Editor's Column

Climate Humanists

JUST HOW IMPORTANT IS "BIG DATA" TO HUMANISTS? IS IT MOSTLY hype and hot air, as argued by Timothy Brennan in "The Digital Humanities Bust"? Or is it a genuine new beginning, as argued by Sarah E. Bond, Hoyt Long, and Ted Underwood in response? And what exactly does "big" mean?[1] Is the magnitude necessarily the result of algorithmic computation, a form of digital humanities based on data mining and yielding statistical observations about large corpora? Or could it be nonalgorithmic, coming from collaboration, say, rather than computation? Bond, Long, and Underwood point out that big data projects might look different in the future, transformed by new partnerships with libraries and museums. What might some of these projects be?

These questions were on my mind as I began a long and increasingly multiparty e-mail correspondence with the Data Refuge team at the University of Pennsylvania. Data Refuge is a collaboration between librarians, scientists, and humanists to save at-risk climate archives on federal Web sites. The fear is that, given the science-denying agenda of the Trump administration, any records documenting climate change will be erased. The first Data Refuge event, held the Saturday before the inauguration, featured 150 librarians, Web archivists, and humanists hunched over laptops on the sixth floor of the Van Pelt Library (Schlanger). Since then, more than fifty other similar events have been organized across North America. *PBS NewsHour* reported on this unprecedented collaboration ("How"), as did National Public Radio, *The New York Times*, *The Washington Post*, *Los Angeles Times*, *The Wall Street Journal*, Reuters, and *Wired*. Bethany Wiggin, a professor of German and director of the Penn Program in the Environmental Humanities, who spearheaded the

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https://doi.org/10.1632/pmla.2018.133.1.9 Published online by Cambridge University Press

effort, was interviewed by Trevor Noah on *The Daily Show* ("Canada").

Wiggin had been my guide to other Penn projects, but one look at the operational logistics of Data Refuge—the networking needed to coordinate thousands of climate scientists and an equal number of volunteers with Web archiving skills—made it clear that a team rather than an individual ought to be my subject. Data here are about as big as they can get. Eventually four other people also joined the e-mail correspondence, reflecting the scope of the project and the supporting infrastructures needed: James English, faculty director of the Price Lab for Digital Humanities; Stewart Varner, managing director of the Price Lab; Paul Farber, managing director of the Penn Program in the Environmental Humanities; and Laurie Allen, director for digital scholarship in the Penn Libraries.

The institutional frame for digital work at the University of Pennsylvania was consolidated in 2015 by a two-million-dollar grant from the Andrew W. Mellon Foundation, given to the library, museum, and Price Lab as working partners. Henceforth, networking capabilities and technology personnel would be housed in the library and shared with individual research projects. Since one of the goals of the Penn Libraries is the "stewarding and preserving" of information, a climate-data project is squarely within its purview ("Mission"). Still, even for this well-funded entity, Data Refuge is too huge and too multifaceted to be undertaken alone.

The Penn researchers turned first to the Union of Concerned Scientists, an organization with over 125,000 members. With its help, they surveyed thousands of climate scientists, making a list of Web data considered the most important and most vulnerable, distributing this information to volunteer archivists across North America. Building on a Web-harvesting tool developed in Toronto by the newly formed Environmental Data and Governance Initiative, the Penn team then added preservation protocols, expanded the scope of data gathering, and sponsored an array of science-literacy events. The library truism "lots of copies keep stuff safe," first coined at Stanford (www.lockss.org), served as the motto for this collaborative project, archiving information in multiple sites, in universities and private companies as well as in federal agencies. Since the archiving facilities at the University of Pennsylvania were not adequate to the amount of data saved and the demand for public access envisioned, Data Refuge eventually had to look for another home. Thanks to an anonymous donation of unlimited space on Amazon servers, this public-spirited project truly went public, configuring its storage space and archiving its material using open-source software, accessible to any user.

The data being protected are the result not of algorithmic aggregation but of crowdsourcing: a large number of volunteer archivists make this vast project possible. Magnitude, while necessary, is not the only consideration, however. Micronarrating is just as important. To anchor this big data project in lived experience, the Penn Program in the Environmental Humanities has also launched a human-scale companion project, called Data Refuge Stories. Working once again with the Union of Concerned Scientists, and supported now by the National Geographic Foundation, the team recorded face-to-face conversations with some two hundred earth scientists to be included in a digital "storybank" ("About"). The American Geophysical Union, the largest organization of space and planetary scientists, with over sixty thousand members from 137 countries ("Our History"), was impressed enough to host these storytellers at its December 2017 annual convention.

Could such a climate project, born of collaboration rather than computation, serve as a template for the humanities, including digital humanities?[2] Varner, speaking for the Price Lab, is emphatic in his reply. "For me, DH means humanists who are free to ask

https://doi.org/10.1632/pmla.2018.133.1.9 Published online by Cambridge University Press

questions, find answers, and tell stories using whatever tool or method is most appropriate," he writes, adding:

> DH also means working closely with others despite collaboration being relatively rare (or even frowned on) in your field. DH also means being critical of technology; not from a Luddite's but from a hacker's perspective. Finally, DH means using a humanist's critical edge and concern for social justice to publicly engage with current concerns. From what I can see, Data Refuge enthusiastically checks each of those boxes.

Speaking for librarians, Allen adds that, in caring for its material the way it does, "Data Refuge is a project that shows us new kinds of work we want to be doing." The greatest achievement of this pioneering effort is in making a case for the efficacy of the humanities as collaborative partners. We tend "to see the problem of saving at-risk federal climate and environmental data as a primarily technical one, but it is, of course, bound together with deep civic and social problems," Allen writes. "Advocacy and storytelling remain at the heart of Data Refuge," since "a deeper public understanding of the relationship between federal environmental and climate data and people's lives is a necessary precondition for any long term solution to the problem of data vulnerability."

Data vulnerability is the new normal here, calling for a humanist scholarship likewise responsive and responsible. The ground-level work of identifying, gathering, and preserving at-risk material has become more urgent and more necessary than most of us would have imagined just a few years ago. An ethics of care is no longer a theory; it is above all a practice. And it might well be the most valuable thing humanists have to offer just now, a truly interdisciplinary platform, a kind of work meaningful to our colleagues in science, technology, engineering, and medicine, and necessary to our own field as we attend to our precarity along with that of the planet. Data Refuge is, in this sense, a test case not only for climate activists but also for humanists of all stripes.

On 20 October 2017, *The New York Times* reported that all references to climate change had indeed been "scrubbed" from an Environmental Protection Agency Web site on energy and climate (Friedman). Talks by scientists on climate change were canceled, and e-mails by employees critical of the agency were investigated by a hired company (Lipton and Friedman). On 10 January 2018, *Scientific American* reported that thousands of climate Web pages had been erased from the Web sites of the Environmental Protection Agency, the Department of Energy, and the Department of the Interior, deleting information about renewable energies and climate-preparedness measures for cities and states (Waldman, "Climate Web Pages"). The timeliness and consequentialness of Data Refuge can no longer be in doubt. What's the implication of this project for the rest of us? Can we think of its combination of big data with micronarrating as a new direction for literary studies as a whole, tech-enabled but not tech-fetishizing, leading to scholarship that looks different from what we ordinarily do because prompted by circumstances also different?

The Theories and Methodologies contributors in this issue—faculty members, graduate students, and nonacademics—call attention to the no-longer-familiar forms writing can now take.[3] I'd like to make a case for macro-micro data projects in that context: as the no-longer-familiar work done by a new kind of humanism, "climate humanism," a twenty-first-century update on the humanism of the fifteenth century. Unlike Renaissance humanists, whose dedication to ancient Greek and Latin manuscripts blinded them to the emergence of print and the scientific revolution powered by that medium (Grafton), climate humanists are medium-conscious from the first, embracing the digital revolution

https://doi.org/10.1632/pmla.2018.133.1.9 Published online by Cambridge University Press

with open eyes, knowing that science-and-technology partnerships would be needed to get the job done. Climate humanism is born-digital and born-collaborative. Reaching back as well as staying current, it carries on the time-honored task of caring for archives but works with numbers as well as texts, doing so in a tech-based environment and using tools and platforms hitherto unknown.

Just how viable is climate humanism across scales? Is its macro-micro synthesis equally fruitful for the planet, the university, and the individual? What might it look like as a global initiative and as the work of a single pair of hands? In what follows, I explore some of these questions by looking at two projects, growing out of different contexts and working with different mediums and together giving a sense of the scalar variation in climate humanism: the nearly carbon-neutral conference pioneered by Ken Hiltner and the Kyoto-Protocol-inspired paintings of Peter Sacks.

Hiltner's conference was part of a larger Carbon Neutrality Initiative, announced in November 2013 by Janet Napolitano, president of the University of California. Noting that "global climate disruption is impacting the planet in ways never experienced in human history" and that such disruption is "driven by the release of carbon dioxide into the environment," the university's official statement "commits UC to emitting net zero greenhouse gases from its buildings and vehicle fleet by 2025, something no other major university system has done" ("Carbon Neutrality Initiative"). Enacted at all ten campuses of the University of California, the initiative is also meant to serve as a template for other educational institutions, nation-states, and supranational entities such as the Paris Agreement. "We are the University of California, and there is no reason that UC can't lead the world in this quest, as it has in so many others," Napolitano said (qtd. in Ramanathan et al.).

The Carbon Neutrality Initiative is climate humanism on a megascale. Recognizing that the rise in atmospheric carbon dioxide is caused by human beings, it puts the burden of remedy squarely on human beings, taking under its care one particular bit of data: the current (and already dangerously elevated) carbon level of 405.1 parts per million (Waldman, "Atmospheric Carbon Dioxide"). Keeping that number from going any higher will be the collaborative work of everyone at the University of California, at all campuses and across all disciplines. How might humanists take an active part in this project that is so much theirs in spirit? In 2015, Hiltner—a Renaissance scholar at the University of California, Santa Barbara, and author of five books on ecocriticism—hit on the idea of the nearly carbon-neutral conference. He began a white paper with some eye-opening statistics: "30% of UCSB's total GHG [greenhouse-gas] emissions come from air travel to conferences, talks, and meetings. If we remove commuting from the equation, air travel jumps to 35%. This 30% (or 35%) figure for air travel represents approximately 55,000,000 pounds of CO2 or equivalent gasses." Globe-trotting humanists, even those giving papers on climate change, are making the problem worse. "Just 20 schools like UCSB would have combined GHG emissions for air travel of more than a billion pounds per year. As there are nearly 5,000 colleges and universities in the U.S. alone, the planet's institutions of higher learning are responsible for many, many billions of pounds of GHG emissions annually. All just from flying."

Hiltner had attended several high-tech virtual events in the past and found them disappointing. His conference requires a lower level of technology. Instead of presenting live video broadcasts, the conference features talks recorded in advance, using video cameras, computer cameras, even cell phones. When the conference begins, all the videos are posted simultaneously on *YouTube*, remaining open for several weeks. This lower level of technology allows for far greater dem-

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ocratic representation and access. Attendees can watch the talks at all hours and any number of times. No one needs to miss talks from concurrent sessions. And, no longer hamstrung by the cost of air travel, conference organizers can invite speakers from any part of the world. Those from developing countries, frontline witnesses to the uneven pace of climate change, hitherto excluded from North American conferences, are now represented.

Teaming up with the sociologist John Foran, Hiltner set out to make the conference an experiment in "applied humanities," a revamping of the "suite of practices that constitute the traditional academic conference." What results is a climate-responsible alternative within reach of everyone. Making good use of carbon-emission data and in turn generating human data of its own, the conference makes one important contribution: quantitative evidence about the immediate social benefits of this climate initiative. For Foran, what began as a side effect—greater democratic representation—ended up being a key determinant. "Climate change," he said, "is a massive social injustice" (qtd. in Murdock), repeating and exacerbating our current inequalities, putting the maximum burden on those least guilty of producing greenhouse gases. It is incumbent on us all to counter that injustice, and for humanists, undoing the structural inequalities of the academic conference might be the very place to begin.

As befits a macro-micro project, storytelling is crucial. Hiltner has written a practical guide, in which he discusses some previous findings and responds to frequently asked questions, making it clear that anyone familiar with *WordPress* can set up a nearly carbon-neutral conference in about a day. And the conference is a good story, with many surprises along the way. Among other things, the closed-captioning function of *YouTube* makes the talks accessible to the hearing-impaired, creating an unexpected partnership between climate humanists and the disability community. Meanwhile, the opening up of the conference as a continuous event lasting for several weeks gives people more time to think through the issues and ask informed questions. On average, the question-and-answer sessions of these conferences generated three times more discussion than would be the case at a traditional conference. Some sessions generated fifteen times the amount of discussion.

All of which is to say that a macro-micro project has many outcomes, producing data both big and small, significant to scientists and humanists alike. Hiltner is the first to admit that there is still room for improvement and complementary efforts. The conference is only nearly carbon-neutral, after all: watching online videos and powering the computers that host the event still leave a carbon footprint. By his analysis, the carbon footprint of an attendee is around one percent that of an attendee of a traditional conference. Any project operating online would have that footprint. Is zero emission ever possible, and just how necessary is digitization for climate humanists? Can the work of caring for data be done without making the digital medium a requisite every step of the way?

Peter Sacks's paintings come immediately to mind. A poet, scholar, and Harvard professor, Sacks has written five volumes of poetry and a study of the English elegy. Since 2002, however, he has made painting his medium, the form that his "writing" would henceforth take. He has long been drawn to writing understood in this primitive, elemental sense: as visual inscription of any sort, a record kept against all odds for otherwise unrecorded lives. Growing up in South Africa, he spent days and weeks wandering in the Drakensberg Mountains, looking at cave paintings made by the bushmen—human data that, according to him, "seemed to come out of the rock," predating the print and digital revolutions, predating even cursive writing, yet persisting to this day, still-living testimonies to "people who had been forced out of the land"

https://doi.org/10.1632/pmla.2018.133.1.9 Published online by Cambridge University Press

(qtd. in Merkin). He began to take a notebook with him to jot down these data, a habit that he kept when he later traveled in Europe, Asia, and the Americas, always looking for human records hovering "between the spoken and the written, the seen and the sensed, the visible and the invisible" (Sacks, "'Every Painting'"). His poetry has been animated by such data; his handwrought, densely layered paintings now recall the same.[4]

Such paintings are about as nondigital as any twenty-first-century operating environment can be. "It matters to me," Sacks says, "that the insistent materiality of my medium" counters the "otherwise dematerialized digital medium," making viewers "physically as well as optically accountable for what is in front of them" (E-mail message [19 Dec. 2017]). That physical accountability is "never subject to abstract instrumentalizing or computation" (E-mail message [20 Nov. 2017]). Yet his data could not be bigger. Along with cave paintings, included here are archives gathered from across human history, some celebrated and some wrested from oblivion: the words on a burlap sack carrying sugar, the sales figures on a slave-ship logbook, the Geneva Conventions, the words of Primo Levi, lines from the Upanishads. These data are then painstakingly typed onto thin linen strips. The strips are in turn ripped, charred, or painted over. In some cases, they are buried under other kinds of material—shrouds, prison and work shirts, metal rings, threads, buttons, eyelets, ropes, fishing nets—creating ridged surfaces and partly exposed veins in layer after layer of perishable testimonies.

This is how Sacks "cares for" data: excavating them not to make them forever safe—an impossible task—but to highlight their vulnerability, their weak claim to existence. Sacks's recent triptych *No Refuge* features, among other things, words taken from United Nations and newspaper reports about tens of thousands of Syrian refugees vainly seeking sanctuary on the Greek island of Lesbos (fig. 1). Following the movement of these refugees, strips of colored fabric undulate and pulsate across the three panels, but many come to a dead end, emblematic of the broken lives, lost belongings, and involuntary closures that ensue.

Working with his hands, and making his home among these charred and buried materials, Sacks is much less optimistic than digital natives, much less confident about the fate of human records. Data vulnerability, from his standpoint, has been a given since time immemorial: *refuge* can only be used in the negative. His series *Aftermath*, unrelenting in its reduction of the world to a debris field, is emphatic on this point. And yet, just as emphatically, the debris is not the end either, not an aftermath equated with a single terminal catastrophe. "Aftermath—many people think this word refers exclusively to the end point of something destructive, whereas the actual meaning of the word originally refers to the first regrowth of a field after it has been mowed," Sacks says. He adds, "We have, by now, mowed down so much of ourselves and of the planet," but something else always crops up afterward, for the physicality of visual inscription—its existence as material "traction" as well as signifying "abstraction"—allows it to have a life and a trajectory different from

FIG. 1
Peter Sacks, *No Refuge*, detail. Courtesy of Marlborough Gallery, New York.

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the destructive forces visited on it. For Sacks, "[t]he show is about survival. It is about what endures" (E-mail message [20 Nov. 2017]).

Sacks's *Kyoto Protocol* proceeds with just that understanding. Painted between 2014 and 2016, almost twenty years after the 1997 climate agreement setting specific carbon reduction targets for industrialized nations, the triptych could be said to be about a glaring failure, a debris field of its own. After all, while most nations ratified the Kyoto Protocol and while the European Union was on track to reach or even exceed its carbon-reduction targets, there was one conspicuous nonsignatory: the United States. This outlier, along with China and India (exempt from specific targets because of their historically low emissions), now churns out enough extra carbon dioxide to wipe out all the combined reductions made by other countries. Worldwide, carbon emissions soared by nearly forty percent between 1990 and 2009, the period covered by the Kyoto Protocol (Clark), "reaching an all-time high of 34 billion tonnes in 2011" (Olivier et al.).

These are dismal statistics. And yet Sacks's *Kyoto Protocol* seems oddly undiscouraged. Like *No Refuge*, its companion in adversity, this triptych tells a story of thwarted efforts, dashed hopes, and wasted labor—but does so through a micronarrative that, while documenting a disappointing outcome, is clearly not coterminous with that outcome. The choice of the triptych is key here. The story of the Kyoto Protocol has to be told in three panels (fig. 2), with record keeping starting at a much earlier point and, thanks to that long backward arc, not quite ceasing with the supposed end. In this tripartite composition, two-thirds of the canvas is given over to the aspirations leading up to the signing of the protocol, aspirations so deep and abiding that they persist even when judged to be futile.

The first panel, a groundswell of possibilities, features many strips of brightly colored fabric, some with flowers on them, crisscrossing and going energetically onward. In the second panel, these strips seem to burst forth in a concerted flowering, almost completely covering the canvas, filling the background void with vibrant colors and motions. In the third panel, most of these strips are gone, swept away by an obliterating hand, leaving us with the background void, now dominant. What makes this void not conclusive, not quite the last word, is that instead of being the ground of reality, it turns out to be visibly imposed from above, a flimsy white fabric pasted on, and already torn in a couple of places, showing the brightly colored fabric still alive

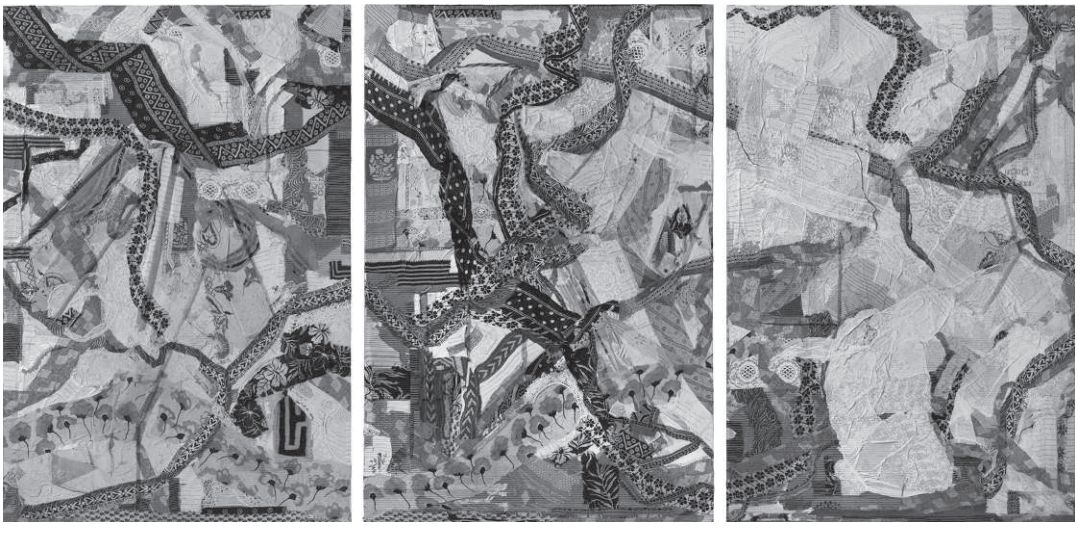

Fig. 2
Peter Sacks, *Kyoto Protocol*. Courtesy of Marlborough Gallery, New York.

https://doi.org/10.1632/pmla.2018.133.1.9 Published online by Cambridge University Press

underneath (fig. 3). The groundswell of aspirations in the first panel, seemingly epiphenomenal, is in fact deep-rooted. It has gone under for the moment, biding its time. But already, in the resurfacing of those vibrant colors and motions, another forward arc is in the offing.

The Kyoto Protocol is kept going by just such an arc. Though some have consigned it to the "ash heap of history" (Brandon), that ash heap has proved fertile ground, an incubator for what would come next. The Paris Agreement, adopted on 12 December 2015, with 195 signatories, picked up just where the Kyoto Protocol left off. The action of the United States, in this case, has not undermined the resolve of the other treaty members but strengthened it. On 6 July 2017, one month after Donald Trump announced the withdrawal of the United States from the agreement, France pledged to ban all new gas and diesel cars by 2040 as part of its compliance ("France"). On 12 December 2017, the second anniversary of the agreement, the French president, Emmanuel Macron, teamed up with the United Nations and the World Bank to host One Planet Summit. Fifty world leaders attended. The rallying cry was "Make Our Planet Great Again" (Gleiser).

None of these events could have been foreseen by Sacks when he began creating *Kyoto Protocol* in 2014. Yet his tripartite composition, telling a story at once granular and elongated, and tracing its trajectory backward and forward, already intuits, through the very form of narrative, that this apparently failed treaty is far from doomed. This too is how he "cares for" data—caring for it by highlighting just how big it is, how far-reaching and densely layered, a much larger archive than the finite one at any cutoff point. This large archive tells us that any depopulated field is only momentary, unlikely to be the sum total. The Kyoto Protocol, carried forward in the Paris Agreement and in Sacks's triptych, now digitized and viewable online, shows us just what big data climate humanists can do with micronarrating.

Fig. 3
Peter Sacks, *Kyoto Protocol*, detail. Courtesy of Marlborough Gallery, New York.

Wai Chee Dimock

Notes

1. For meditations on scale and size, see especially Booth; Drucker; Piper.

2. For more on the relation between environmental humanities and digital humanities, see the Changing Profession section on ecological digital humanities in the March 2016 issue of *PMLA* (vol. 131, no. 2).

3. Kittler is the first to call attention to the transformation of writing in a digital age.

4. In an e-mail correspondence on 18 November 2017, Sacks wrote, "I am actually excited by the term 'data' especially when plus 'refuge' and also when thought upon as threshold of given and found."

https://doi.org/10.1632/pmla.2018.133.1.9 Published online by Cambridge University Press

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