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Grappling with Interdisciplinary Research: Response to Pooley

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We were glad to read Pooley's (2013) comments on our earlier paper (Szabó & Hédli 2011) and welcome this opportunity to further discuss some important issues we could not elaborate on in that paper. Although we concur with Pooley on many points, let us start with a clarification. While it may be generally true that "previous calls for cooperation between historians and conservation scientists published in ecological and conservation journals have been made by nonhistorians" (Pooley 2013), it is certainly not true in our case. One of us is a historian with a PhD in medieval studies, the other is a vegetation ecologist. We believe our work benefited from fruitful discussions between two authors who saw the topic from often opposing perspectives. Nonetheless, we have our doubts whether disciplinary categorization is constructive when used as the basis for evaluating an individual researcher's point of view.

General versus particular

Through references to recent "big histories" and synthetic works in environmental history, Pooley emphasizes that the tendency toward generalization is present in history as well as in ecology. We agree with him, although the definition of those "big issues and themes" that according to Pooley are tackled by "breakthrough books" in environmental history is probably a matter of taste and perspective. Big in what sense--geographically, temporally, conceptually? We showed in Fig. 1 of our paper the various spatial and temporal extents used in purpose-defined subdisciplines of historical and ecological research, which we hope is more illustrative of our view than any written sentence could be. We believe historians and ecologists can successfully cooperate in endeavours conducted at different spatial and temporal scales. However, we also believe there is a substantial difference between historical and ecological research. We refer to the distinction between the search for *generalizations* (general narratives) in history and the search for *generalizability* in ecology. The latter is something other than looking for a broader picture. It is rather the search for universal principles that are common regardless of the level of organization. Such a distinction may be common in post-medieval human thinking. Nevertheless, in ecology the search for generalizability has become particularly strong in the past few decades. It reflects a different stream of scientific thinking than the much older, descriptive natural histories. Adopting the idea of a single generalized human knowledge, prominent ecologists have even fancied somewhat idealistically that "eventually all of science will coalesce into a continuum of description and explanation through which any educated person can travel by guidelines of principles and laws" (Wilson 2013).

Such necessity is not self-evident in the humanities. In history, general narratives are arrived at by putting together smaller pieces; however, the original particularities do not get dissolved in the general story. To quote eminent environmental historian Richard C. Hoffmann: “I am wary of a search for narrative unity lest it become easy reductionism. ... Historians, especially environmental historians, must try to reconstruct and communicate ... differences, then show how larger unities arise as generalizations from some of the particulars” (Hoffmann et al. 2008). This is not to say that ecologists do not need to study and describe particularities to derive the desired generalities. Such a trend is well reflected in the current creation of large databases of species traits. But again, these particularities have been used to search for generalizability in the functioning of nature (Cornwell et al. 2008). General principles enter the discussion at a much earlier stage in ecology than in history, often at the very start, and the plausibility of principles is tested by mathematically comparing observations with the principles. Mathematical statistical methods belong to the common toolset of almost every ecologist, which illustrates the dominance of the top-down approach in modern ecology. There are ecologists whose contributions are made mainly in the field of statistics, whereas direct experience with nature plays a lesser role in such studies. But we also emphasize that there are many ecologies and many histories – what some find good research does not please others. General statements of research trends cannot cover the entire spectrum of any discipline.

Collaboration versus integration

Pooley criticizes us for calling “not for collaboration, but for the integration of historical concepts into ecological research,” which in effect would mean we expect conservation professionals “to become historians through adopting some notional historical toolset.” Here Pooley read too much into our paper – this is an issue we did not address. We intended to encourage conservation professionals to consider how the “turn toward history ... can serve as a bridge that can link our various disciplines” (Cronon 1993). Be it far from us to suggest that there is a better way to do interdisciplinary research than collaboration – our own work is also based on collaboration between ecologists, palynologists, dendrochronologists, geographic information system specialists, archaeologists, and historians (e.g., Jamrichová et al. 2013).

However, we think there is more to collaboration than Pooley suggests. By limiting the role of historians to research planning and to providing “the necessary historical perspective,” Pooley allocates to historical research a classical *Hilfswissenschaften* (or auxiliary sciences) role, which is much the way a century ago genealogy was viewed as a tool to reconstruct political history rather than as a research subject in its own right. In our view, collaboration has the potential to lead to synergetic results, those that are more than the sum of the findings of individual disciplines. A good example of synergetic research is the concept of “ancient woodland” (Rackham 1980). The basic idea (although it can be traced as far back as the 19th century) stemmed from the recognition (by British ecologists) that differences between the vegetation of woodlands might be connected to whether or not these woodlands had existed continuously for longer periods. This was followed by intensive archival and landscape archaeological research aimed at establishing minimum ages for individual woodland sites. The results basically confirmed the original hypothesis: ancient woods are

ecologically distinct from recent woods in their species composition, richness, soil chemistry, etc. In the United Kingdom, this (originally historical) concept initiated large-scale ecological investigations. It was also gradually integrated into British nature conservation – ancient woodlands were recognized as high-priority conservation targets (Goldberg et al. 2007). The concept proved applicable in other European countries as well and lists of ancient woodland indicator species with further connection to species traits were compiled (Hermy et al. 1999; Verheyen et al. 2003). Furthermore, the agenda necessitated cooperation between various conservation bodies – ancient woodland is as much cultural as it is natural heritage.

Interdisciplinary work

Another issue connected to collaboration is the multiplicity of historical research into past environments. We believe Pooley's accent on environmental history reduces the diversity of approaches. For example, historical geography has been investigating pasts environments for many decades, and discussions about the relation between this field and environmental history have always been inspiring (Williams 1994). Another example is forest history, with its tradition of over a hundred years, whose certain branches have a distinct natural scientific agenda.

Given such variety, why is interdisciplinary work the exception rather than the rule? Quite symptomatically, most existing academic structures push students into narrowly defined disciplines, and many people are comfortable with this. But there are others, for whom the necessity to make a choice is neither obvious nor fruitful. Carole Crumley's reminiscences of her student days are worth quoting here: "I was horrified to realize that I would soon have to choose 'between camps.' ... This meant, however, that my professional life would be spent trying to master very different areas of study and engaging in shuttle diplomacy among them. So I am trained in paleoclimatology, geomorphology, archaeology, anthropology, ethnohistory, and classics" (Crumley 2007). It would arguably be counterproductive to evaluate Crumley's work from the perspective of a single discipline. But knowing that she is the executive director of the Integrated History and Future of People on Earth project (IHOPE), can one really say that the project was "devised without the input of historians?" (Pooley 2013).

Crumley's example is certainly not unique, but most cases of promising young scholars discouraged by the segregation inherent in our educational system remain unknown. In central Europe, where we both obtained our degrees, opportunities for cross-disciplinary education are scarce. As opposed to earlier days, nowadays a student can compose his or her study plan almost freely. However, instead of allowing for a healthy interdisciplinary curriculum, our system requires wavering students to attend two mutually isolated institutions. Eventually, most students have no other choice than to pick one discipline (or engage in tiresome "shuttle diplomacy"). Although we recognize and welcome the growing number of interdisciplinary institutions and educational platforms, we find Snow's (1959) idea of two miscommunicating worlds still valid. We believe that in addition to research teams, which remain the most important platform of interdisciplinary research, individuals can also transcend disciplinary boundaries and break new ground at the intersection of the

natural sciences and humanities. However, more needs to be done in higher education to encourage institutions and departments to respectfully exchange ideas as well as teachers and students. Disciplinary boundaries are necessary, but digging trenches along them is not. We hope our plea for change is not in vain. What seems interdisciplinary and therefore unusual today may be everyday practice tomorrow.

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