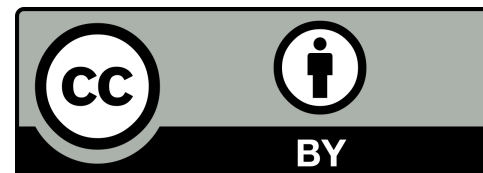


But what about astrophysics? And what about China?

Of blind spots in the ecological mindset of researchers,
and what digital technologies have to do with it

Anne Baillot

April 24th, 2024



What about astrophysics? What about China?

Today we talk about the elephant in the room

Whose research is concerned with environmental issues? Everyone's.

- Digital Humanities and their take on it
- Archiving and publishing in research: what ecological footprint?
- From footprint measures to shifts in research practices
- How to cope with the cognitive dissonance caused by the knowledge of the climate and biodiversity crises

What are « Digital Humanities »?

Reasons to be baffled by the concept:

- A contradiction in terms? Digital vs. Humanities
- Aren't all Humanities scholars using digital technologies?

And yet:

- Reflecting on how the use of IT changes the disciplines (different approaches depending on Humanities disciplines)
- Still a strong tendency to put digital tools front and center (techno-solutionism)->trying to counter-balance this tendency

A structured community of research

- Regional/national associations (sometimes defined by linguistic areas like the DHd Verband: <https://dig-hum.de/>)
 - European overarching association EADH
 - Global association ADHO
- > each organizing their yearly conference.

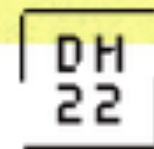


How we started to address issues pertaining to the climate and biodiversity crises in DH

- Day of DH 2021
- Publication V1 of the Manifesto « DH and the Climate Crisis », *open peer review* on hypothes.is
- Publication V2: <https://dhc-barnard.github.io/dhclimate/>
- DH Award for best failure 2022
- Presentation (remote) at the DH 2022 conference as a long paper

Digital Humanities Awards

Highlighting Resources in Digital Humanities



DH2022 Tokyo

Digital Humanities and the Climate Crisis

a manifesto

Preamble

This manifesto emerged from a collective desire to foreground the climate crisis within digital humanities work. We are a group of digital humanists, in varying positions and career stages, from the Caribbean, Europe, and the United States, working within well-resourced academic institutions. We know that as individuals and as a community we contribute to the climate crisis. We believe that with our world in the midst of vast and borderless catastrophe, digital humanists have a responsibility to act.

Some Context

The digital is material. As digital humanists, every project we create, every software application we use, every piece of hardware we purchase impacts our

As humanities researchers, it is also our role to probe the values, the power structures, and the future imaginaries that underpin sustainable solutions. Given, especially, the immense and monopolistic power wielded by the global tech sector, and the critiques of this power that are part of DH, our use of their resources should be informed by the ways corporate economic, cultural, and scientific power perpetuates and exacerbates the crisis. Choosing a hardware or hosting provider, for example, should mean considering direct environmental impacts, broader environmental policies and record of the provider, and more broadly still, the kinds of collective future that such a collaborative encounter presupposes. We should be able to candidly explore the complex and sometimes contradictory nature of our ecological impact: we should be able to measure and model where possible, while also creating context around our measurements, flagging uncertainties, and advocating for transforming wider conditions. This would require taking a step back from detailing the environmental impact of a resource, to ask whether the activities supported by that resource really serve ecological and social justice.

Creation of the Digital Humanities Climate Coalition (DHCC)

- Managed by UK- and Ireland-based scholars
- <https://www.cdcs.ed.ac.uk/digital-humanities-climate-coalition>
- First publications:
 - A Researcher Guide to Writing a Climate Justice Oriented Data Management Plan (<https://doi.org/10.5281/zenodo.6451499>)
 - DHCC toolkit (<https://sas-dhrh.github.io/dhcc-toolkit/>)



The Digital Humanities Climate Coalition Toolkit

This toolkit is a guide to making your research practices more environmentally responsible. It is geared towards digital practices, but also touches on general areas such as travel and advocacy. We hope it will be relevant to researchers, educators, students, administrators, librarians, technicians, and others. The toolkit aims to highlight actionable solutions, while also critically reflecting on their nuances, in the broader context of climate justice. It is a community-developed work-in-progress, and you are warmly invited to contribute.

Where to start?

If you have a specific question, check if it listed in the [I Want To ...](#) section. Or browse the toolkit in any order. If you'd like a suggested pathway, try this:



Join the mailing list

If you'd like to be kept in the loop about DHCC activities, [ask to be added to the email list](#). We plan to have some regular informal conversations in 2023 to explore further developing the toolkit and other next steps.

DHCC Toolkit

Where to start?

If you have a specific question, check if it listed in the [I Want To ...](#) section. Or browse the toolkit in any order. If you'd like a suggested pathway, try this:

- [Introduction](#)
- [Minimal Computing](#)
- [Maximal Computing](#)
- [Grant Writing](#)
- [Working Practices](#)
- [Teaching](#)
- [Advocating Within Your Institution](#)
- [Decision Trees](#)
- [Climate Change FAQs](#)



[I want to organise an online event](#)

[I want to organise a hybrid event](#)

[I want to measure carbon emissions](#)

[I want to create a website for a research project](#)

[I want to create a digital edition of a book](#)

[I want to create a personal website](#)

[I want to create a website for a research network](#)

[I want to train an AI](#)

[I want to build a piece of software](#)

[I am writing a Data Management Plan](#)

[I am working with an external partner on their digital sustainability](#)

[I think my laptop / desktop / device needs replacing](#)

[I am requesting equipment for my DH lab](#)

Working Group « Greening DH » of the DHd association

- <https://dhd-greening.github.io/>, since 2022
- Contribution to the DHCC toolkit
- Workshops for the DHd community:
 - 2023: scenarios of implementation of the DHCC toolkit in German institutions; discussion with a representative of the DHd board (in German): <https://digitale-wissenschaft.de/podcasts/dhd2023-special-1/>; <https://digitale-wissenschaft.de/podcasts/dhd2023-special-2/>
 - 2024: green data management plan (output to be finalised in May)



Leveraging larger issues?

- Questioning one's digital practice, even one's research practices in general
 - Still framed in a logic where individuals have to take in charge the necessary changes -> institutional leverage still an open issue
 - How to reach people who are not yet aware of the problem?
 - Initiatives that bear more of a good conscience function than a wake-up call
- > need to understand the encompassing, systemic character of the environmental footprint of research, especially in its digital dimension

Questioning basic scholarly practices: archiving, publishing

- Drawing from *From Handwriting to Footprinting. Text and Heritage in the Age of Climate Crisis*, Cambridge, 2023
(<https://www.openbookpublishers.com/books/10.11647/obp.0355>)
- More details in the New Books Network podcast episode:
<https://newbooksnetwork.com/from-handwriting-to-footprinting>

Archiving practices and their relevance for research

- Archiving artefacts: old practice
- Key functions: selecting, preserving, recording, making available (documents that are mostly written by hand, through a finding aid/catalogue)
- Selecting involves no to keep everything=> a selective narrative is generated through the archiving process, some material gets discarded, destroyed, forgotten.
- Importance of documenting/formulating archiving principles
- Key role of (physical) archived documents: unique and authentic artefacts -> fundamental for all historical research

Digital archiving

- Some differences with physical archiving: notion of unicity of the document obsolete (-> versioning)
- More complex recording strategies: role of metadata, different modes of accessibility (cold/warm archiving)
- Core functions similar to physical archiving (selecting, storing, recording, making available); similar issue of creating a narrative and generating blind spots through selection and modes of access
- How could researchers be empowered to leverage sustainable archiving strategy?

Environmental footprint of archiving processes in research

- Cooling storerooms, archive buildings; transporting artefacts; travelling to archives to consult documents -> footprint of physical archiving as practiced in historical sciences
- Digital archiving concerns data of all disciplines. Requires
 - storing data
 - exchanging data (upload, download)
 - computing data (also with IA)
- ➔ managing its environmental footprint is key to all disciplines.
- Role of data formats, of good assessment of the data that is really needed for research, of strategic development of research infrastructures.

Publishing strategies for tomorrow

- Goal of publishing: dissemination of edited content to a specific or general audience, in general in exchange for money.
- Publisher: authority in selecting content, in dissemination forms; actor who contributes to establishing discursive norms
- Online publishing breaks some of these historically established authority schemes (self-publishing, new regulation modes to establish content quality)
- But the ruling of publishers' authority remains predominant especially when it comes to publishing scientific results

Open Access as a key to virtuous publishing practices

- OA: at first sight rather bad in terms of environmental footprint (multiplication of browseable content)
- But facilitates reuse of existing digital resources (rather than reinventing the wheel for each project)
- Importance of funding national infrastructures to support OA publication of data, articles according to the FAIR principles-> limitates the environmental footprint of knowledge creation and dissemination

Role of DH in leveraging change for Humanities disciplines

- Predominance of big tech companies on information circulation // lack of agency of researchers in this area
- We know how to conceive and implement low-resource formats, Open Science principles, to establish standards, to steer towards the needed pedagogy but: no incentive to put them front and center.
- Need to formalize quality criteria for digital publishing in all disciplines (and beyond the scientific community to empower internet users and make them actors of their online practices)
- To me, reaching this level of intellectual coherence in publishing practices is a core goal of DH, and strongly connected to moving towards sustainable research

New time frame, new working habits

- Archiving and publishing: long-term activities
- But: implementation inclosed in to day-to-day routines

Moving away from digital tool development, changing working habits can be a first step: for instance, reuse tools, reuse data, before creating new ones, and assess one's actual research footprint.

Measuring the environmental footprint of research

- Measuring carbon footprint: a good way of gaining awareness
- Makes it possible to have a rough estimate to begin with
- Measurement tool GES1point5: <https://apps.labos1point5.org/ges-1point5>
- Developed in France. Currently several hundred instituts undergoing the assessment
- Another French research network, dedicated so the environmental impact of IT at large: Ecoinfo <https://ecoinfo.cnrs.fr>



What impact measures tell and what they don't tell

- GES1point5 tool now taking into account not only carbon footprint but also impact on water resources; new release tailored for research infrastructure

but:

- Does not work through the whole lifecycle (production/use/end of life), focusses on use phase.
- It remains an approximation (exact figures not available for all the elements that need to be factored in), leading to long discussions about details
- Is there really a leveraging potential behind this measuring effort?

A question of speed

- Environmental footprint measures are moving slowly, and not advancing awareness very quickly
- Upcoming carbon (maybe also water) budgets for HER institutions likely to generate big disruptions
- Humanities are convinced to be frugal in terms of environmental footprint; they also are the less useful sciences -> not preparing to the upcoming changes will probably cost a lot of losses especially there
- How can we move towards sufficiency as a leading principle in research practices? How can we do that fast enough to preserve research (with the rest of the world) from complete collapse?

Where to start?

- Colonial vision of research: we don't actually « see » how research is done in the Southern hemisphere (lots to learn on how to work with low resources!)
- Absurdity of annual conferences around the world: how do we change that? (connected to h-index and publication rewards)
- Innovation is still key in the Academic evaluation system -> only makes sense in a growth-based Weltanschauung
- But we are not in a situation of growth, we are in a situation of lack of resources and of climate emergency

Cognitive dissonance

- On the one hand: innovation, growth as leading values; on the other hand: knowledge of situation of imminent collapse
- Academia functions in a manner that is contradictory with the science (climate crisis, biodiversity crisis), the critical views it fosters
=> unease of researchers, at loss for coherence and leverage
- A few things can be done within Academia:
 - role of funders, of evaluation instances: scientific societies are in a position to put pressure on them. Use the organs that exist in your discipline!
 - reuse and mutualization are always better than creation. Facilitate and apply them whenever you can!

The world to come

Where do you see your research in five years?

In ten?

What can you do

- Consider local levers: your research institute, your university, your city, your region. What can be done there?
- Look for inspiration: some institutes have tried for instance travel policies, carbon rewards... look into what works, what doesn't
- Talk to people who have tried and failed in order not to go the same path
- More generally, talk about it around you: more people are actually as concerned as you are than you think
- Along the way, think of how this evolution impacts your understanding of your discipline, how it impacts your discipline more generally

We need a rapid change – we have to be the change

- All of the above is part of an adaptation strategy
- Will only make sense in the middle and long run if rapid changes take place now, in particular in terms of our reliance on fossil energy
- Role of scientists: carry a particular societal responsibility due to their understanding of the crisis
- If we don't display publicly the unease there is in it for us, how should non-scientists grasp the contradiction we are experiencing with the current « business-as-usual » model? How will they understand the emergency?

scientist rebellion_

