

Scientific Life

The Anthropocene Biosphere: Supporting ‘Open Interdisciplinarity’ through Blogging

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This paper describes a process of ‘open’ interdisciplinary scholarship. Researchers from across the University of Oklahoma blogged about a recent paper by ecologist Erle Ellis, and met in person to discuss posts. They then hosted Ellis for a seminar on questions that emerged, and for a public panel discussion.

Interdisciplinarity: Contrasting Focused and Open Methodologies

The processes transforming the biosphere in the Anthropocene include a complex array of social, ecological, and geophysical factors [1]; any attempt to understand them must therefore be interdisciplinary [2]. But how should interdisciplinary work be organized? This paper presents a methodology for what we call ‘open interdisciplinarity’. Though we did not organize the project we describe as a formal experiment, we can indicate the effectiveness of

the methods we explored. We hope other groups of researchers might be able to adopt and adapt those techniques to suit their own goals.

Our methodology is best described through a contrast with Erle Ellis’ 2015 ESA Centennial Paper ‘Ecology in an Anthropogenic Biosphere’ [3]. Ellis combines ideas from ecology, anthropology, evolutionary theory, and sociology into what he calls ‘anthroecological theory’, which seeks to integrate natural and social science concepts within a ‘general theory of anthropogenic ecological change’ [3]. Anthroecological theory thus attempts to ‘focus’ its underlying disciplines by (i) identifying how its subject of inquiry can be defined in each, and (ii) producing a unified outlook capable of generating testable predictions.

In order to respond to Ellis’ theory we implemented a complementary model of interdisciplinary scholarship. During spring 2016, 13 faculty members from 9 departments across the University of Oklahoma (the coauthors of this paper; see [Box 1](#)) participated in the ‘Anthropocene Biosphere Project’, an extended discussion of Ellis’ paper on a public blog, and in person.

Where Ellis takes what we call a ‘focused’ approach, we organized an enquiry that took an ‘open’ approach to interdisciplinarity. We did not seek to produce the kind

of theoretical synthesis Ellis attempts, but instead aimed to assemble diverse outlooks on a shared question of interest. The focused and open approaches are both valuable, but appropriate to different goals [4]. The focused approach enables the framing of operationalizable theory [2]. But the open approach facilitates a wider-ranging consideration of inherently interdisciplinary topics, and is therefore well suited to the assessment of interdisciplinary theory – our objective in examining Ellis’ paper.

The Blogging Component

For ten weeks beginning in late January 2016, project participants published posts on the blog ‘Inhabiting the Anthropocene’¹, which is a forum for scholars to present ideas from within their own disciplines relevant to the broad topic of the Anthropocene to academics in other fields, and to the wider public [5,6]. Nine of the posts in the series were ‘reflections’ expressing the author’s own view on an issue Ellis raised. Authors read and commented on each other’s posts (and discussed them in person, see below), so as the series progressed some shared concerns emerged. In the other seven posts, a participant discussed a paper chosen from Ellis’ extensive and varied bibliography. These ‘reading posts’ functioned as commentary on Ellis’ use of interdisciplinary sources. Most reading posts were by specialists in the area of the selected paper, who commented on the ideas involved and Ellis’ interpretation of them. But some participants selected papers outside their own fields in order to learn more about those ideas and to explore how they functioned in Ellis’ view.

The series of posts thus explored Ellis’ application of concepts from the participants’ disciplines, raising questions about anthroecological theory and indicating areas where it might be refined. This critical discussion appeared in the posts themselves and also in exchanges in the blog’s comment stream (to which Ellis contributed actively). The diversity of the participants’ academic backgrounds

Box 1. Disciplines Represented in the Anthropocene Biosphere Project

Natural Science

Ecology
 Evolutionary Biology
 Geology

Social Science

Anthropology
 Geography
 Sociology

Humanities

English
 History of Science
 Philosophy

provided for a richly interdisciplinary response, indicating the wider intellectual contexts of key ideas Ellis deploys, and therefore the fuller set of considerations his theory should encompass [7].

The In-Person Component

Another feature of the Anthropocene Biosphere Project was essential to the construction of our response: weekly in-person meetings of participants. These sessions were similar to a traditional reading-group: the topics for each were set by the posts that appeared earlier in the given week; those posts, and any associated papers from Ellis' bibliography, were the assigned reading; and the posts' authors led the discussions.

The blogging element and the in-person element operated in tandem, giving the project as a whole a hybrid character we believe was the foundation of its success. The publication schedule helped the group meetings maintain momentum and focus, by motivating discussion leaders and participants alike to be prepared. Further, their ongoing personal contact strengthened participants' working relationships, and thereby their sense of shared ownership of and responsibility to the blogging project.

The in-person element also served a crucial role in achieving the goals of the project: the conversational atmosphere fostered intellectual trust among the participants [8]. This allowed participants to acknowledge their lack of understanding of others' perspectives in ways that did not dismiss those perspectives' value, but rather invited them to be shared [9]. The trust participants had in each other deepened their respect for each other's disciplinary outlooks, so that, even if they did not see immediate continuities between a colleague's outlook and their own, they nonetheless accepted its relevance to the group's conversation [10,11].

The project culminated on April 14, 2016, with a visit by Ellis to the University of

Oklahoma campus. He spent the day in an extended seminar with project participants discussing a set of questions distilled from a review of the in-person discussions (which had been recorded) and organized around the concepts participants identified as central to Ellis' view. In the evening he gave a public talk, followed by a panel discussion featuring four of the participants (a video is available on the blog, as is a selection from the stream of comments students 'live-tweeted' during the event).

Evaluating Open Interdisciplinarity

By design the Anthropocene Biosphere Project did not seek to generate a single 'focused' position on Ellis' anthropological theory. Instead its goal was to assess it in the spirit of 'open interdisciplinarity'. We hoped to discover gaps in the theory's responsiveness to particular disciplinary

concerns, but also to contribute to the broad understanding of humans' transformations of the Earth the paper advances. Thus, the design of the project made it open in an additional sense: conducting the project on a blog meant that its results are accessible to the community of interested scholars, as well as to the broader public. The blog series, and the video of the culminating panel discussion, make available the added intellectual value accumulated over the course of the weekly posts, comments, and in-person meetings [8].

In light of these objectives there are several ways to indicate the project's effectiveness. Most directly, we can measure the reach of the project beyond its immediate participants in terms of the number of views of the blog. Blog posts have been viewed approximately 3100 times,

Box 2. Feedback from Project Participants, by Discipline

Ecology

The format created trust among participants and fostered productive interdisciplinary cognition. As a conservation practitioner, the process was a model for interdisciplinary and integrative problem-solving. (K.K.G.)

Geology

It is very easy for academics to erect and continually fortify disciplinary silos, with walls strengthened by impenetrable dialects unique to one's field of study. This project forced us to chisel windows to widen our perspectives. I focus on anthropogenic change to 'nature' (the Earth System), but had never considered the philosophical question of the very meaning of 'nature'. (G.S.S.)

History of Science

Our genuinely interdisciplinary discussions generated real bridges among disciplines. I recall one conversation on subtle differences in approaches to evolution among anthropology, archaeology, and sociology – which then branched out to differences between these perspectives and the approaches to evolution taken by the biologists and humanists at the table. (P.S.S.)

Sociology

Approaching questions around the Anthropocene from widely different perspectives can be stimulating, and at times disorienting, yet invites a broader synthesis. After these sessions, it is virtually impossible to think about problems, even in my home discipline, without the tendency to reframe the questions more broadly. (T.J.B.)

primarily during the project period, but also in the period following. Readership is primarily USA-based, but the blog has a global audience; views have come from dozens of countries.

Evidence that the blog format facilitated discussion is seen in the 54 total comments on project posts, primarily exchanges between project participants and post authors. In particular, the format facilitated discussion of Ellis' use of ideas drawn from outside his own discipline, as seen in a particular exchange with humanists who critiqued his conceptualization of culture.

Finally, we have subjective accounts of the opportunity for intellectual growth the project offered its participants (a selection is found in [Box 2](#)). These show the value of the project for scholars across the disciplinary spectrum. And Ellis himself attested to the success of the project in generating useful responses to his paper, stating that it 'vastly deepened my understanding not only of the broader implications of my work, but more importantly made me think more deeply about a number of elements of my theory, helping me to move forward in important new directions. This is a process I would recommend to any scientist aiming to deepen their theoretical world.'

To conclude, because the Anthropocene Biosphere Project was not designed as a study, our evaluation of it is informal. But reflecting on our experience does suggest ways future projects might be assessed more formally. A more comprehensive assessment could include pre- and post-project surveys of participants, in order to judge any change in their understanding of the material specifically, and in their understanding of and appreciation for work from other disciplines more generally. And it might include pre- and post-project surveys of a focus group, for example, students in a relevant class, in order to judge any change in their comprehension of the material presented, and of its use of

interdisciplinary sources. Finally, it could incorporate directly into the blog an analytics tool to measure project reach more precisely, as well as an assessment protocol, for example, a survey for readers.

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Resources

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Science & Society

The Rise of Invasive Species Denialism

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Scientific consensus on the negative impacts of invasive alien species (IAS) is increasingly being challenged. Whereas informed scepticism of impacts is important, science denialism is counterproductive. Such denialism arises when uncertainty on impacts is confounded by differences in values. Debates on impacts must take into account both the evidence presented and motivations.

IAS are defined by their negative impact, for which there is such an overwhelming body of global evidence [1] that IAS now rank as one of the major challenges to biodiversity conservation of our time. Reporting on invasive species and their threats is increasingly found in the mainstream media and literature. At first this coverage reflected the scientific orthodoxy that IAS have negative biodiversity, social, and economic impacts. More recently, however, many of these stories, sometimes in high-profile media outlets (e.g., *The Economist*ⁱ, *New Scientist*ⁱⁱ, *The New York Times*ⁱⁱⁱ) or books^{iv,v}, have challenged the existing scientific consensus on IAS. In some cases the scientific evidence and consensus on the impact of IAS have been misinterpreted and misrepresented. Although many of these challenges have come from laypeople, scientific journal opinion pieces [2] and