

Open Research Data: Experimenting Towards a Publishing Infrastructure

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Abstract¹

In this editorial, we describe the work that has been undertaken by the *ESTS* editorial collective (EC) over the last two years towards establishing a publishing infrastructure for open research data. A broad movement in the scholarly community is pushing towards data sharing or “Open Data,” particularly in the natural

¹ This is an updated version (published on October 20, 2022) of this essay.

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To cite this article: Editorial Collective: Okune, Angela, Grant Jun Otsuki, Tim Schütz, Clément Dréano, Noela Invernizzi, Aalok Khandekar, Duygu Kaşdoğan, Ali Kenner, Sujatha Raman, Federico Vasen, Amanda Windle, and Emily York. 2022. “Open Research Data: Experimenting Towards a Publishing Infrastructure.” *Engaging Science, Technology, and Society* 8(2): 1–13. <https://doi.org/10.17351/ests2022.1885>.

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sciences and medicine. Recognizing that there are compelling reasons why scholars are wary of data sharing and careful to protect their work, our EC has pursued experiments towards establishing a publishing infrastructure for open data with the goal of better understanding the possible benefits for the STS community from data sharing and the role that a scholarly-run journal like *ESTS* could play in realizing such opportunities. The sharing of data could serve as an archive of work in/for STS; offer greater recognition of diverse contributions to scholarly research beyond individual author(s); enable reuse of data for new insights and pedagogical opportunities; and engender new forms of scholarly community in the field.

Keywords

open access; data sharing; publishing infrastructure; qualitative data; STS Infrastructures

Introduction

“Open Data” initiatives, through which research data is made available to other researchers and broader publics, have become increasingly more visible in the scientific publication landscape over the past decade. These initiatives have been promoted by government research funding agencies and universities, partly to improve transparency and oversight of scientific research, and to allow for public access to publicly funded research.² These initiatives have been taken up most visibly in the natural sciences, and medicine where an increasing number of researchers are publishing their data sets so that they can be reused and to increase accountability in the research process ([Jiao, Li, and Fang 2022](#); [Resnik et al. 2019](#)). In other instances, as sociologist Lori Peek notes about hazards and disaster research, sharing data and research instruments and protocols allows for developing comparative understandings across contexts and enhances capacity for rapid response in disaster contexts ([Fortun, Peek, and Knowles 2021](#)). Opening up research data, thus, is increasingly positioned as an important practical, scientific, and democratic good.

In our experience, data sharing is far less prevalent in the humanities and social sciences, including in STS. One major reason for this is that qualitative data, which STS researchers are more likely to create and use, tends to be less modular and mobile than quantitative data. While all data is tied to particular times and places, researchers in STS-related fields are more likely to recognize and acknowledge this situatedness (c.f. [Biruk 2018](#); [Borgman 2012](#)). From such a perspective, data always lies at the nexus of multiple ethical and political imaginaries, including concerns over privacy and safety of vulnerable participants. Failure to recognize this can lead to further extractive and exploitative knowledge practices rather than better research relations. This is a point made clear in the work of many indigenous scholars and those in the “Global South,” who point out the very real potential for data sharing mandates to retrench historically exploitative relations

² Refer, for example, to the Biden administration’s recent directive toward “Ensuring Free, Immediate, and Equitable Access to Federally Funded Research” in the United States ([Nelson 2022](#)) under the leadership of STS scholar and acting director of the White House Office of Science and Technology Policy, Alondra Nelson, as well as directives under Plan S aimed at “Making full & immediate Open Access a Reality” for research funded through European agencies: <https://www.coalition-s.org/>.

of knowledge production ([Lovett et al. 2019](#); [Serwadda et al. 2018](#); [Bezuidenhout et al. 2017](#)). STS researchers can also be wary of indirectly legitimizing the adoption of standards such as reproducibility that are sometimes championed in natural science and health related fields as a value that all research, including our own, should conform to. These are just some of the reasons STS scholars have not pursued data sharing to the extent that researchers have in other fields, despite support for the impulses that motivate open data practices in other fields.³

The *ESTS* editorial collective (EC) recognizes both the promises and challenges that accompany data sharing. Our approach is not to pursue data sharing as an unalloyed good, but rather one that formulates data as a problem of navigating conflicting, and at times incommensurable notions of value. Our approach also develops a commitment to recognize and foster the data relations we most value as a heterogeneous community of scholars and interlocutors. Given our attention to infrastructures of scholarly publishing, we are also mindful that without concomitant efforts to build underlying infrastructures and communities of practice, data sharing by itself is unlikely to achieve significant results ([ESTS Collective 2021a](#), [2021b](#), [2022a](#)). As Elizabeth Pisani, epidemiologist and advocate for open data in public health, and colleagues have noted, “accessible data” as a goal is not enough; rather, what is needed are investments in the systems that make the information useful ([Pisani et al. 2016](#)).

There is also great risk that unless scholarly societies, institutions of higher education, the public interest technology nonprofit sector, and other aligned organizations seriously invest and work on developing alternative infrastructures and systems, the growing power of commercial firms, that already run much of the underlying scholarly knowledge infrastructure relied upon by academics, will become the dominant infrastructure for data sharing ([Andrews 2020](#); [Meagher 2021](#); [Acker 2020](#)). Commercial take-over of scholarly infrastructure is already underway in significant ways. Much of the publishing process is owned by commercial publishers who have been heavily investing toward steadily shifting their business models towards providing data products and services based on research and analytics ([Larivière, Haustein, and Mongeon 2015](#); [Posada and Chen 2018](#); [Chan 2019](#); [McKenzie 2017](#)). These commercially-owned infrastructures reflect and promote values of profit maximization and extraction ([Pooley 2022](#); [Sadowski 2019](#); [Lamdan 2022](#)), values that our EC does not want as the bedrock for our own knowledge circulation infrastructure. We believe others in the STS community would agree.

Keeping these considerations in mind, our EC has been working to understand what “open data” can mean in/for STS, and develop norms, practices, and infrastructures that match the kinds of data that we work with. Strategy meetings conceptualizing *ESTS* open data processes and aims began in late 2019. Two of our associate editors, Angela Okune and Grant Jun Otsuki, have focused on testing out multiple data sharing and

³ See Maienschein et al. ([2019](#)) for a more detailed discussion about opportunities and barriers to pursuing open data practices in STS.

publishing platforms, conducting a wide review of existing open data practices of scholarly publications in the humanities and social sciences, facilitating discussions with STS scholars working in/on open data (see Transnational STS Publishing working group discussions; [Okune 2022](#)), and participating in discussions on broader listservs and working groups such as the [Research Data Alliance \(RDA\)](#) and the [Journal Editors Discussion Interface \(JEDI\)](#).

From this groundwork we learned that there are as yet no best practices for publishing ethnographic data readily available for journals to use. Further, those leading conversations on open ethnographic data publishing have thus far been commercial publishers. Accordingly, this recognition has prompted us to focus less on establishing best publishing practices for data, and more so on infrastructuring practices for supporting creative elaboration of new relations through data, all the while attending to the many legal, ethical and other constraints attached to it. We are interested in understanding what shifts may transpire as a result of new kinds of publishing infrastructures. Thus we approach the publishing of authors' data as one way to keep the ongoing dynamism of research and scholarship at play and to move beyond just one final end product (the journal article) and towards a multiplicity of scholarship forms.

In 2021, after conducting our initial groundwork, we began to outline the *ESTS* data publishing workflow and infrastructure stack, enrolling Tim Schütz in the role of open data editor. We currently publish [data artifacts in STS Infrastructures](#). STS Infrastructures (STS-I) is an instance of the Platform for Experimental Collaborative Ethnography (PECE): a digital archive, workspace, and publishing platform designed and built by STS scholars. The platform has hosted special exhibits as part of the [2018](#) and [2019](#) 4S annual meetings. The platform also provides the digital infrastructure for the [Student Section of the Society for Social Studies of Science \(6S\)](#). STS-I allows us to publish richly contextualized data artifacts, preserving—especially through the “Critical Commentary” field—the situatedness of research data. It also provides a variety of permissions in terms of data visibility and reuse, allowing users to limit access, which may sometimes be necessary, and inform the manner in which data is further reused by other researchers. STS-I also offers a variety of features that encourage data reuse—allowing artifacts to be pulled into multiple groups simultaneously and for them to be annotated, for example, which can be especially useful in generating communities around shared data, including in pedagogical contexts.

Publishing Data in *ESTS*

ESTS publishes research artifacts as standalone data artifacts (audio, video, image, text, or tabular data). We understand *source data* as materials originated by the contributing author. *Supplemental data* is that which has been contributed by someone other than the author(s). We distinguish between these two categories to make explicit the existing relations in a data artifact—including those of copyright and fair use—that we need to contend with as this data shapes and is shaped by our socio-technical publishing infrastructures.

We have developed two supporting documents to be completed by contributors interested in submitting their source data for publication by *ESTS*: a Data Availability Statement ([Editorial Collective 2022b](#)), and a Data Publication Agreement ([ibid., 2022c](#)). The Data Publication Agreement explicitly lays out the responsibilities and obligations that authors and editors have when publishing data with *ESTS* to establish a

legally and ethically sound starting point from which data can be shared. The Data Availability Statement is a means to narrate some of the context of a data artifact's production and publication, that is, to keep some of its relations active even as it comes into a new infrastructure and among new users. We intentionally organized the guidelines as prompts to be responded to rather than a form to be filled, because of our interest in reading diverse and creative ways to offer data context. Perhaps future data availability statements may take the form of haiku or song.⁴

There is, however, much work that remains. In particular, we are keen to establish strong preservation practices and imagine depositing our published datasets with Harvard Library's Dataverse ([2020](#)) for preservation and backup. We have also developed the workflow for the data peer-review process, which we hope to initiate in 2023.

In this issue, we present our inaugural publications featuring research data. Four publications (not including this editorial) have associated research data published on the STS-I, demonstrating different logics and ways in which research data could be published. Elen Nas' publication inaugurates *Research Data*—a new genre of publication in *ESTS*. This is a standalone data artifact which features an interview that Nas conducted with Geoffrey Bowker on the ethics of emerging technologies ([2022a](#), [2022b](#)). A brief essay contextualizing the interview is published in the journal pages, while audio clips from the interview have been published on STS-I. Jose Cañada and Satu Venäläinen's essay, *Inequality in the Governance of Pandemic Threat* ([2022](#)), is accompanied by a summary technical report of the EU/ WHO reviewing exit screening measures in place at airports in Conakry, Freetown, and Monrovia that has been archived on STS-I ([Pletschette 2014](#)). Such supplemental data serves at least two important purposes: first, keeping the report readily available in the public domain even though it is no longer available on the EU/ WHO website, and second, as a primary source that can be used for pedagogical purposes or reused in other research projects. Aishwarya Ramachandran and colleagues' essay, *Value-Judgments in Science and Science Studies*, is accompanied by the syllabus of a science studies course which is at the center of their analysis as well as a survey tool that was used for data generation for the essay ([2022a](#), [2022b](#)). Matthew Sample and colleagues also share a survey instrument with their essay, *Brain-Computer Interfaces with Rehabilitation Professionals* ([2022a](#), [2022b](#)). Such source data allows for readers to engage more deeply with the analysis, and gives them access to resources such as a course syllabus and research instruments that they can further adapt for their own purposes.

STS Data Sharing Benefits

Based on our work so far, there appear to be many possible benefits for the STS community from some form of data sharing. Data sharing may create:

⁴ In this, our hope is also that documents such as Data Availability Statements become a site of elaboration of community values rather than yet another bureaucratic requirement in the publishing process that results in high degrees of non-compliance (cf. [Gabelica, Bojčić, and Puljak 2022](#)).

1. *An archive of work in the discipline.* Currently, formal publications such as journal articles and books remain the main means that STS work is preserved in publicly accessible and credentialed forms. There is a vast amount of information that STS scholars collect and produce that may be of interest to broader publics, but which remains inaccessible. Some such archives already exist, but increased sharing of this source material could help facilitate their growth.
2. *Greater recognition of diverse contributions to scholarly research.* STS scholars are well aware that the people recognized for major contributions are not always the only people responsible for them. Data sharing may make it possible to better acknowledge and credit the many people who contribute towards a research project. For instance, a research interlocutor could be named as the creator of a citable object for contributing photographs they took. They could also help to contextualize the photograph directly themselves through the metadata text.
3. *Opportunities for new insights.* STS data is often strongly tied to specific times and places, but this also means that the sharing of such source materials might inspire new insights when viewed by someone working apart from the original context—an interview conducted in the US in 2022 may be understood differently by someone in Taiwan in 2050, revealing something that could not be foreseen by the original data contributor. This is how historical archives work, of course, but why wait for the passage of time to leverage this kind of situated analysis? Encouraging different and creative interpretive use can become another reason for sharing data, beyond conventional logics of the reproducibility of findings.
4. *Pedagogical opportunities.* Data sharing may provide new resources that could be used in STS teaching. Students may learn about research methods and analysis by being able to see the source data from which a conventionally published essay was produced, and supplementary data artifacts may be developed specifically to facilitate pedagogical engagement with journal articles.
5. *New forms of scholarly community.* In upcoming *ESTS* publications, authors have worked closely with each other, engaging not just with final manuscripts but also data artifacts around which the manuscripts have been developed. This has required sustained engagement on behalf of the authors and facilitation on behalf of our EC, reinforcing for us the understanding that working with data will require new forms of community norms and practices.

All of these possibilities emerge from an understanding of data that STS scholars have long argued for: not as stable and self-contained *objects* that speak for themselves, but as embodiments of *relationships* which underlie our work.⁵ We expect that most benefits of data sharing will accrue from extending and diversifying these data relationships through creative data practices.

⁵ Our conceptualization of data as relational draws from broad work on data and ethics influenced by activist, indigenous, and feminist STS scholars like Abeba Birhane (2021), organizations such as the DAIR Institute and Algorithmic Justice League, and others working on algorithmic injustice; Tahu Kukutai (2016) and collaborators working in indigenous data sovereignty; Max Liboiron (2016, 2018) and team working on anticolonial Science; and

As of now, the actual benefits for STS scholars of data sharing and open data are still an open question and whether or not they become common in STS remains to be seen. We see these as areas awaiting exploration, and our EC remains committed to experimenting with these and other possibilities of openness in STS. Alongside publication, we also plan on hosting events around the data that we are beginning to publish in order to extend and diversify the data relations that can help figure out and actualize the promises of data sharing in STS. At the upcoming 2022 4S annual meeting in Cholula, for example, we will be running a workshop entitled “Open STS Data: Opportunities for Pedagogy, Reuse, Re-interpretation” for those interested in exploring first-hand the potentialities of shared data (readers interested in participating in the workshop can register their interest via [this form](#)). We welcome ideas, inputs, and collaborators.

Issue 8.2

Issue 8.2 includes six *Original Research Articles*, one *Engagements* essay, and the inaugural publication in *Research Data*, a new genre in *ESTS*. They bring together a wide range of empirical focuses and conceptual approaches, exemplifying the diversity and vibrancy of the field. This is also the first issue in the volume to benefit from additional input in various stages of review, copyediting, publication, and promotion. *ESTS* welcomes into the editorial team our new editorial assistants—Clément Dréano and Federico Vasen.

The issue includes *Epistemic Turbulence in Renewable Energy Engineering*, by Zhuo Chen, Bryan Tilt, and Shaozeng Zhang (2022). They investigate the making of renewable energy in transnational contexts, focusing on the everyday interactions and negotiations between Chinese, European, and Israeli engineers at a hydropower generation project in Israel as part of the Chinese “Belt and Road Initiative.” They offer the concept of “turbulence” as a productive way to understand “the rapid transnational movements of engineering concepts and personnel in the renewable energy sector.” Importantly, the essay instantiates analysis that develops approaches and concepts in the vein of “Transnational STS” that our EC hopes to cultivate.

Chelsea Barabas’ essay, *Data Ethics and Code: Computation in the Carceral State*, develops “a vocabulary for identifying and resisting the ways that sociotechnical systems reinforce dependency on oppressive

Sabina Leonelli and colleagues who work on data infrastructures and open data in the life sciences (2015). These and other scholars have critiqued dominant scientific practices and pushed back against treatment of data as if they are unitary, stable objects “owned” by any given researcher/author. Sabina Leonelli (2015) for example has considered data as “tools for communication,” whose main function is to “enable intellectual and material exchanges across individuals, collectives, cultures, governments, and . . . whose mobility across these groups is a hard-won scientific achievement” (*ibid.*, 810–11). Our conceptualization of data as relational also relates to Janneke Adema’s (2021) framing of scholarly book publishing as a relational practice where “the book is no longer perceived as (merely) a commodity or an object of value exchange fueling both publishing and university markets but becomes an ever-evolving node in a network of relations of communing, which it both fosters and is fostered by.” We understand data as entangled in systems of relations that it fosters and is fostered by.

structural conditions” (2022). Drawing on feminist frameworks, Barabas reads refusal as both a way to resist the assumptions and framings that often characterize data intensive work, and as a strategic and generative act that opens up the space to renegotiate them.

In their essay, *Inequality in the Governance of Pandemic Threat*, Jose Cañada and Satu Venäläinen propose that a “more-than-human intersectionality” approach in understanding the governance of pandemic threats makes visible how science-based global public health (re)produces social inequalities by “enacting social divisions based on categorizations into the threatening and the worthy of protection” (2022a).

In *Brain-Computer Interfaces with Rehabilitation Professionals*, Matthew Sample and colleagues explore how rehabilitation professionals in Canada perceive the use of neuroprosthetics in ambivalent terms, recognizing both the potential benefits of technology in contexts of disability and rehabilitation while also expressing practical and ethical reservations (2022a). Sample et al. thus draw out the nascent coproduction of neural technologies and social order, arguing that their analysis challenges any simplistic calls for “responsible innovation” operationalized through more inclusive technological design without also attending to widely held ableist views about human enhancement.

In *Biomedical Science: Funding and Feedback Loops*, Alexander Kladakis, Kaare Aagard, and Janus Hansen contrast perceptions of biomedical researchers working in specialized research centers and a conventional university department in Denmark to analyze ways in which emerging funding dynamics are shaping hierarchies between research and teaching in universities as well as the kind of research that scientists undertake (2022). The essay underscores the considerable impact that research funding increasingly has on the conduct of science as well as the coping strategies that scientists have evolved in response to this emerging trend.

In *Value-Judgments in Science and Science Studies*, Aishwarya Ramachandran and colleagues offer reflections on science studies education as a site for “reduc[ing] barriers to fruitful engagement with scientific practices” based on their experiences of participating in an interdisciplinary science studies graduate course at the University of British Columbia (2022a). The essay notes that students with a background in the sciences that had enrolled in this course were mostly in agreement with the critiques of science that science studies scholarship posits. Rather than epistemic issues, their criticisms instead focused on more practical concerns such as the length of texts, nature of language, etc. The essay thus highlights the need for critical interdisciplinary scholarship that can enroll audiences based in both humanities—as well as natural science-based fields. It is worth emphasizing that the essay is the first publication under the editorship of the current EC focused on STS pedagogies. This is an important editorial thrust for our EC, and we especially welcome submissions that contribute to this focus.

The *Engagements* section features an essay by Pablo Kreimer, *Constructivist Paradoxes Part I*—the first of a two-part contribution—that reflects on the limitations of “hegemonic STS” (2022). In the present contribution, Kreimer highlights the asymmetries in STS knowledge production which have largely concentrated on one part of the world, and the implications this has had for the objects of STS research as

well as the conceptual and methodological approaches deployed to apprehend them. The contribution offers a key provocation for “Transnational STS,” the focus of an upcoming special issue in ESTS.

The Research Data section features a contribution by Elen Nas, *The Ethics of Emerging Technologies* (2022b). The contribution is based on an interview that Nas conducted with STS scholar, Geoffrey Bowker. Audio snippets from the interview are published in STS-I. Accompanying commentary in which Nas draws out two key themes from the interview, “the recognition that social values are embedded in technologies and the need for new politics of ethical computing,” is published in *ESTS* pages (2022a).

Data Availability

Data published in this issue can be accessed in STS Infrastructures at <https://n2t.net/ark:/81416/p4pk5t>.

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