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Historical Geography, Volume 46, 2018, pp. 32-47 (Article)

Published by University of Nebraska Press

DOI: <https://doi.org/10.1353/hgo.2018.0024>

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INTERDISCIPLINARY RESEARCH ON PAST ENVIRONMENTS THROUGH THE LENS OF HISTORICAL-CRITICAL PHYSICAL GEOGRAPHIES

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ABSTRACT: What does it mean to be interdisciplinary and integrative in the geophysical sciences and humanities, and more specifically across physical and historical geography? While some have viewed the “divide” between physical and human geography as a hindrance to interdisciplinary research, others have worked to blur and transcend the divisions to tackle global environmental problems from an integrative perspective. This special issue is framed specifically within the context of new work in critical physical geography (CPG) by showcasing geographical research that highlights the role of historical approaches in doing interdisciplinary research on human-environment relations. A key question moving forward asks: what exactly does being “critical” mean in the context of interdisciplinary approaches like CPG? For the editors of this issue, doing “critical” research of any kind means being reflexive about the uneven power relations that shape scientific and nonscientific knowledges alike (past and present), situating physical or material processes within sociohistorical contexts (for instance, in relation to capitalism, globalization, or systemic racism), and unpacking differential terminology and techniques to find commonalities alongside tensions across disciplines.

KEYWORDS: *Critical physical geography, interdisciplinarity, past environments*

Over the last decade, academics in the humanities and geophysical sciences have been moving toward interdisciplinary research on past environments to examine global environmental change over time, including climate change, deforestation, water scarcity, soil erosion, and uneven development between the Global North and Global South.¹ Yet geography as a discipline has been at the forefront of interdisciplinary research on the environment for much longer, considering its long-standing history in the “human-environment” tradition (or what Berkeley School scholars used to call the “man-land” tradition), the central role of fieldwork, and the role of university departments in fostering boundary crossing between human and physical geography in undergraduate and graduate teaching.² Throughout their careers, geographers are often exposed to multidimensional epistemologies and ontologies, qualitative and quantitative methodologies, lab and fieldwork practices, all of which highlight close connections to other disciplines such as anthropology, sociology, archaeology, geology, and now, environmental history.

While some have viewed the “divide” between physical and human geography as a hindrance to interdisciplinary research, others have worked to blur and transcend the divisions to tackle global environmental problems from an integrative perspective.³ As Berkeley historical geographer James J. Parsons once wrote: “Geography, so magnificently interdisciplinary, seems an ideal vehicle for the joining of hands of science and humanism, including the taking of moral positions on environmental and spatial issues. This world, after all, is seriously out of balance with regards to production and consumption of food and raw materials, environments are deteriorating, resources and opportunities are unevenly available.”⁴ Writing in 1977, Parsons challenged future geographers to ask critical questions about how this imbalance escalated, inferring the importance of understanding human-environment relations from a historical perspective. Over four decades later, Parsons’s concerns regarding balance, degradation, and inequity remain as pertinent as ever for geographers.⁵

This special issue is framed specifically within the context of new work in critical physical geography (CPG) by showcasing geographical research that highlights the role of historical approaches in doing interdisciplinary research on human-environment relations. CPG emerged as an intervention to bring human and physical geographers

together to think critically, historically, and scientifically about global environmental challenges. In 2015 Rebecca Lave et al. published a piece in *The Canadian Geographer* to challenge critical human geographers to engage with the physical sciences by acknowledging more deeply the material environment in shaping social relations, while pushing physical geographers to learn about the histories of colonialism and the role of unequal power relations in the places they conduct fieldwork.⁶ Although the authors acknowledged the long history of critical work within physical geography, such as biogeography, some critics have questioned whether this approach is actually something new, and, if so, how?⁷ Regardless of its status as a new or reimagined project, the commitment CPG scholars encourage in understanding socioecological landscapes and transformations while interrogating the politics of knowledge production, invite environmental researchers to engage more deeply with historical geographical practice.

Our special issue originated from an American Association of Geographers (AAG) session on historical-CPG (H-CPG) in Boston in 2017, where we questioned what it meant to be interdisciplinary and integrative in the geophysical sciences and humanities; whether a project could be considered interdisciplinary if it only involves disciplines within the sciences or the humanities without crossing those boundaries; and to what extent, and how, seemingly disparate approaches can improve interdisciplinary research projects. The AAG session also focused on the need for works that are historically informed, and to reflect on the process of actively engaging in boundary crossing, limitations, and challenges is to explore the histories and practices of formal research collaboration and interdisciplinary work on the environment through the work of geographers interested in reconstructing past environments and human-environment relations in the past.

We understand H-CPG to be a terrain of interdisciplinarity, which Judith Carney described as “the hallmark of geography.”⁸ We draw inspiration from Pawson and Dovers’s reflection on the practical, institutional, and intellectual challenges and potential of interdisciplinarity in the context of environmental history.⁹ Following Pawson and Dovers, the pieces in this special issue showcase a “willingness to see why others ask different questions, the ways in which they construct and interpret evidence, and how they represent their findings.” Our attention to historical-critical physical geography in

this issue is thus intended to neither ignore nor negate the other types of intra- and interdisciplinary approaches on human-environment relations. In recent years political ecologists and environmental geographers have made similar attempts to integrate methodologies from disparate disciplines to focus on the past. Andrew Sluyter, for example, integrates an analysis of historical social and biophysical processes to understand landscape transformation of the Veracruz lowlands in Mexico from 1519 to 1619.¹⁰ In 2004 Karl Offen edited a special issue of this journal on historical political ecology, which highlighted the role of historical analysis in political ecology since the emergence of the approach in the 1970s and 1980s.¹¹ For Offen, historical political ecology centered on fieldwork interpretation (archival materials, ethnographies, interviews, plant surveys, soil samples) and questions surrounding society-nature relations in the past, including how these relations have changed (or not changed) over time and space to improve social justice and nature conservation in the present. Most of this work involved the Global South, or more specifically the Americas. Environmental historians have been equally concerned with integrating traditional archival research with proxy data to understand environments in the past. William Cronon's *Changes in the Land: Indians, Colonists, and the Ecology of New England* (1983) highlighted the role of pollen studies in reconstructing historic forest coverage, a tradition that traces its roots to early archeological studies in Europe, which we will see in one of the special issue's papers. Other historians have weaved together the use of paleoecological records, such as guano, to reconstruct climates of the past in their analysis.¹²

Similarly, there is a long history of the use of historical records by scientists who study past environments to help them investigate the role of climate events in shaping human history, both through the use of the records themselves¹³ and by linking historical events to changes in the environment.¹⁴ The use of palynology (the study of pollen) as an archive of past environmental change grew out of its use by geologists interested in understanding vegetation changes through geologic time, and it entered the geographic tradition when its value as a tool for investigating land use change and biogeographies through time came to be recognized. In his 1941 paper, Johannes Iverson was the first to recognize that changes in pollen could be attributed to tree clearing by Neolithic peoples. Geographers, particularly biogeographers interested

in paleoecologic changes, quickly saw the value in these types of studies beginning in the 1950s. Palynological research quickly become so integral to the field of biogeography that by the late 1970s biogeographer David Watts noted that palynological investigations, along with field and documentary studies, represented “by far the greatest amount of work being undertaken by geographic biogeographers.”¹⁵

As this special issue highlights, palynological and paleoecological records still play an important role in understanding human uses of landscapes, as discussed by Schoolman et al. in this issue, and more peripherally by Greer et al. through their in-depth look into David Watts’s influence on Caribbean environmental research. The field of geomorphology also has a long history of use in understanding the ways in which people interact with and impact the environment. Historical records have long provided valuable information into human modification of landscapes and records of what past landscapes may have looked like, and they have contextualized specific events such as landslides and avalanches.¹⁶ Likewise, physical geographers also have a history of developing ideas from archeology and anthropology to advance the palimpsest concept as a tool to better understand the “layered histories” of a place, combining archival and field work in unique ways to understand how past environmental change underpins present social and ecological processes.¹⁷ The Bampton et al. paper in this issue draws on both of these traditions.

A key question moving forward asks: what exactly does being “critical” mean in the context of interdisciplinary approaches like CPG? Lave et al.’s *The Canadian Geographer* piece continues to spark deeper reflection for both physical and human geographers participating in interdisciplinary research programs, and who may be entering such endeavors with different interpretations of the methodologies and responsibilities that a critical approach might carry. At issue also is that many physical scientists who may have training outside of geography may not have experience with what the term “critical” means in the context of geographical research. For most physical scientists, “critical” is generally interpreted either as important (e.g., Critical Zone Observatories) or as criticism of something. This differential interpretation of terminology is often a challenge that needs to be addressed when carrying out interdisciplinary work, and it may provide an additional impetus to reevaluate methods of scholarly

communication.¹⁸ For us, doing “critical” research of any kind means being reflexive about the uneven power relations that shape scientific and nonscientific knowledges alike (past and present), situating physical or material processes within sociohistorical contexts (for instance, in relation to capitalism, globalization, or systemic racism), and unpacking differential terminology and techniques to find commonalities alongside tensions across disciplines.

The authors of this special issue introduction continue to engage with these questions about doing critical, interdisciplinary work, most recently through collaborating on a Canada Social Science and Humanities Research Council Insight Development project titled *Empire, Trees, Climate: Toward Critical Dendroprovenancing*. *Empire, Trees, Climate* was inspired by CPG and is, in some ways, a manifestation of that concept in practice by a team of human geographers, historians, a paleoclimatologist, and an archaeologist to understand how studying the Atlantic “triangle” timber trade can help inform global climate change research. The idea for the project began as a conversation between a historical geographer (Greer) and a paleoclimatologist (Csank) working in the same geography department at Nipissing University (Ontario, Canada) and finding commonality in “the archive,” whether as a repository of historical documents or an actual forest to reconstruct past environments (figs. 1a, 1b, 2). Notably, as this concept of archives was explored more deeply, the scientist on the project (Csank) came to learn that there was just as much background and contextualization required to understand different written documents (such as historical meteorological records) as there was to understand the mechanisms underlying most proxies. Likewise, it is helpful for historical geographers and historians who wish to make use of paleoenvironmental data to better understand both the biophysical processes that underlie proxy reconstructions and their various strengths and weaknesses, as well as to engage in field and lab work to understand the cultures of environmental sciences research. In all cases, critical approaches insist on questioning the historical-political context in which scientific knowledge and concepts are produced.¹⁹ In the authors’ case, this involved a deeper examination of how climate was conceived in the age of empire.

Given the above context of departmental and governmental support, an important question arises: to what degree is boundary crossing in

FIG. 1a. "Boundary Crossing."

Adam Csank, a paleoclimatologist, examines historical meteorological records dating back to the 1830s at the Bermuda Archives, where he learned the value of the historical archive in reconstructing climate in the past.

FIG. 1b. Kirsten Greer, a historical geographer, cores a Bermuda cedar at Fort Scaur, Sandy's Parish. She acted as Csank's field assistant and acquired knowledge of writing field notes and taking samples of trees for future processing in the lab.

historical-critical physical geography contingent on departmental cultures and histories, as well as funding opportunities that promote integration? In Greer and Csank's case, being in a small department likely helped break down the commonly cited cultural and institutional divides between physical and human geographers. Furthermore, what are the spatialities and temporalities of interdisciplinary work, including that which may be described as H-CPG? Where and when do we see the integrative processes working most harmoniously, and at what stages and places might they break down? In our case, we believe the success of practicing H-CPG lies in mutual respect, a sense of curiosity, patience, effective communication, and a common goal to create positive change in this world.

Fieldwork endures as a central "site" where many geographical researchers develop their interdisciplinary and integrative approaches, and thus it forms another thread that weaves together the pieces of this special issue.²⁰ According to James Parsons, fieldwork shapes researchers into "as much humanists and historians, as scientists,"²¹ a sentiment echoed by Karl Offen and exemplified by our "boundary-crossing" images in figures 1a and 1b. This issue highlights how "the field" has broadened to include not only historical field sites (archives, past places, farmlands, and buried geographies) but also digital fields (GIS and geovisualization software). As this collection reveals, meaningful

collaboration in historical CPG requires curiosity, open-mindedness, and the development of a shared language across disciplines and subdisciplines, especially when devising research questions and methodologies. As the former professor of physical geography at Bristol University, John Thornes (1940–2008), highlighted: “What can human geographers learn from the way images are constructed by physical geographers and vice-versa? Success will mean that geographers can effectively communicate with each other and with other disciplines, as well as with the real world, in a meaningful, creative and critical way.”²²

What follows is a collection of papers that reflect some of these questions addressed during and after our special AAG session in 2017. The first paper, “Historical Geographies of Interdisciplinarity: McGill University’s Caribbean Project,” examines the historical geographies of interdisciplinary research on the environment through an examination of the Caribbean Project led by geographers from McGill University in Barbados starting in the 1950s. Rooted in McGill’s recently formed Geography Department, but interdisciplinary in approach and personnel, the initiative brought together geographers, climatologists, historians, biologists, and other researchers whose work blurred disciplinary boundaries, and who had academic lineages that reached some of the most renowned scholars in the histories of their disciplines (including Berkeley University cultural geographer Carl Sauer). Situating it within Cold War geopolitics of the time, the authors use the Caribbean Project to show that the environmental and climate-related research being done by McGill scholars in Barbados reflected a commitment to interdisciplinarity that was largely tied together through a historical lens. Although the McGill scholars may not have identified their work at the time as critical physical geography, environmental history, or cultural-historical climatology, the lineages of such interdisciplinary approaches are important to document. The Caribbean Project, which was one of the early projects to come out of the McGill Geography Department, is an important case study in the lineage of critical research on climate and the environment and prompts further questions about the politics of doing interdisciplinary research in cross-cultural contexts.

The second paper, “Mary Prince, Enslavement, Cavendish, and Historical Timber,” by Margôt Maddison-MacFadyen and Adam Csank, examines the role of dendroprovenancing and environmental histories in understanding the histories of enslavement. Maddison-MacFadyen

puts isotopic analyses (conducted by paleoclimatologist Csank) into conversation with the first known slave narrative recounted by a black woman, Mary Prince, to tell a fuller story about Bermuda's colonial heritage. Using the Cavendish home, where Prince was enslaved by the Darrell family, as a site where seemingly disparate stories of slavery and the timber trade converge as part of a broader colonial narrative, Maddison-MacFadyen demonstrates the value of engaging less conventional methods, including literary works and tree ring samples, in telling interdisciplinary histories of place. Her concluding question: "How did Emancipation affect timber flows?" stands as an example of the new kinds of critical questions that emerge through interdisciplinary approaches to environmental change. Such inquiries seem to necessitate collaboration and integration, building interdisciplinary approaches into research design from the outset in a process that might be described as proactive rather than reactive.

In the third paper, Edward Schoolman (a historian), Scott Mensing (a paleoecologist from the Berkeley tradition), and Gianluca Piovesan (a paleoecologist, trained as a forester) reflect on their interdisciplinary collaboration drawing on the central role of pollen in retelling stories of the past. The authors used archival records of political, economic, and environmental changes in Italy as well as paleoecological evidence from pollen to illustrate how these changes impacted the Rieti Basin landscape. The authors use historical events as a narrative focus, through which paleoecological data is woven. As they indicate, events such as the Black Death (1348) and Rieti's political realignment with Rome are reflected in the pollen record as a resurgence of forest following the plague-induced population reduction. As a final contribution, Schoolman et al. provide insightful documentation of the challenges faced by workers attempting these types of boundary-crossing studies and should be required methodological reading for any paleoscientist seeking to use historical evidence in their studies and any historian who wishes to include paleodata.

In the fourth paper, "The Hyperlocal Geography of Climate Change Impacts: Long-Term Perspectives on Storm Survivability from the Shetland Islands," Matthew Bampton, A. R. Kelley, and J. T. Kelley present an interdisciplinary field project in the Shetland Islands combining archeology, geomorphology, climatology, and GIS to analyze

FIG. 2. Csank is examining the correspondence of Carl Sauer in the Bancroft Library, University of Berkeley, in May 2018. Greer and Csank research the Sauer papers at Berkeley after retracing the early fieldwork on the Ghost Pine of David Watts in the foothills of California. Csank is smiling after recognizing some of the scientists with whom Sauer networked, including Ernst Antevs, a Swedish American geologist who made significant contributions to Quaternary geology, particularly geomorphology and geochronology. Greer and Csank continue to cross boundaries in their work.

why some communities on the Shetland Islands survived increased storminess in the seventeenth century, while one community (Broo) was buried by sand and destroyed. They use documentary evidence to provide context for the community in terms of economic prosperity to assess how resilient the community was to environmental perturbations. Bampton et al. further contextualize this through climatological findings, drawing on GIS and wind direction data to investigate why Broo may have been more greatly impacted by sand movement than other adjacent communities. Finally, they bring back documentary evidence in the form of accounts of economic losses sustained by storm and sand encroachment, resulting in the eventual abandonment of

the communities. This is a fascinating exploration of the differential resilience of communities to environmental perturbations related to minor differences in the geographies of their locations.

The final contribution consists of commentaries from two of the original authors of the “Critical Physical Geography” *Canadian Geographer* piece in 2015. Maria Lane, a historical geographer, and Rebecca Lave, a nature-society geographer, reflect on the papers in this collection while responding to and clarifying several questions about the connections between CPG and interdisciplinarity posed throughout this introduction. Lave importantly reminds us that interdisciplinarity is “only part of CPG’s overall program,” referring back to the intellectual tenets of CPG (ecosocial landscapes, the politics of knowledge production, and ecosocial transformation). Lane similarly challenges authors and readers to grapple further with the (yet unanswered) question: “how much interdisciplinarity is even required for critical physical geographies?” She reflects on the unique positioning and self-reflexivity of historical geographers to take up the prompts by critical physical geographers, concluding that historical geographers must recommit to grounding their work in the present. “By more explicitly accounting for the modern significance of our scholarship at the points of project design and team formation,” Lave writes, “we may find new paths to solve some of the thorny problems raised in these thoughtful papers.” Indeed, both Lave and Lane offer critical suggestions for how to move forward as we work toward H-CPG.

Karl Butzer once advocated for “a small-scale but intensive collaboration among researchers each of whom master several sets of skills, and who discuss issues on an almost daily basis for weeks at a time. In this way individuals broaden their perspectives, allowing for cross-disciplinary appreciation as well as integration of information and ideas.”²³ The geographers associated with the McGill Caribbean Project were certainly a small group brought together in the intimate space of the department, and in the Bellairs Research Institute in Barbados, which allowed for intensive research on a program of study. The same can be said of the authors of this special issue and their research teams. But, as we have shown, these are not the first to take up such a challenge; a glance back to past works offers important reminders that interdisciplinarity has been mediated and mobilized in different ways. Indeed, beyond traditional academic writing, the three volumes of the

Historical Atlas of Canada (1987–93), for example, show that “innovative atlases are the product of partnerships between not just historians and cartographers but also engage the spatial imaginations of geographers and owners of indigenous territorial knowledges.”²⁴ Revisiting such texts provides opportunities to identify the historical geographies that were omitted but also to recognize and learn from earlier examples of integrating human and physical geographies.²⁵

As we move forward, it is important to reflect on Butzer’s comment through the lens of the digital turn, and the extent to which the digital turn enabled and created challenges for the kind of interdisciplinary work being done within emerging fields of historical-critical physical geographies. From an ability to collaborate across the world, to the changing ways of defining and being in the field, to digital recording practices and methods of communication, to creative research practice, this issue carries the recognition that digital methods and media present new opportunities for polyvocal narratives of environmental change that put into conversation scientific, social, and historical knowledges.²⁶ Historical geographic information systems (HGIS), for example, continue the work of “innovative atlases” while also creating new spaces for both *showcasing* and *practicing* mixed-methods research on the environment through their capacities as descriptive, analytical, and communicative online platforms.

As the pieces in this special issue address to varying degrees, it is important to recognize that geography, among related disciplines, is haunted by its own institutional and colonial histories, including the use of cartographic methods that led to the production of racial sciences and have enabled environmental and social injustices through uneven resource extraction. Going forward, a number of questions emerge: Can critical-historical physical geographies be part of doing “reparatory history” particularly in the context of slavery and “race”?²⁷ What role does historical research play in pursuing climate justice in places like the Caribbean?²⁸ And how might these pursuits be realized without reproducing colonized knowledges or other techniques of exclusion, erasure, or exploitation? Perhaps this is an ideal time to be reflective and critical of our own work, and to acknowledge that for some, that might mean different starting points (as pointed out by Lave et al.). Physical geographers might learn more about positionality or colonial histories influencing the lab/field/scientific knowledge, while human geographers

and historians might make room for quantitative methods or balance the discursive with the material. In doing so, we are “expanding and translating through interdisciplinarity” to better grapple with current global environmental challenges.²⁹

ACKNOWLEDGMENTS

We wish to acknowledge Arn Keeling, Rebecca Lave, and Maria Lane for their invaluable editorial assistance and commentaries. We are grateful to our peer reviewers for their generous time and feedback on the papers in this issue, as well as other geographers interested in this endeavor, such as Chris Duvall, April James, and Nate Basiliko. We also thank the participants and audience members of the 2017 AAG special session on H-CPG for inspiring this special issue, as well as collaborators and assistants in the *Empire, Trees, Climate* research group for contributing to the interdisciplinary experiences and lessons discussed in this introduction.

NOTES

1. For examples, see Christopher L. Pastore, Mark B. Green, Daniel J. Bain, Andrea Muñoz-Hernandez, Charles J. Vörösmarty, Jennifer Arrigo, Sara Brandt, et al., “Tapping Environmental History to Recreate America’s Colonial Hydrology,” *Environmental Science and Technology* 44, no. 23 (2010): 8798–8803; Morgan Kelly, Cormac Ó Gráda, Sam White, Ulf Büntgen, Lena Hellmann, and Jan de Vries, “The Little Ice Age: Climate and History Reconsidered,” *Journal of Interdisciplinary History* 44 (2014): 301–77; Mark Carey, Olivia C. Molden, Mattias Borg Rasmussen, M. Jackson, Anne W. Nolin, and Bryan G. Mark, “Impacts of Glacier Recession and Declining Meltwater on Mountain Societies,” *Annals of the American Association of Geographers* 107, no. 2 (2017): 350–59.

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3. See Carol Harden, “Framing and Reframing Questions of Human-Environment Interactions,” *Annals of the Association of American Geographers* 104, no. 4 (2012): 737–47; Carol Harden, Anne Chin, Mary R. English, Rong Fu, Kathleen A. Galvin, Andrea K. Gerlak, Patricia F. McDowell, et al., “Understanding Human-Landscape Interactions in the ‘Anthropocene,’” *Environmental Management* 53 (2014): 4–13; Noel Castree, “Changing the Anthro(s)cene: Geographers, Global Environmental Change and the Politics of Knowledge,” *Dialogues in Human Geography* 5, no. 3 (2015): 301–16. See also commentaries on Castree’s piece: Mike Hulme, “Changing What Exactly, and from Where? A Response to Castree,” *Dialogues in*

Human Geography 5, no. 3 (2015): 322–26; Lauren Rickards, “Critiquing, Mining and Engaging Anthropocene Science,” *Dialogues in Human Geography* 5, no. 3 (2015): 337–42, <https://doi.org/10.1177/2043820615613263>.

4. James J. Parsons, “Geography as Exploration and Discovery,” *Annals of the Association of American Geographers* 67, no. 1 (1977): 1–16.

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6. Rebecca Lave, Matthew W. Wilson, Elizabeth S. Barron, Christine Biermann, Mark A. Carey, Chris S. Duvall, Leigh Johnson, K. Maria Lane, Nathan McClintock, and Darla Munroe, “Intervention: Critical Physical Geography,” *Canadian Geographer / Le Géographe Canadien* 58, no. 1 (2014): 1–10.

7. Marc Tadaki, Gary Brierley, Mark Dickson, Richard Le Heron, and Jennifer Salmond, “Cultivating Critical Practices in Physical Geography,” *Geographical Journal* 181, no. 2 (2015): 160–71.

8. Judith Carney, “Landscapes and Places of Memory: African Diaspora Research and Geography,” in *The African Diaspora and the Disciplines*, ed. Tejumola Olaniyan and James Hoke Sweet (Bloomington: Indiana University Press, 2010), 101.

9. Eric Pawson and Stephen Dovers, “Environmental History and the Challenges of Interdisciplinarity: An Antipodean Perspective,” *Environment and History* 9, no. 1 (2003): 53–75.

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14. David A. Hodell, Jason H. Curtis, and Mark Brenner, “Possible Role of Climate in the Collapse of Classic Maya Civilization,” *Nature* 375 (1995): 391–94.

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16. Stanley W. Trimble and Ronald U. Cooke, “Historical Sources for Geomorphological Research in the United States,” *Professional Geographer* 43, no. 2 (1991): 212–28.

17. Alan D. Marvell and David Simm, “Unravelling the Geographical Palimpsest through Fieldwork: Discovering a Sense of Place,” *Geography* 101, no. 3 (2016): 125–36.

18. Pawson and Dovers address similar issues with terminology, in addition to a variety of intellectual, institutional, and practical challenges associated with doing interdisciplinary environmental histories, in “Environmental History and the Challenges of Interdisciplinarity.”

19. See Kirsten Greer and Laura Cameron, “Introduction: The Use and Abuse of Ecological Constructs,” special issue, *Geoforum* (October 2015): 451–53.

20. Thanks primarily to the work of feminist scholars in the 1990s, most geographers acknowledge the blurry boundaries of defining, being in, and moving through the “field,” including questions about how the field is constituted and the degree to which any geographer can ever be fully inside or outside a subjectively defined field. See, for example, “Special Issue on Women in the Field: Critical Feminist Methodologies and Theoretical Perspectives,” *Professional Geographer* 46, no. 1 (1994): 54–102.

21. Parsons, “Geography as Exploration and Discovery,” 15.

22. John E. Thornes, “Cultural Climatology and the Representation of Sky, Atmosphere, Weather and Climate in Selected Art Works of Constable, Monet and Eliasson,” *Geoforum* 39, no. 2 (2008): 579.

23. Karl W. Butzer, “Environmental History in the Mediterranean World: Cross-Disciplinary Investigation of Cause-and-Effect for Degradation and Soil Erosion,” *Journal of Archaeological Science* 32, no. 12 (2005): 1774.

24. Pawson and Dovers, “Environmental History and the Challenges of Interdisciplinarity,” 60.

25. A panel discussion at the Canadian Association of Geographers’ annual meeting in 2017 in Toronto was dedicated to revisiting the *Historical Atlas of Canada*

to understand its impact, longevity, and exclusions as part of a roundtable featuring critical conversations around Canada's 150th anniversary as a state. See Matthew Farish, Phillip Gordon Mackintosh, and Kirsten Greer, eds., "Roundtable—Canada at 150: Critical Historical Geographies," *Historical Geography* 45 (2017): 100–151 (see 100–102 and 124–36 for specific reflections on the *Atlas*).

26. For example, see Nipissing University's Centre for Understanding Semi-Peripheries (CUSP) historical GIS portal at <https://cusp.maps.arcgis.com/apps/MapSeries/index.html?appid=6475de8ff85a4c7b9a2b4be500d99605>. For an example of art-science creative practice, see Scott St. George, Daniel Crawford, Todd Reubold, and Elizabeth Giorgi, "Making Climate Data Sing: Using Music-like Sonifications to Convey a Key Climate Record," *Bulletin of the American Meteorological Society* 98, no. 1 (April 4, 2016): 23–27, <https://doi.org/10.1175/BAMS-D-15-00223.1>.

27. Catherine Hall, "Doing Reparatory History: Bringing 'Race' and Slavery Home," *Race and Class* 60, no. 1 (2018): 3–21.

28. In their 2016 special issue in *Geoforum*, April Karen Baptiste and Kevon Rhiney introduce a collection of papers on "Climate Justice and the Caribbean," all of which respond to the importance of doing critical, situated research on climate change that amplifies the capacity of nation-states and communities at greatest risk, but who have previously been neglected in Global North-dominated climate research. Although not explicitly an issue focused on critical physical geographies, the papers in Baptiste and Rhiney's *Geoforum* show how critical physical geographies in the future might formulate around specific issues like climate. Not by design, but perhaps also not coincidentally (given the profound effects of climate change on tropical island regions), readers will find overlap between our issues with two of the following articles focusing on environmental research on two Caribbean islands: Barbados (Greer et al.) and Bermuda (Maddison-MacFadyen). See April Karen Baptiste and Kevon Rhiney, "Climate Justice and the Caribbean: An Introduction," *Geoforum* 73 (2016): 17.

29. Katherine Donovan, James D. Sidaway, and Iain Stewart, "Bridging the Geodivide: Reflections on an Interdisciplinary (ESRC/NERC) Studentship," *Transactions of the Institute of British Geographers* 36, no. 1 (2011): 9–14.