Curating Complexities in Art, Science, and Medicine

Art, Science, and Technology Studies (ASTS) in Public Practice

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Abstract

What does art have to lend to Science and Technology Studies (STS)? Might we see art and its display in museums and galleries as a method of performing STS 'by material means'? And what roles might STS scholars play in art-science collaborations? Drawing on our experiences with collaborations at the intersections of contemporary art and biology, we explore the similarities and overlapping practices of these knowledge communities and make a series of observations about the potential of the area of Art, Science, and Technology Studies (ASTS) to refigure and complicate the art-science landscape. Our analysis emphasizes the museum as a material public forum and curation as a form of knowing, histories of art and science, and examples of scholarly facilitation and intervention in art-science. We examine emerging patterns in ASTS scholarship and emerging roles for STS scholars as facilitators, participant-observers, curators, and collaborators, particularly in art-science institutions and newly emerging STS and art contexts in Denmark, and specifically, the Medical Museion. Our analysis reveals the persistent third leg of curation, cultural history, or STS as party to collaborations between artists and scientists.

Keywords

Art, Science, and Technology Studies, social construction of knowledge categories, bioart, biology and art, curation as knowledge-making.

Introduction

What does art have to lend to Science and Technology Studies (STS)? Might we see art and its display in museums and galleries as a method of doing STS 'by material means' (Rogers, 2020)? And what roles might STS scholars play in art-science collaborations? At the recent conference of the Danish Association of Science and Technology Studies (DASTS), we came together as a group to discuss new questions, methods, and approaches for thinking of art through an STS lens. Inspired by the recently published *Routledge Handbook of ASTS* (2021), collectively, we wanted to explore how the boundaries and borders between the areas of 'art' and 'science' are maintained and breached as they are explored through histories, institutions, and disciplinary norms. Despite a significant history of demonstrating the ways in which art is integral to scientific knowledge-making and dissemination, thinking about art and artistic practices has largely fallen out of the scope of STS research. What the editors of the *Handbook* make clear is that there is an urgent need for case studies that explore the complex ways that an Art, Science, and Technology Studies (ASTS) perspective might emerge in practice. With that provocation in mind, our panel brought together a wide variety of projects that blended art, the public, STS, and interdisciplinary research to explore some of the contours of this emerging field.

Drawing on our experiences with collaborations at the intersections of contemporary art and biology, we explore the similarities and overlapping practices of these knowledge communities and make a series of observations about the potential of the area of ASTS to refigure and complicate the art-science landscape. Our analysis emphasizes the museum as a material public forum and curation as a form of knowing,

histories of art and science, and examples of scholarly facilitation and intervention in art-science. We aim to examine emerging patterns in ASTS scholarship and emerging roles for STS scholars as facilitators, participant-observers, curators, and collaborators, particularly in art-science institutions and newly emerging STS and art contexts in Denmark, and specifically, the Medical Museion[1]. In recent years, the critical encounter of art and science has been the subject of numerous exhibitions and research interventions in Denmark, including most recently the *Rewilding the Museum* project at Arken and *The World is in You* exhibition at Kunsthal Charlottenborg[2]. The country is also home to influential art-science incubators like Primer, an arts platform embedded in a global water technology company[3]. Yet, the subject of art and artistic research is almost entirely absent from recent editions of leading Danish STS journals, including *STS Encounters* and the *Nordic Journal of STS*[4].

This paper presents case studies of recent and ongoing ASTS research in the Danish context from scholars working at the University of Copenhagen, IT University of Copenhagen, and Roskilde University. We are interested in what our diverse experiences of bringing together art and science might lend to STS and the development of ASTS as an area of research in the Nordic context. Derived from observations made by ASTS panelists at the 2021 DASTS meeting, this paper is organized into three questions, each using the panelists' examples to consider what it means to think about ASTS in the context of museum work and curatorial commitments. All take the museum as a site of contested knowledge-making that offers a springboard for self-reflection by curators, open inquiry into collaborative practices in museums, and placement of public(s). While many of the contributors here work in museum contexts, we hope that the discussions will serve to inspire STS scholars in Denmark and further afield to engage more critically with art as a subject of research and a potential field of collaborative participation.

What's so special about museums for ASTS work?

ASTS can take place in art contexts, science contexts, and intentionally and unintentionally hybrid contexts. These contexts offer different possibilities for modes of working and for the audiences' reception of the ideas they communicate. This is both because the audiences themselves are diverse and because the expectations of the kind of space (art gallery, science centre etc) may infect or even complicate interpretations of exhibitions and programs. We posit that the 'special case' of art collaborations in museums may allow more controversy, wild play, and openness to failure than is generally possible in policy, institutional, or applied technology contexts. This is because a variety of concepts can be treated in collage with each other, and without playing out some of the hierarchical epistemic decision-making often embedded in academic or traditional textual modes. And whilst museums rightly undergo soul-searching about the diversity of their audiences, they are often more public and more accessible than other more academic or policy-related contexts where art-science work is typically shown[5]. We need to acknowledge more openly the potential affordances of non-academic space and consider the wider relevance to STS of considering museums, galleries, and public spaces as places to understand the interplay between different ways of knowing. Indeed, we ask in what ways this might be fruitfully (if cautiously) considered 'doing STS' by material means. There is space here for greater inroads to be forged between emerging ASTS research and the art-science work

1 For more on the research program at the University of Copenhagen's Medical Museion, see https://www.museion.ku.dk/research-at-medical-museion/

2 For more on Rewilding the Museum, see https://uk.arken.dk/research-projects/

3 For more on the Primer platform, the Aquaporin art program, see https://primer.dk/offsite/Info

4 Notable exceptions include: Friis, T. (2021). Recasting ethical dilemmas in participatory research as a collective matter of 'response-ability'. *STS Encounters,* 12(1), 91-124; and Hutchinson, R. (2017). Working with space: An opportunity to be considerate and reflective as a human being. *Nordic STS,* 5(2).

5 https://onlinelibrary.wiley.com/doi/abs/10.1111/cura.12436

already being done in the realm of art gallery and museum studies (Rossi-Linnemann & Martini, 2019).

Informal learning spaces like museums can also be places to experience ideas that do not conform to historical pedagogical or science communication forms, and that may even subvert them. Inspired by STS literature on failure (Barwich, 2019), and on misbehavior (Horst & Michael, 2011) and silence (Mellor & Webster, 2017) in science communication events (Davies & Horst, 2016), Louise Whiteley examined, at the Danish Association for Science and Technology Studies conference in 2022, what we learn by *not* understanding each other in collaborative processes, focusing on the communication of values, virtues, and affects, rather than the communication of concepts, methods, and ideas. This emphasis takes on particular significance in the context of art-science collaborations, especially those presented in a museum context where the stakes of public understanding are raised under the banners of sometimes conflicting notions of what art and science are and the proper places of their knowledge. Whiteley is interested in identifying particular moments in the collaborative process where communicative tension and breakdown occur, contending that this often occurs around differing values, and that capacity limits, rather than limits of will or possibility, are usually what prompt tensions to emerge.

Whiteley then suggested that recognizing rather than trying to resolve differing priorities can unite collaborators in finding a mutually acceptable solution, route, or way of tinkering together. Drawing from artistic and curatorial practice, Whiteley suggested that using juxtaposition and collage as metaphors and techniques can help us exploit the potential of failed communication and help collaborators feel comfortable working with it. In practice this perspective can be usefully integrated into exhibitionary practice, for example, by creating opportunities to present contrasting responses to exhibition content. In the exhibition *The World is in You*, this framework informed an interactive visitor wall where visitors were invited to map connections between exhibition content - creating a riotous web of understanding. Many questions remain in exploring the way cultural spaces such as museums can take up ASTS and acknowledge, celebrate, or even encourage failure. And this calls for developing what Whiteley called an ethics of celebrating misunderstanding – to articulate and track within collaborations the contours between the generative and the confusing, and between acknowledging failure as a way to improve relations, and the risk that it might end up damaging those same relations and indeed public engagements with the outcomes.

Where are the publics in ASTS?

What publics are offered and how they are figured as part of the art-science equation is of ongoing interest in ASTS. Sound studies scholar Eduardo Abrantes argues that the mixture of art, science, and technology has great potential in helping to bring forth experiences of complexity and entanglement for visitors – "from fluid borders to misplaced translations, from curious frictions to mixed results, from wow to wonder (-ing what was the point?)". He suggests that these interdisciplinary encounters are thus frequently most productive at their most frustrating, the most meaningful knowledge often occurring in the attention to the vitality of process, in its rhythmic fluctuations between epiphany and perplexity, rather than in the outcome.

Adam Bencard extended this idea in discussing his experience in co-curating *The World is in You* (2021-2022), in which Medical Museion collaborated with Kunsthal Charlottenborg to blend biomedical science, contemporary art, and historical objects to consider how human bodies are connected to their world. Curatorially, the exhibition aimed at creating a shared space between science, art, and cultural history, by insisting that the open questions raised within science refuse to be settled within one domain, spilling over into art, history, culture, politics, and philosophy. Proceeding from Fitzgerald and Callard's (2015) notion of the intra-disciplinary, which Bencard et al. (2019) had previously deployed in curating the earlier 2017 exhibition *Mind the Gut*, *The World is in You* attempted to create a space for questions that neither belonged completely to nor could be contained within singular

disciplines or approaches, instead coming from the space in-between. Ultimately, the exhibition aimed at stimulating a shared and open conversation about what it means to collapse the distance between body and world, conceptually and curatorially. The exhibition featured several interdisciplinary teams of artists and scientists, as well as historians, philosophers, STS researchers, and the curators themselves. Bencard suggests that the power of such collaborative works is to open up and expose uncertain and unfinished science, that is, the ongoing practices of science which have not arrived even at temporary conclusions, with an emphasis on "exploring rather than explaining." This attention to the unexpected and the open-ended was founded on the belief that discussions carried out under these less-than-certain premises hold potential beyond the particular questions of *The World is in You*. The willingness to allow other unexpected questions to co-exist within more established explanatory frameworks can be crucial for any inquiry into the complex, even wicked problems that characterize our current historical moment. The communicative potential of exhibitions lies partly in their multifaceted ability to be a resonant, physical space for affective encounters, that is to say experiences calling upon more than reason for their effect often by allowing mental and physical space for reflection. This type of space lends itself to the presentation of different perspectives so that divergent worldviews can be brought together and juxtaposed. In practice, the exhibtion created 'islands' of intradisciplinary content, displaying art, scientific and historical objects alongside eachother and on equal footing.

The workings of this power to create empathy, affinity, and understanding was suggested by Christopher Gad as one of the potentials for his project, *Udredning-Udtrykt / Expressing 'undergoing diagnosis'*, a collaboration between researchers at ITU and Danish artist Mogens Jacobsen which explores the situation of families working through the Danish socio-medical diagnosis (udredning). The installation elucidates the experience of parents encountering the foggy, interconnected infrastructures (as one might analyze the situation from an STS perspective), which make up the process of diagnosing their children.

The piece will use the voices of actors to offer the stories of families, particularly parents, who are working through the health system as advocates for their children. The user navigates the installation with a control device but without being in full control of what happens. The user will pass through different 'scenes' containing images of institutions and hospitals as they listen to the stories. For families, the situation of dealing with new institutions is often marked by, as Gad puts it, "uncertainty, it is resource-draining, and it is a situation in which it is difficult to find a stable foothold." Such parents commonly denote their roles as becoming like an "octopus project manager" in the lives of their children and their family. They become the point of coordination in managing appointments, interactions, and record-keeping in relation to the many different social services and healthcare actors encountered in the trajectory of diagnosis. Their infrastructural competences and skills are assumed and stretched thin. The installation offers a space for imagining being in this situation, fertilizing (ideally) new imaginative relationships between people and institutions related to health, as well as exploring the shortcomings and complexities of the current system. Furthermore, one might speculate that the installation is related to a rather common, if extreme version, of the current experience of citizens encountering an increasingly digitized and fragmented state with scarce resources, which have difficulties dealing with non-standard cases and citizens. The experience of this sociological artwork offers the space for new imaginative relationships between people and institutions related to health, as well as exploring the shortcomings of the current system. Gad's project undertakes an attempt to offer reflective space to think through the situation and to consider in what ways the system might be rethought, and its shortcomings better identified and understood.

Who does ASTS research?

While it is often tempting to think of museums and galleries as institutions that produce authoritative and author-less exhibitions, the ASTS perspective encourages us to focus on the many actors who are

producing knowledge in this context (from the originators of displayed objects to curators and exhibition designers). We note here the growing trend of curators acting in the position of facilitators in explicitly multidisciplinary art-science exhibitions. Curators acting in the position of facilitators are increasingly common as the number of explicitly multidisciplinary art-science exhibitions proliferates. As much as this is framed as novel territory for artists and scientists (despite the long history of the relationship between these knowledge communities), it is also new territory for curators who have hitherto often served institutions with clear commitments to to particular methods of knowlege practice, ie the curation of art, history or science. These new roles are negotiated on a case-by-case basis or within the norms of a specific institution and are not without trouble and definitional complications for the curators themselves.

Kristin Hussey delved into Shell's (2021) notion of the 'curatorial analytic' in the context of her role as co-curator in the interdisciplinary exhibition *The World is in You*[6]. She began her talk with a confession of an emotive state brought on by the curatorial experience. Hussey had experienced professional discomfort derived from her close involvement in *The World is in You* because she found herself acting in a number of roles that had overlapping and sometimes contradictory priorities, i.e., an STS-informed researcher, creative producer, and curator in the development of the collaborative artwork *Time Animals* (Martin, 2021)[7]. This hybrid role, though familiar to many working in the arts, is highly unusual in the world of historical and technical museums. As a historian of science, Hussey keenly felt a sense of 'epistemic trespassing' (Ballantyne, 2019) as she attempted to apply the practices of a museum curator in an arts environment.

Hussey argued that STS can provide a set of conceptual and methodological tools to guide the work of a curator in an interdisciplinary arts-science setting. Imagining what an 'STS-curator' might look like, Hussey reflected on the ways that STS provides a crucial grounding in critical thinking, interdisciplinary working, and engaging a wide variety of actors (citizens, scientists, and more) that resonate closely with curatorial work. She explored in the case of making *Time Animals* how STS was both the subject of the artwork (the lab practices of chronobiology) and informative of the methodologies (acting as a bridge or mediator between artist, scientists, the exhibition team, and visitors) (Hussey et al., 2021). There is a tendency in STS to see interconnected networks of knowledge production and the contrasting format of exhibitions as working incredibly well together, with the willingness to let things sit alongside each other, in community, contrast, or clash, and with openness to what kinds of connections different people will draw. However, collage is not always the endpoint, and as Whiteley and Hussey suggested, sometimes it seems that the need for outputs suitable to the exhibition space may force a kind of condensation that sharpens the juxtapositional gesture. As Rogers (2022) has written, this consolidation, made present for audiences in a myriad of material and rhetorical ways, may serve to reify differences between art and science while minimizing the visibility of the very present hand of the curator.

The 'curatorial analytic' – the knowledge-generating processes of curatorial work – of a historical curator differs so widely from that of an art curator, raising questions for Hussey about where the borders between research, curation, and arts begin and end. Whiteley added in our discussion that the importance of communicating beyond content and concepts – about ethos, values, hopes, and fears – is often framed by the curator/facilitator, and taking notice of this may help to construct and understand the role this third body is playing in the art-science collaboration context. Rogers et al (2021) described the role of STS scholars and concepts in the development of facilitated art-science research and projects. Separately at the Museion, Whiteley and Hussey developed the concept of the 'third leg' of the art-science collaboration stool, referring to the role played by the STS-trained/informed researcher or curator acting as a facilitator with and between

6 For more on the The World is in You exhibition, see https://kunsthalcharlottenborg.dk/en/exhibitions/the-world-is-in-you/.

7 For more on Martin and Hussey's collaboration, see https://www.museion.ku.dk/blog/z-time-the-art-and-science-of-circadian-rhythms/

an artist and scientific collaborator. This third way can depolarize the supposed art-science binary (Rogers, 2022). The presence of another option can guide collaborators away from some art and science stereotypes which tend to undermine the overlapping knowledge of the two communities[8]. Among the many complications of these collaborations which extend to the "third leg" but may also look to it for brokering resolutions, or as Whiteley put it, "a family therapist" role, are issues of crediting and acknowledgment and how those elements will be interpreted in the participants' original social worlds (e.g., a particular branch of art or science).

Conclusion

Each scholar involved in the ASTS panel at DASTS 2022 demonstrated the many different forms that ASTS projects can take, reinforcing how collaborations with the arts are only increasing in STS circles. Nevertheless, there is clearly a great need for understanding the 'who', 'what', and 'where' of these projects. How can we move past instrumentalizing art, science, and STS and explore how STS might be pushed further by its encounters with the arts?

Among the areas for further research raised by the panelists is the possibility that mismatches in temporal concerns may be playing a role in the complications often encountered in multidisciplinary ASTS teams. Whiteley suggested that one possibility in the groups she has observed is that the artistic process allows everyone involved to move – to think – a little more slowly, with more space for reflection, backtracking, and entertaining often wild alternatives, and contends that this is particularly aided by engaging in a process of material making together. This could have very important practical implications for curators and ASTS scholars working with art-science collaborations. As Whiteley put it, "There is a potential tension here about impact – what needs to be 'focused in' at the start to ensure the study is 'relevant' vs. more exploratory, intuitive processes. These don't always fall on the two sides you would expect, but often do." She posited the possibility that in such situations actors may believe that they need to choose and select sooner than they really do and that leaving possibilities open can allow multivocality and relationality to persist for longer than we think.

This question of timelines might help to relate the professional anxieties raised by Hussey to the situations of the artists and scientists. Curators and other kinds of ASTS practitioners often serve the role of facilitators, needing to bring together the needs and desires of their partners. Understanding the various time scales of artists and scientists, especially in the wider context of, for example, an exhibition, is highly likely to invoke professional anxieties. We might perhaps look to the work of Ulrike Felt (2022) and others interested in interdisciplinary collaborations, who argue that epistemic environments come with their own 'ambient' temporal regimes with which other practitioners must engage if they hope to collaborate with other disciplines. Rogers (2022) suggested that this mismatch might not reflect a difference in speed but rather a difference in the place in a work cycle scientists and artists may be in at the time when their collaboration is formed. Another possibility is that these differences in speed and pace may emanate from the different institutional workings of art and science, in the context of a given collaboration the actors might be out of sync because of wider structures shaping their perceptions of urgency, efficiency, and impact, rather than working "faster" or "slower" relative to each other.

Where do these discussions leave STS practitioners who might be interested in working within art-science collaborations? The panelists suggested a need for creating standards or at least frameworks for working with artists, helping STS practitioners to support and respect their professionalism, as well as challenging their own practices. Our collaborative observations particularly focused on the political economy and precarious employment of artists in our society must be

8 Kristin Hussey, Isabella Martin, and Louise Whiteley presented their collaborative work at the international Social Studies of Science (4S) meeting using the metaphor of the three-legged stool to think about the role that Hussey had played in balancing the art and science team by offering her expertise in the history of science.

remembered by those in the "third leg." Frequently, collaborators from STS, like those from science, may have more comfortable long-term employment and are, therefore, obligated to take seriously the needs of artists and other freelance creatives. At the same time, the work of those occupying the "third leg" needs to be considered as many art-science collaborations make this additional labor invisible. Those in the ASTS position need to be able to challenge both artists and scientists while making their own worlds and work contributions visible. *The Routledge ASTS Handbook* goes some distance toward suggesting the reasons that STS is well-positioned to deal both with the history of science and the history of art and the resulting contemporary knowledge communities, but there is much more to be done to fully theorize and concretize the emergent roles of ASTS in collaborative and public contexts.

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Kristin D. Hussey is a historian, curator and researcher who works across disciplines to think critically about science and medicine. She is currently a postdoctoral research fellow at the University of Copenhagen researching circadian rhythms. She has worked in collections and curatorial roles at the Science Museum in London, the Hunterian Museum of the Royal College of Surgeons, and the Royal College of Physicians Museum, and her first book, *Imperial Bodies in London*, was published by University of Pittsburgh Press in 2021.

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Adam Bencard is Associate Professor in Medical Humanities at the Medical Museion in Copenhagen, and affiliated with The Novo Nordisk Foundation Center for Basic Metabolic Research's section for Metabolic Science in Culture. In addition to his research on metabolism and the gut microbiome, his curatorial exhibitions include, *Mind the Gut*, was supported by the Bikuben Vision prize 2015 and won the UMAC award 2019, and *The World is in You*, which received the communication award Formidlingsprisen 2022.

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