced that "ecosystem services" is a widespread term in landscape and natural resource management, but other terms like "cultural values" or "relational values," which were used in our studies, may fit better in some contexts.

A lot of our work had been dedicated to the development of cultural ecosystem services assessment methods, which was missing in the early days' development of ecosystem services. For example, together with colleagues we somehow pioneered the development of Public Participation Geographic Information Systems (PPGIS) for the assessment of cultural ecosystem services<sup>[6][7]</sup>. At the beginning, we started in the old-fashioned way asking people to mark cultural values or cultural services of their local landscapes with stickers put on some paper maps. Soon, we went into digital tools and online tools. Nowadays, we ask our survey participants to map their perceived cultural ecosystem services with internet tools. We also try to utilize and further advance other methods focusing on the cultural ecosystem services perceived by individuals, such as photo elicitation. At the same time, we put effort into deliberative processes including focus groups and workshops to assess and predict the past, present, and future of cultural ecosystem services of a landscape. For instance, participatory scenario development techniques allow to assess what is difficult to measure or put on a map, which had necessarily been ignored also in policy decisions<sup>[8]</sup>.

We also tried to advance cultural ecosystem services more theoretically and conceptually. One critical issue about cultural ecosystem services is that there are values not purely generated by nature or by the ecosystem alone, but co-produced by people and nature. Obviously, it is difficult to take people out of ecosystem services. Based on this consideration, we tried to explore how this relationship and the process of co-production of cultural ecosystem services look like in some projects.

Another field we seek to advance this concept was improving the understanding of the relationship between CES and the human well-being. The relationship was also highlighted in the *Millennium Ecosystem Assessment*, yet was done superficially

like a brainstorming list of different items. In various surveys, we assessed the relationship across different sites in Europe, and tried to provide more robust evidence about how people actually relate cultural ecosystem services to the individual well-being. We discovered some factors that typically do not show up on the ecosystem services list, one of the surprising results we got consistently in Europe is “tranquillity”<sup>[7]</sup>. People experience it in landscapes and ecosystems as an outstanding property or part of the human well-being, although it is really hard to fit that into common ecosystem services categories.

**GUO:** How do you address CES studies in your academic career?

**PLIENINGER:** CES is not the only and possibly also not the most important area of my research. I have quite broad research interests focusing on how land is managed and can be managed sustainably. But the role of cultural values remains quite prominent in most of the projects I am working on. Fortunately, nowadays also many colleagues from natural sciences also see the need to understand and to assess the sociocultural side of land management and the context. So, it remains prominent but in the process of development.

Many scholars treat the term CES critically. Currently, a lot of our work is taking up the concept of the IPBES. And the term of ecosystem services is being replaced or advanced by a more inclusive concept—Nature’s Contributions to People (NCP)<sup>[9]</sup>, which focuses less on economic perspectives but includes broader word use on ecosystems. In that regard, also in my research, the terminology and the approaches are being broadened. So many of our projects are studying the broader role of cultural values or how the human-nature relationship is shaped by relational values together with other values, like intrinsic and instrumental values. In such a perspective, I think it is actually more helpful. The human-nature relationship is complex and the original CES concept was probably too narrow. I am now calling for not being limited by this terminology and inclined to use more inclusive, broader, and pluralistic understandings of cultural values of landscapes.

The power of cultural ecosystem services is so compatible with ecosystem services thinking. Therefore, it can easily be accessed as a boundary object to the other disciplines within academia. CES is quite well-understood in policy development and practice. But, indeed, the term is also a bit narrow, and it comes with some problems. Many scholars are criticizing the use of “services,” as it is perceived as an economic term or, economistic term, which

applies somehow perspective on nature driven by instrumental, economic and similarly problematic. “Ecosystem” is a biological term, not a part of the daily language. It has a certain conversation in the general language, for example, you are almost considered as an environmentalist if you use a term. I would also argue with this word as a landscape scientist—maybe when people perceive nature on the spatial scale, typically on the scale of a landscape, they are moving across land and they are seeing and perceiving land. Therefore, I am a big fan of the “landscape” terminology much more than the “ecosystem” terminology. Regarding the term “cultural,” some colleagues criticized that it is too broad and too narrow. Although it is complicated, it introduced the term. I think the current conceptualizations about plural values of nature resolve quite a few of these problems. Therefore, I feel a little bit more comfortable with these current framings of culture in the whole debate.

I am firmly convinced that each research question is unique, which requires a specific concept towards it. For example, if you work with a biologist who investigates specific ecosystems through biological methods, but still seeks to have a cultural perspective, then, of course, it makes sense to assess these ecosystems using the CES lens. On the other hand, in a scenario that you are working in a landscape project closely with local people about how they perceive their place, and you hope to explore more broadly about the human-nature relationships and the human values to land, it is sensible to use a landscape terminology and perhaps to use a broader categorization rather than ecosystem services categories. Although those terms are defined in different frameworks, an open approach can be applied to be more inclusive and to ensure the full assessment of the values that the local people have, as they often will be different from the 24 ecosystem services categories defined in the *Millennium Ecosystem Assessment*.

Employing these more recent conceptualizations, like NCP, allows scholars to consider a certain use in different categories. Recreational hunting or fishing in Europe, an important nature use as an example, strict use of ecosystem services categories can sometimes be difficult. On the one hand, hunting or fishing activities for food or trading makes it reasonable to use the word of “provisioning ecosystem service.” But on the other hand, it also can be treated as recreational activity, as many hunters in Germany do not live on hunting or would even pay for it as a hobby, for it is difficult or impossible to make profits with hunting or fishing here. Some would even take it as an inspirational or spiritual activity to be a Jäger (hunter). However, with the concept of NCP, one does not have to decide whether it is a cultural service or provisioning

service. NCP allows people to understand the activity in multiple categories.

**GUO:** Except the recent concept of NCP, what are the other concepts developed based on CES? According to your experience, how do you use these concepts into your practices?

**PLIENINGER:** There have been many debates and, particularly, it is certainly also important to think about the concepts of ecosystem services and the related relevant frameworks. For example, the cascade model, which was developed by two UK-based researchers Roy Haines-Young and Marion Potschin<sup>[10]</sup>. Linking ecosystem services into advances of cascade model somehow described how certain structures and processes of ecosystems translate into ecosystem functions, and again would translate into ecosystem services and into benefits. These considerations have been widely debated in the early days. Moreover, framework debates have been carried out, and some people proposed a landscape services framework instead of ecosystem services for instance. But they are not so successful in my impression in getting it through. Regarding NCP, there are many frameworks and many different terminologies which all have a point at the same time. Especially when someone wants his idea being taken up in policy-making and practice, we have to be careful in not changing our language and our core concepts throughout the time. NCP and some others have made the point that we have been trying to get an understanding of ecosystem services into policy-making over years. Now, at the point where we have been successful to some degree, we are replacing it by the new concepts and frameworks, which will make policy-makers have a hard time understanding and adapting to what right now we call NCP and so on. You can debate how useful they are. Maybe we have been obsessed too much in developing frameworks, but too little in implementing changes.

One example can be a project I was involved in, which focused on urban forests. It was a project funded by the State Forest Service of Baden-Württemberg in southern Germany. There were piloted assessment of cultural ecosystem services in three urban forests of Stuttgart, Heidelberg, and Karlsruhe. As a context, forestry in Germany has always fulfilled different functions, and there has been a long debate among foresters going back almost a hundred years ago that forest is for the production of timber, firewood, and so on. But there are also what foresters call conservation functions such as conservation of soil, biodiversity, and also recreational functions. So, managing for these different societal demands has always been a role in forestry. But they have not had good tools to take

up recreational functions and other cultural ecosystem services in enforced planning until recently. At the same time, we have a process of urbanization in Baden-Württemberg just like elsewhere in the country and in the world. Quite a few forests in this state are actually located quite close to cities and to larger settlements. In these forests, obviously, the cultural ecosystem services play a quite outstanding role. It has become particularly evident in the covid pandemic when people are unable to go to bars or theaters but suddenly went out into the forest. This phenomenon probably created actually some problems for the forest management. So, for this project in southern Germany, we developed a methodology and subsequently carried out a large interview process with local forest users in these three urban forests by making use of the PPGIS methods to assess how people were actually using and how they were valuing these urban forests. Then we developed an approach that linked these CES uses with certain features of the forest and of the landscape. We tried to investigate which kind of forest types people value more or less with specific features, like an ancient tree or some cultural elements in the forest that would be appreciated in a particular way.

That was quite successful in scientific regards. It led to one PhD thesis that was just defended and has been published in three journals, but it has also been really welcome and taken up by the forest service who had funded this project<sup>[11]~[13]</sup>. I felt that the way of taking these approaches up into their formal planning processes was actually to develop in the next port. The success inspired the other Forest Services in Germany, as well as in other countries like Luxembourg, where as I was told is a starting to follow this model. That means for practical forest management, maps of hot spots and cold spots of recreational uses can be created and allow to check agricultural values. With the hot spots, we can determine places where many people are appreciating and parts of the forest that could be especially managed to fulfill the needs of people for recreation. Then the other parts of the forest—cold spots that people do not appreciate so much or access for recreational purposes—could be where would be managed for other purposes, like for production.

**GUO:** From the specific case, it is clear how you launched CES framework in your three-urban-forest project. How did you explain to your collaborators about the framework? Since it always takes time for people to fully understand the significance of the framework, how did your collaborators recognize the framework?

**PLIENINGER:** In general, it depends on how people is familiar with the concept and what discipline they come from. For those who come

from the hard sciences, sometimes there is a lot of weakness and a lot of qualitative nature in assessing cultural ecosystem services. Even so, those people typically see and appreciate it to understand landscape sustainability, for which they need to take it up. They also see that there is advancement in these methods. It allows more comfortability with perhaps the other approaches that they are familiar with. As I have mentioned already, the CES concept or term has been contested by many people, especially those from the social sciences. But for the overall, I think it is well accepted nowadays that a cultural lens on ecosystems and landscapes is needed and then the values blend. The literature on CES has grown so strongly, as there are so many projects, activities, and PhD theses carried out. The research towards CES has become a valid part of ecosystem services research and also of larger sustainability science. Of course, it is an interdisciplinary concept of the interface between social and ecological sciences, through which it is always more pro to attract values than a long introduced classical disciplinary concept.

In my view, it is developing a bit like a game changer now. This whole field is also arising of making use of social media data of Twitter, Instagram, photographs and texts online. To make use of the effort assessing the cultural values of ecosystems and landscapes, there has been a rich development. I think it is mushrooming currently. It is also very difficult to critically assess many assumptions just to put a thousand photos of a landscape online. It is not necessarily indicated that this is a highly appreciated place by local people, for instance. But at the same time, there are opportunities for moving beyond local case to higher spatial scales, for introducing a strong quantitative component into this field is quite fascinating as well. Maybe the concept is abstract and difficult to understand. If given examples including CES, I think it is quite universally applicable and also easily understood. Like if someone talks about concepts like recreation values, aesthetics or the spiritual meaning of a landscape, most people would immediately understand the importance. If someone looks at the services all together, probably he will recognize that food, for example, has an important cultural component that people have to decide for their livelihoods. If you understand how culture stamps all aspects of your everyday life, CES lens can enrich the understanding.

**GUO:** How do you think about the concepts and practices about CES or NCP in developing countries? And how do you think about the studies in China?

**PLIENINGER:** In my view, assessing cultural values is applicable universally. As you know, there are many research projects in the

global south. Whenever I get in our study areas, I see dramatically culture actually has shaped and is continuously to determine the way how land is managed. For example, I was in India in the spring of 2022, people can see everywhere how religion actually has contributed to preserving large ancient trees even in rapidly developing cities. So, it is not a concept that would be only applicable among economically developed countries; it can be practices that you may find from many studies of cultural values in all parts of the world. However, it depends on how you frame and contextualize it. Coming back to your contact farmers in surveys, if you ask them about their identity, how the identity is linked to the land, what the role of heritage, and how they have inherited certain practices from their ancestors and so on, very few of them would say it does not matter or they only need to make money and ignore all social and cultural aspects of their farming practices.

I see that cultural ecosystem services are also increasingly investigated in China and many Chinese scholars are very present in ecosystem services research. In general, I would say that many components of CES are important. On the one hand, similar to what I commented about India before and remember from my visit to China, spirituality is quite decisive and quite presently invisible in many landscapes of China. At the same time, I also see rapid economic developments and the rise of the middle class in Chinese society. This middle class seems to develop habits that maybe have not been always around, such as domestic tourism towards natural places within the country. So, I think that both recreation and ecotourism are quite on the rise in China. To plan it in a sustainable way, a cultural lens would certainly be important.

**GUO:** What is your suggestion or expectation to the junior researchers and young generation to follow CES? What are the frontier topics of CES or NCP?

**PLIENINGER:** There are so many young and gifted scholars in the field of ecosystem services today, who are doing a great job. They are much better in applying advanced methods for assessing values than I did. There are great people and great advancement, so I am not concerned about the future development of the field. I personally find it important to keep a broad approach to be not focus on one single ecosystem service or one single method too much, but to understand the interactions and get the whole picture of how people relate to nature. I find it also important to keep an applied perspective in the field not only to make that a technocratic or just a purely academic exercise, but also to really keep the implications for agriculture, for forestry, for spatial planning, for

rural-urban development, and so on in mind, and to be policy relevant in the research. Thus, in that regard, I think all the work taking stock of in the best assessment report, for example, is a good sign that the research is also going into this way.

Besides, many new methods are emerging. A current breakthrough is the use of digital data and social media data to improve the understanding of the power of these methods and the limitations of this increasing availability of all kinds of data. Another important research topic is the role of cultural ecosystem services in increasingly unstable times. Many cultural ecosystem services are underpinned by long established and relatively stable human-nature relationships. Now we are experiencing constantly new examples and cases of destabilization across the world, as the

climate crisis is unfolding, such as disruptions, floods, draughts, and wildfires. I think the question how people are living in such increasingly unstable world also effects cultural ecosystem services. How to maintain and foster the sense of place will be an important future task for researchers to investigate. I believe the future generation has great potential to undertake these frontier topics.

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# 生态系统文化服务的发展推动“人与自然”的研究视角多元化——对话托比亚斯·普利宁格

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## 摘要

托比亚斯·普利宁格是生态系统文化服务研究的重要先驱者之一。他通过一系列在欧洲与亚洲的森林和农业生态系统的实证研究，为生态系统文化服务的框架构建做出了贡献。在本文中，普利宁格介绍了生态系统文化服务是如何作为新兴领域被纳入《千年生态系统评估》中的。生态系统文化服务作为生态系统服务的一部分，在最开始却因缺乏充分内容来体现而受到忽视。基于其所研究的课题，普利宁格探讨了如何为生态系统文化服务建立指标，以及介绍了公众参与地理信息系统这一方法是如何将景观中的文化价值纳入研究的。受生态系统文化服务本身的限制，“自然对人类的贡献”等新的更具包容性的术语逐渐兴起。随后，普利宁格指出了使用社交媒体数据来拓展研究范围的新趋势，同时分享了他对印度、中国等国家生态系统文化服务研究领域发展的见解。他建议不应局限于在技术上或纯粹的学术活动中应用这些方法，而要着眼于处理现实世界的问题。最后，他鼓励年轻一代进一步深入研究前沿课题，如探索生态系统文化服务在日渐失稳的时代中可发挥的作用。

## 关键词

生态系统文化服务；  
自然对人类的贡献；  
公众参与地理信息系统；  
文化景观；  
人类－自然关系

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## 文章亮点

- 生态系统文化服务如何成为生态系统服务研究的实质性组成部分
- 通过公众参与地理信息系统评估生态系统文化服务
- “自然对人类的贡献”等新概念的出现拓展并完善了生态系统文化服务的内涵和限制
- 生态系统文化服务研究的发展历程、新趋势及未来前沿课题方向

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## 托比亚斯·普利宁格简介

托比亚斯·普利宁格（以下简称“普利宁格”）是德国哥廷根大学和卡塞尔大学农业系统中的社会－生态互动教席教授，兼任卡塞尔大

学有机农业科学学院学术副院长。作为一位可持续发展领域的学者，他致力于社会－生态跨学科研究，特别是乡村景观变化、生态系统服务和可持续性转型。他的研究重点关注农业、林业、自然保护，以及与自然资源管理相关的其他领域之间的复杂关系。他是景观领域生态系统文化

服务（Cultural Ecosystem Services, CES）评估研究的先驱之一，他的实践为公众参与地理信息系统（Public Participation Geographic Information Systems, PPGIS）的发展做出了贡献。他是联合国环境规划署生物多样性和生态系统服务政府间科学政策平台（Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES）<sup>①</sup>转型变化评估工作的主持者。此外，普利宁格还担任《景观与城市规划》（*Landscape and Urban Planning*）、《人与自然》（*People and Nature*）、《可持续发展科学》（*Sustainability Science*）期刊的副主编。

**郭天禹（以下简称“郭”）：**现今出现了大量生态系统服务的文献。作为先驱者之一，您通过推动建立生态系统文化服务这个分支，为经典生态系统服务框架发展做出了巨大贡献。过去十数年间，生态系统文化服务受到了越来越多的关注，并促进了人类重新思考自己在生态系统中的角色。来自景观科学、人文生态学、人文地理学、人类学和社会学等领域的学者，在气候变化和社会转型的背景下开展了众多生态系统文化服务研究，以提高人类福祉。至少在柏林—勃兰登堡科学和人文科学院领导初级研究团队时期，您就开始了生态系统文化服务的研究。到目前为止，您已经在这个领域深耕多年，能否请您总结一下您在生态系统文化服务研究方面的心得？

**普利宁格：**我第一次使用“生态系统文化服务”这个词，几乎已经是二十年前的事情了。我是在2005年通过接触《千年生态系统评估》进入生态系统服务领域的。《千年生态系统评估》是一项对生态系统状况和随之而来的变化进行的重要的全球性评估。它于千禧年前后发表，使“生态系统服务”这个词开始走进学者和政策制定者视野。生态系统文化服务从一开始就是该概念的一部分。但是，当熟悉生态系统服务之后，我惊讶地发现，与供给服务、调节服务或支持服务相比，人们对于文化服务的关注如此之少。换言之，文化服务在某种程度上被忽视了。例如，《千年生态系统评估》非常详细地评估了每一项生态系统服务，但大多数文化服务类别却缺乏足够的信息，或仅随机展示了一些信息。

我接受过林学教育，并取得了景观管理博士学位。我一直对那些由人类活动塑造的、反映了人与自然密切互动的景观颇为关注。我们把这种景观称为“文化景观”（德语为“Kulturlandschaft”），而我也因此

更加关注生态系统服务的文化方面。从那时起，我就开始在许多不同的项目中使用生态系统文化服务这个术语或这个概念。例如，最初，我们将生态系统文化服务应用于研究德国东部的某一生物圈保护区的管理问题<sup>[1]</sup>；后来我参与了一个针对库尔德人聚居区的城市森林、农林景观和风水林的生态系统文化服务评估项目，然后又陆陆续续参与了许多欧洲及世界其他地区的生态系统和景观的生态系统文化服务评估项目<sup>②</sup>。例如，在哥本哈根大学期间，我曾与我的博士生徐海韵在中国甘肃省开展过类似的当地文化景观评估工作。

**郭：**生态系统文化服务的研究在您2008年建立初级研究团队时被纳入到课题计划中。您选择生态系统文化服务着手进行研究的原因是什么？当时的其他学者是以什么角度看待生态系统文化服务或景观的文化价值的？

**普利宁格：**事实上，那是我开展的第一个生态系统服务项目——“文化景观中的生态系统服务”。当时出于在德国农业和森林景观中检验生态系统服务效能的想法，加之文化与景观研究在德国具有的强势地位，我们自然而然地选择了生态系统文化服务领域。通过研究，我们得以洞察土地和景观的文化价值对于土地的可持续管理确实产生了深刻影响。《千年生态系统评估》以及后续相关研究都表明，人类的福祉在很大程度上取决于生态系统文化服务。与此同时，也有许多研究发现，文化价值或生态系统文化服务也是土地利用决策的重要驱动力之一。例如，在美国西部，现在许多农民和牧场主是受文化价值而不是经济利益的驱动来实现当地可持续发展。对生态系统文化服务的认知和应用的理解，对于改善农业供给和其他相关资源的管理也是相当重要的——不仅在单个农场或土地层面上是如此，在社会层面上亦是如此。另有研究发现，文化价值还有利于游憩活动或野生动物资源的获取等<sup>[2][3]</sup>。实际上，这也有助于激励人们积极投身于土地管理以及生态系统和景观保护工作当中。

生态系统服务早期的调查研究大致可分为两类。一方面，生态学和生物学领域的学者较为关注生态系统服务的生物物理评估，并开展了针对调节服务的诸多研究。另一方面，经济学者关注生态系统服务的经济或货币化评估，他们的研究对象主要是生态系统的有形产品以及具有交易属性的商品和服务。而这两类研究都忽视了文化服务。部分学者认为很难找到合适的指标来衡量这些文化服务<sup>[4]</sup>，有些学者甚至建议将文化服务从生态系统服务框架中剔除。幸运的是，这并没有发生，因为人们逐步意识到生态系统文化服务的重要性。诚然，文化服务评估工作确实很困难；但就某些方面而言，并不比评估其他生态系统服务困难太多。同时，如果我们不去做文化服务评估研究，那我们将无法揭示人类与自然关系中许多的重要内涵。所幸在过去的十五年间，这种局面发生了很大

① 生物多样性和生态系统服务政府间科学政策平台（IPBES）是联合国环境规划署整合《千年生态系统评估》的后续行动和生物多样性科学知识国际机制所形成的知识框架，功能类似于联合国政府间气候变化专门委员会。IPBES 于 2012 年 4 月在巴拿马正式成立，秘书处设在德国波恩。

② 详情请见欧盟“欧洲文化景观遗产的可持续未来”项目（HERCULES）。

改变。如今，在评估生态系统文化服务方面已经涌现了大量的研究与丰富的研究方法。因此，我认为生态系统服务的社会和文化评估与生物物理建模和经济评估同等重要，文化服务也与供给服务和调节服务处于同等地位。例如，我们在欧洲不同地区进行了调研，研究人们在日常生活中感知到的生态系统价值。研究结果均表明，约70%的人们感受到的价值都与文化服务相关，而非其他的生态系统服务类别<sup>[5][6]</sup>。

**郭：**生态系统文化服务如此重要，但却在一开始被人们所忽视。您对文化景观中的生态系统服务的研究和课题促进了生态系统文化服务研究体系的构建。能否请您结合一些具体案例，向我们展示一下这一体系呢？

**普利宁格：**这一研究体系是随着时间逐步构建起来的，也得益于我所参与的每个项目中的具体研究经验。显然，在宽泛的土地利用语境下，文化的多种价值都具有重要意义。每一个具体环境和应用场景都需要运用相应的评估方法。然而，需要指出的是，“生态系统文化服务”一词仍存在一定争议。尽管“生态系统服务”一词已在景观与自然资源管理领域中广泛使用，但在某些情况下，我们在研究中使用过的其他术语，如“文化价值”（cultural values）或“关系价值”（relational values）可能更为恰当。

我们的很多工作都致力于开发在生态系统服务早期研究中缺失的生态系统文化服务评估方法。例如，我和同事一同牵头创建了利用PPGIS评估生态系统文化服务的方法<sup>[6][7]</sup>。一开始我们以传统的方式要求人们用贴纸把当地景观的文化价值或文化服务标记在纸质地图上；很快，我们引入了数字和线上工具，现在我们借助互联网工具来研究人们的文化服务感知情况。我们还尝试使用并进一步推进其他方法（如照片引谈法）来探知个体的文化服务感知情况。同时，我们还尝试引入审议程序，通过焦点小组和研讨会等形式来评估和预测景观中过去、现在和未来的生态系统文化服务变化。例如，通过参与式情景开发技术来评估那些之前难以被测量或无法通过地图显示的研究对象，这些信息在过往政策决定中也往往被忽视<sup>[8]</sup>。

我们还试图在理论和概念方面进一步推动生态系统文化服务的发展。生态系统文化服务的一个关键问题是，其价值并不是由自然或生态系统单独形成的，而是在人类与自然的共同作用下产生的。显然，在进行生态系统文化服务评估时很难将人从其中剥离出来。基于这样的想法，我们也尝试探索人与自然的关系及由二者共同塑造生态系统文化服务的本质。

此外，我们也试图加深对生态系统文化服务与人类福祉关系的理解。《千年生态系统评估》中虽也强调了这一关系，但它更像是简单地列出不同服务项目的一个“头脑风暴清单”。我们在欧洲不同地区对这

一关系进行了多样化的调查，力图阐明生态系统文化服务为人类个体带来了怎样的福祉。研究发现了一些极少出现在生态系统服务分类中的因子，其中令人惊讶的是，“宁静感”（tranquillity）<sup>[7]</sup>常常出现在我们对于欧洲地区的调查结果中。尽管“宁静感”不被包含在常见的生态系统服务分类中，但其是人们在景观和生态系统中能够明显体验到的一项福祉。

**郭：**您如何看待生态系统文化服务相关研究在您的学术生涯中的定位呢？

**普利宁格：**生态系统文化服务在我的研究中不是唯一的，或许也不是最重要的研究领域。我研究兴趣广泛，尤其关注土地管理及其如何被可持续地管理。但文化价值仍因其本身的重要性在我的大多数研究项目中占据突出地位。幸而许多进行自然科学研究的同行如今也认识到了在土地管理背景中理解和评估社会文化价值的必要性。因此，生态系统文化服务是仍在发展中的重点研究领域。

关键的一点是如何认识“生态系统文化服务”一词。目前，我们的很多工作都基于IPBES的理念。“生态系统服务”一词也正在向着另一个更具包容性的概念发展，即“自然对人类的贡献”（Nature's Contributions to People, NCP）<sup>[9]</sup>。自然对人类的贡献较少关注经济视角，但囊括了更广泛的生态系统术语。同样，我的研究也在不断拓展所采用的术语和方法，以更广泛地研究文化价值的作用，以及关系价值和其他价值（如内在价值和工具性价值）是如何塑造人与自然的关系的。在此视角下，我认为引入自然对人类的贡献概念是有益于研究的，因为最初的生态系统文化服务概念对于解释复杂的人与自然的关系来说，或许是狭隘的。因此，我希望大家不要受其所限，而应对景观的文化价值进行更包容、更广泛、更多元的理解。

鉴于生态系统文化服务的效能与生态系统服务思维的兼容性，生态系统文化服务经常作为跨学科研究对象；同时，其在政策制定与实施中也被很容易被理解和贯彻。但是，这一术语还是存在局限性，并伴随着一些问题，这要从这三个词说起。首先，许多学者在批评“服务”（services）一词的使用，认为这是一个经济学术语或带有经济主义意味的术语，因而生态系统文化服务天然具有工具型、经济型和类似问题驱动型视角。“生态系统”（ecosystem）是一个生物学术语，而非日常用语，通常在一定的语境中使用。例如，如果你在生活中使用这个术语，很容易被认为是一个环保主义者。作为一名景观研究者，我也会对这个词提出异议，因为人们通常是以在大地上行走、观赏和感知土地的形式（即景观尺度）感知自然。因此，相较于“生态系统”，我更倾向使用“景观”（landscape）一词。对于第三个词，尽管“文化”（cultural）一词有着复杂的内涵，正如一些学者所指出的，其既宽泛又相对局限；

也正是因为文化的复杂内涵，其被引入了生态系统服务框架中。我认为目前在对自然的多重价值的概念化过程解决了部分相关问题。因此，我更加认同在当前生态系统服务的学术讨论中对于文化的解读。

我深信每个研究问题都具有独特性，需要使用特定的概念进行探究。例如，当你和生物学家合作，希望在以生物学方法调查特定生态系统的同时引入文化视角，那么就可以运用生态系统文化服务概念来评估这些生态系统。又或者，如果在景观项目中希望通过与当地居民密切合作来了解他们对周边环境的感知，并更广泛地探索人与自然的关系和土地的人文价值，那么使用“景观”概念或比生态系统服务更为广泛的分类系统会更为恰当。尽管这些术语出自不同的概念框架，研究者需应用更具有开放性和包容性的方法，来确保那些超出《千年生态系统评估》既定的24个生态系统服务类别的相关价值可以得到充分评估。

诸如自然对人类的贡献等新概念的使用也有利于研究拓展。以欧洲重要的传统活动——休闲狩猎和捕鱼为例，严格的生态系统服务分类很难对其进行界定。一方面，打猎或捕鱼可获取食物或进行交易，因而可被归为供给服务；但另一方面，打猎或捕鱼又可被视为游憩活动——因为在德国，人们很难靠打猎或捕鱼盈利，所以许多人并非以打猎为生，而是作为一种消遣爱好，还有人会把成为一名“猎人”（德语为“Jäger”）当作一项的精神目标。而自然对人类的贡献概念可以同时通过多个维度来理解这项活动，而非将之单一地归类为文化服务或供给服务。

**郭：**像自然对人类的贡献的概念一样，有多少概念是基于生态系统文化服务而提出的？您是如何在实践工作中运用这些概念的？

**普利宁格：**关于生态系统文化服务及其相关知识框架存在一些重要的思辨。例如，将由英国研究员罗伊·海恩斯-杨和马里昂·波钦开发的级联模型<sup>[10]</sup>与生态系统服务结合，可以描述生态系统的结构和过程如何转化为生态系统功能，又进而转化为生态系统服务和效益。此外，还有早期关于知识框架的广泛争论，一些学者提出用景观服务（landscape services）框架来代替生态系统服务框架。但就我个人的印象而言，后续进展并不顺利。虽然关于自然对人类的贡献的知识框架和术语众多，但它们都秉持同一种理念。尤其是在希望我们推行的概念能被政策实践所采纳时，应当更加谨慎地选择术语和核心概念。多年来，我们一直致力于使生态系统服务概念被纳入政策制定中，并现已取得一定程度的成功。自然对人类的贡献等新的概念和框架正在取代生态系统服务，然而不管这些概念具有怎样的重要意义，这样都会使政策制定者很难理解和适应。也许相较于知识框架的建立，我们应更加重视实施层面的转变。

举例来说，我曾参与过一个城市森林项目。这个项目由德国南部巴登—符腾堡州的国家林业局资助，对斯图加特、海德堡和卡尔斯鲁厄

三个城市中的森林进行生态系统文化服务试点评估工作。在德国，森林一直以来承担着多重功能，但在林业工作者之间存在着一个近百年历史的讨论：森林承担着生产功能（如木材、木柴的制造等），但也承担着保护功能（如土壤保护、生物多样性保育等）和游憩功能。因此，林业一直对这些不同的社会需求具有管理职责。但直到目前，林业部门都尚缺乏合适的方法和工具对游憩功能及其他生态系统文化服务进行管理，因而并未在规划中纳入这些功能管理。同时，与德国或世界其他地区的城市一样，巴登—符腾堡州的城市化进程使得该州有相当多的森林紧邻城市或较大的居住区。显然，生态系统文化服务在这些森林中体现得尤为明显。特别是在疫情期间，当人们不能去酒吧或剧院而涌向城市森林时，这些功能愈发显著，而这可能会带来一些森林管理方面的问题。因此，在这个项目中，我们对这三个城市森林的当地使用者进行了大量走访，结合PPGIS来调查人们对城市森林的使用和评价。随后我们开发了一种方法，将生态系统文化服务与森林和景观的某些特征联系起来，以试图了解人们重视或者没那么重视的森林类型具有哪些特征（如拥有古树或具有特别的文化元素）。

这一研究方法已取得了一些学术成果。一篇基于该方法的博士论文研究近期通过了答辩，其主干内容分别发表于三本期刊；但更重要的是，这一方法得到了资助该项目的国家林业局的采纳<sup>[11]-[13]</sup>。我认为下一步他们会把这些方法纳入到实际项目的规划流程中。这一成功启发了德国以及其他国家森林服务部门，如卢森堡也将采纳这种模式。在实际的森林管理中可以创建游憩服务的冷/热点地图，并以此了解相关农业价值：通过热点图可以确定哪些森林区域更受使用者欢迎，并对其进行相应的管理，以满足人们的游憩需求；冷点图所展示出的人们很少以游憩为目的进入的区域，可用作生产或其他功能进行管理。

**郭：**通过这一具体案例，您清晰地展示了生态系统文化服务研究框架是如何应用于上述三个城市的森林项目中的。人们通常需要时间来充分理解这个框架的重要性，那么，您是如何向您的合作者解释该框架的？与您一起合作的同事又是如何认识这一框架的？

**普利宁格：**一般来说，这取决于人们对这个概念的熟悉程度及他们自身的学科背景。对于来自自然科学学科的研究者来说，生态系统文化服务的评估存在很多薄弱环节，且多为定性研究。即便如此，他们通常会意识到并欣赏生态系统文化服务对于理解景观可持续性的作用，为此他们接纳并看到了生态系统文化服务研究方法的长足发展，逐步与他们所熟悉的其他方法产生更强的适应性。正如我所提到的，生态系统文化服务的概念受到很多学者，特别是社会科学学者的质疑。但整体而言，我认为目前大家基本认同需要重视生态系统和景观的文化价值，并将不同价值融合起来。生态系统文化服务相关的研究正在蓬勃发展，有

大量的文献涌现，还开展了众多的相关项目、活动、博士论文研究等。生态系统文化服务研究已经成为生态系统服务研究和更庞大的可持续性科学研究的重要组成部分。当然，作为一个涉及社会科学和生态科学的跨学科概念，生态系统文化服务通常比一些经典学科概念更能专业人士所接受。

在我看来，如今的发展趋势正在为相关研究带来变革，正如推特、Instagram等网络社交媒体，以及人们发布的在线照片和文本数据利用在整个研究领域中的兴起。借此评估生态系统和景观的文化价值的成果已经如雨后春笋般涌现。然而，许多研究议题仅靠千余张线上风景照片难以做出严谨判断，例如，关于某一地点的照片虽然多，但无法代表它受当地人高度喜爱。但同时，这种方法大大丰富了研究数据来源，为将研究拓展至更大的空间尺度提供了机遇。生态系统文化服务概念本身或许抽象难懂，但包含生态系统文化服务的具体案例能帮助人们更好地理解这一概念。比如，如果有人谈到景观的游憩价值、美学价值、精神价值等，大多数人都会立即理解其重要性。生态系统文化服务的视角可以丰富人的认知，以理解文化是如何影响我们日常生活中的方方面面。以食物为例，假如对所有服务功能综合进行审视，人们或许会意识到食物的重要文化内涵：人们对食物的选择也能反映出他们的生计状况。

**郭：**您如何看待中国等发展中国家关于生态系统文化服务或自然对人类的贡献的相关研究和实践？

**普利宁格：**在我看来，文化价值评估具有普适性。如你所知，我们在南半球国家开展了许多研究项目，每当我踏入那些研究区域，我都会感叹文化已深刻地影响并将持续影响着土地的管理方式。例如，2022年春，我在印度见证了宗教是如何为大型古树的保护做出贡献的，即使在快速发展的城市中也是如此。所以，生态系统文化服务不是一个只适用于经济发达国家的概念，适用于世界各地的文化价值研究。但同样，这取决于将之置于何种特定语境之下。以你调研中接触联系的农民为例，如果询问他们的身份、其身份与土地的联系、遗产的作用，以及他们如何从祖先那里传承了某些习俗等，我认为很少有农民会说这并不重要，或是他们只注重赚钱而忽视了耕作的社会和文化意义。

我看到针对中国的生态系统文化服务的调查日渐增多，很多中国学者也活跃在生态系统服务研究领域。总的来说，我认为生态系统文化服务的各个方面都很重要。一方面，我记得在对中国的访问中发现，精神信仰在中国的许多景观中都具有无形的、决定性的作用，我认为这与我在印度观察到的现象很相似。同时，我也看到中国社会的经济发展和中产阶级的崛起。中产阶级的形成带来了一些新的风尚，比如选择在中国

国内开展自然景观旅游。因此，我认为游憩和生态旅游在中国也在不断发展，而引入文化视角对于帮助它们可持续发展也相当重要。

**郭：**您对生态系统文化服务领域的年轻一代学者有什么建议或期许？您认为生态系统文化服务或自然对人类的贡献的前沿课题有哪些？

**普利宁格：**如今，在生态系统服务领域有许多出色的、有天赋的年轻学者。在应用先进的方法进行生态系统文化服务评价方面，他们比我做得更好。优秀的学者和可喜的学术成果不断涌现，所以我不担心这个领域的未来发展。我个人认为应用广泛的研究方法是很重要的，不要过多地关注某一类生态系统服务或某一方法，而是要全面了解人与自然的关系及其相互作用。此外，我认为关注研究的应用意义也很重要——以避免技术官僚主义或纯粹的理论层面的讨论——尤其是在农业、林业、空间规划、城乡发展等方面的应用，以及相关的政策研究。在这方面，我认为比如在一个最佳的评估报告中出现了对相关工作的全方面盘点，这就是一个很好的迹象，充分证明相关研究已在这些领域产生了影响。

此外，许多新的研究方法正在崛起。当前的一大突破是数字数据和社交媒体数据的引入，这增进了我们对这些方法效能的理解，也渐渐降低了各类数据的局限性。另一个重要的研究议题是探究生态系统文化服务在当今日益变化时代中的作用。许多生态系统文化服务是建立在长期且相对稳定的人类与自然的关系之上的，而随着气候危机的蔓延，世界各地的极端灾害层出不穷，包括洪水、干旱、山火等。我认为人们如何在这种具有高度不确定性的世界中生活，也将对生态系统文化服务产生影响。如何保持和培养场所感也将是未来研究人员要承担的重要任务。我相信年轻一代的学者拥有巨大潜力来探索这些前沿课题。

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