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Data duality: When artistic and scientific research overlap

By Hedvig Jalhed

In parallel with the discussions within the Creative Data Lab group at the Pufendorf Institute for Advanced Studies and the work on the Art Files repository at Inter Arts Center, I participated in an interdisciplinary research project under the Art Collab initiative at the Faculty of Fine and Performing Arts at Lund University. Art Collab is a platform that brings together artistic and scientific practices in dialogue and cooperation with societal stakeholders and communities.

Although all my previous artistic research projects have been distinctly data-driven and scientifically informed, this was the first time I formally collaborated closely with scientific researchers and engaged with an industry partner – an institutional opera house. While the project encompassed many dimensions, its core lay in the dynamic interplay between my own artistic interests in interactivity and immersivity, Sara Wilén's artistic and operatic focus on improvisation and stage direction, and Ingar Brinck's perspective based on philosophy and embodied cognition.

From our collaborative process, I trace how art and science created spaces for mutual exchange. My aim here is to demonstrate how the same data could serve as a foundation for knowledge production in both domains simultaneously, and how these two realms can intersect and enrich one another.

Background and scope

The project *First Person Singer: Pilot Study and Prototype* brought together a diverse team of artistic and scientific researchers from Lund University, with a primary focus on opera and cognitive science. The project involved a partnership with Malmö Opera and the topic was connected to previous research

by the individual team members.[1] We had not been working together on a research project before. The research involved data collection across four phases during 2025, resulting in four distinct datasets: two capturing actions and two capturing reflections (see Figure 1).

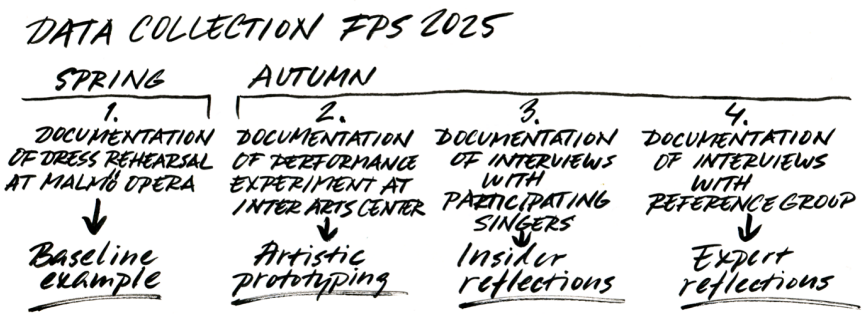

Figure 1. Data collection phases in the First Person Singer project 2025.

The project design was grounded in a practice-led methodology,[2] beginning with the artistic practitioners' challenges and a curiosity-driven quest for artistic transformation. Two research questions framed the inquiry:

1. How can new technology contribute to qualitative deepening and enrichment of the opera experience alongside quantitative measurability?
2. How can new technology be used to utilise and develop the roles and creative agencies of opera singers and directors in new opera?

1 I. Brinck, The Indexical "I": The First Person in Thought and Language. (Dordrecht: Springer Science+Business Media, 1997); H. Jalhed. *An Operatic Game-Changer: The Opera Maker as Game Designer and the Potentials of Ludo-Immersive Opera*, doctoral dissertation (Gothenburg: University of Gothenburg, 2022); S. Wilén. *Singing in Action: An inquiry into the creative working processes and practices of classical and contemporary vocal improvisation*, doctoral dissertation (Lund: Lund University, 2017)

2 L. Candy & E. Edmonds, "Practice-Based Research in the Creative Arts: Foundations and Futures from the Front Line" *Leonardo*, 51:1 (2018), p. 63–69.

The case of the First Person Singer project illustrates how scientific and artistic research both converge and diverge in terms of their affordances and focus. By juxtaposing excerpts from the researchers' notes, the different approaches can be outlined.

The creative concept implemented in the project was rooted in the idea of experimentally establishing the prerequisites for a new operatic format experienced from the singer's first-person perspective. In the future, this format could allow audiences to access first-person viewpoints of individual characters through personalised streaming, potentially incorporating interactive features. By equipping opera singers with body cameras (see Figure 2), audiences can be invited to experience the narrative through the eyes, ears and voices of individual performers.

Figure 2. Opera singer Alexandra Orrgård Solén carrying an action camera in the performance experiment at Inter Arts Center in October 2025.

This approach enables multiple musico-dramatic experiences to be derived from one total work with multiple entry points, where performances can be revisited sequentially from different perspectives, offering new empathic insights and emotional depth over time. At the same time, it introduces new artistic challenges and opportunities of a technical, practical, and/or organisational kind.

Notes from the process

I have drawn on existing notes and later added comments from the research process to gain an overview of what Ingar Brinck, Sara Wilén, and I identified as useful information within the data collection for scientific as well as artistic purposes. We shared our notes on the data after the documentation had been finalised and distributed among us, but our correspondence also includes personal observations made during the on-site data collection and reflections afterwards. These notes formed part of our ongoing joint discussion spanning the entire year. I have kept the excerpts verbatim in order to retain our individual "voices" before commenting in greater depth.

First, the need to verbalise the conceptual idea informing the performance experiment and the specific, artistic function of the action cameras is expressed in this note:

> The idea [of First Person Singer] came from the opera binoculars. How can the desire to see the opera spectacle up close and enter the singer's sensory world be reinterpreted through today's technology? The art of opera is the opposite of Aristotle's thesis that characters drive the plot forward – when I experience opera at its best with an 'effect' of its own is when a restrained plot highlights the characters as if they end up in a portrait, framed by multimedia. It is that framing that is my tool for 'catching' the characters in golden cages and where they can be turned inside out (author's own notes and translation from Swedish)

Ingar Brinck provided comments on the recordings of the artistic experiment, focusing on both the experiential position of the beholder and the singers' embodied interaction with the action cameras worn on their bodies (see Figure 3):

The camera draws me (the viewer) straight into the discussion and by being in the middle of those involved I experience how the ongoing events in the opera emotionally affect the characters present. Here I become a participant through the camera. […] I experience that the camera gives access to a personal sphere in the closed room where the characters meet as individuals. In these clips, mobility contributes, it reflects the attitudes and perspectives of the participants/characters, and I want to see from all perspectives. (Ingar Brinck's notes, author's translation from Swedish)

Camera recording with [head] lamp [is] an incredibly effective move, in all ways. Without a lamp, the singer's camera perspective works in a certain way for the audience: as a kind of observation from the outside, like looking from a distance without others knowing or noticing that they are being observed. The lamp highlights the character's vision, and as an observer, I end up in the background, and the vision becomes significant, a particularly important kind of action. (Ingar Brinck's notes, author's translation from Swedish)

Although the singers can certainly learn to operate the cameras, it takes some of the attention away from the musical aspect. I don't want a technical presence, but a musical one. […] Extremely stiff and uncommunicative camerawork during the Falstaff scene. Later the camera becomes an integral part of the communication between the singers/characters instead. Brilliant! The cameras gain more of a musical presence in the performance. (Ingar Brinck's notes, author's translation from Swedish)

Figure 3. Opera singers David Hornwall, Ulrika Skarby, Agnes Wästfelt, Alexandra Orrgård Solén and Samuel Jarrick with head lamps together with pianist Conny Antonov, in the performance experiment at Inter Arts Center in October 2025.

Sara Wilén emphasised how the research process itself, as well as the data, helps us articulate our artistic agency, and creativity:

> I think we are approaching what we as different persons expect to be possible or 'succeed' to communicate via the cameras. That in itself is very interesting! It says something about what we as individuals expect from the art form itself today and in the future. For me, it is an ethical artistic perspective, where we make visible our own starting points, mindsets, value matrices and values of what we see [as vocal performers]. (Sara Wilén's notes, author's translation, and her added comments, original English)

> For me, the interesting thing is always to communicate intentional bodies on stage or via the cameras (it can be in vocal as well as musical personae) on a stage, up close and from afar. The intentions can lie in different dramatic/choreographic/musical dimensions. This deals with dimensions of place/space and time. […] The data collection from the FPS project, in video and image captures from the IAC sessions, as well as the stimulated recall sessions with the singers, brings new potential to how artistic performance research can be designed, and analysed. This has sparked a number of new ideas regarding new research and artistic projects. It also shows me what has always [been] my own, overarching artistic research goal. Moreover, the data gives new possibilities to communicate auto-ethnographical perspectives of the partaking performers. (Sara Wilén's notes, author's translation, and her added comments, original English)

From a more theoretical point of view, Ingar Brinck's scientific and philosophical perspective became evident in her comments on the reference group's tendency to take the conventional communal presentation format of opera houses and cinemas for granted and to transpose it onto the screening of the first-person perspective:

> It was hard for the group to forget the traditional format of watching the singers at a distance, choosing what to look at on the stage as you wish and what to explore visually, and additionally just letting your eyes wander while you listen to the singers/music: This is the power of the objectifying gaze that was frequently discussed especially in art theory (and generally, in the theories of visual, musical, and performative arts) by the turn of the century. (Ingar Brinck's notes, original English)

Likewise, her theoretical framework from cognitive science is reflected in her comments on the physical and embodied aspects of the concept:

> There are two, apparently opposite, forms of physical and bodily closeness at play: the first-person perspective of the singer, and the singers that move and locomote in the vicinity of the singer; both might be experienced stronger in future work with the concept. (Ingar Brinck's notes, original English)

Furthermore, Ingar Brinck commented on the artistic experts' preoccupation with the issue of audience facilitation in relation to streaming in the reference group interviews:

> All these worries about how the audience would manage – it makes me wonder, wouldn't the audience swiftly learn how to use a new kind of streaming? People are very good at picking up new technical possibilities and most people are curious and like to explore, at least as long as the atmosphere is playful, there are no No-No's, and they cannot be accused of doing the wrong thing. (Ingar Brinck's notes, original English)

From the artistic perspective, practical constraints in relation to artistic affordances became evident through the experiment:

> The challenge of having only one room with one event became apparent. Dramaturgically, the next step must be to work with parallel events in different rooms, preferably connected, to build multi-linearity with 'forking paths' for the characters. Now everyone sees and hears everything all the time, which creates redundancy and does not make enough sense to view from different character perspectives. (author's own notes and translation from Swedish)

Meta-commentaries were also put forward regarding the situation faced by the artistic researcher as an active intervener in the artistic process in real time:

> For future sessions, I need to be much clearer about my screen setup preferences during the recording sessions, with three large screens where the feeds of the different cameras are streamed. It is necessary to see what is happening through the lenses in order to be able to provide meaningful directorial input between takes. That could create new creative and artistic interfaces – and dialogues – between authors, directors, conductors, scenographers, technicians, and researchers. (Sara Wilén's notes, author's translation, and her added comments, original English)

My takeaways

Even though the distinction between artistic and scientific research does not mean that artistic researchers are ignorant about science and vice versa, I will for the sake of comparison categorise Ingar Brinck as a philosopher-scientist and Sara Wilén and myself as artistic researchers, in accordance with our professional titles. All conclusions below are my own.

As we can see, the comments were shaped by the researchers' subjective reflections and interests, irrespective of the researcher's scientific/artistic status. Looking at the notes in total, broadening contextualisation and referencing theory and literature was also done by both scientific and artistic researchers in relation to the data collection. While Ingar Brinck, from her scientific point of view, more often adopted the vantage point of the audience or commented on the artistic performance in terms of achieved presence as experienced by the audience, Sara Wilén and I tended to focus on how the data provided keys to conceptualising and verbalising artistic ideation, including the artistic effects of work ethics and subjective experience. Ingar Brinck appeared to think of the next step in terms of deepening theorisation and connecting to established knowledge, whereas Sara Wilén and I focused more on refining technical and practical application and extending conceptual exploration. Sara Wilén also reflected on the research process and on her own position within it, seeking underlying structures in the research design itself, as though viewing it from above and beyond the information in the collected data.

On the one hand, treating art as a category of product (as operas or operatic events) and processes (as making things in an operatic way) fits well with a scientific approach. On the other hand, the *artform* (n.b. not the *artwork*) itself – in this case, opera – can at the same time be treated as an evolving problem that needs to be redefined, explained, confronted, and resolved by artistic and creative means when placed in a new technological or cultural environment.[3] Sara Wilén noted how our different relationships to the cameras, which are put into an operatic setting and alter the conditions for operatic performance, may tell something about our expectations of the art form itself. We – the artistic researchers – are in this case extrapolating what we can expect from opera (and from operatic practitioners) when the art form is compelled to integrate streaming technology.

3 Cf. the notion of "field of problematicity". See P. de Assis, *On Research Questions Objectives* [Video]. (YouTube, 2020). https://youtu.be/ludtnq1LSG0?si=Ike7w09DlLJQysNu

Here, it is the artists' relationship to the artform that is key and the research is about seeking altered conditions and increased complexity for us who try to keep opera "alive and kicking". In this way, we can get to know both new innovations, their cultural implications and consequences, and ourselves.

That is to say that problems underpinning this kind of artistic research are artistic ones for artists, not aesthetic ones for audiences, which of course may exist simultaneously and interconnectedly. This is an important observation: artistic practice is not necessarily the research method, but in some cases rather the crux itself – generating new challenges and demands in an ever-changing world that the artistic researcher must seek to address and respond to, unless the artform is to be sheltered and preserved from external influences. In this line, one can argue that artistic research might add to the "antifragility"[4] of art forms in that it submits them to minor "trauma" that makes them grow instead of keeping them safe from disturbances.

The overlap and the distinct drivers in this model, as I understand them, can be visualised in a Venn diagram (see Figure 4). Even though the division might seem counterintuitive at first glance and compared to how we usually conceive of artistic research in relation to artistic practice and scientific research, I do not see any actual conflict in combining – and distinguishing – art-as-problem with art-as-product-and-process in this way. While scientists may focus on behaviours and audience perspectives in artistic contexts and in dialogue with artists – a focus that aligns with many artistic practitioners' aim to present artistic products and productions in industrial and societal settings – the idea of artforms as artificial problems, systems to maintain and develop in a volatile situation and sources of challenges that stimulate new artistic probing lies outside the realm of given, unchosen, and forced predicaments of everyday life. For me, as an artistic researcher, this definitely makes sense: *As an artist, opera is something I know how to do with known things; as a researcher, opera is something I don't know how to do with unknown things – yet.* The shift from artist to artistic researcher, which for me is foundational, lies not in making opera as a new product, but as new problems for us to deal with artistically. When we work together with industry partners and scientists, we employ a dual mindset while inviting others to share the problem view of art.

4 N. N. Taleb. *Antifragile: Things that Gain from Disorder*. (London: Penguin Books, 2013)

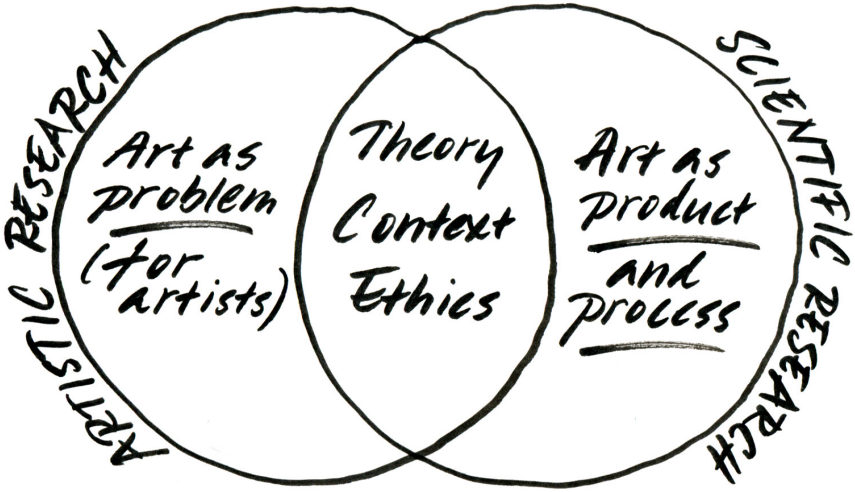

Figure 4. Venn diagram with observed overlap between approaches to art in the collaborative project.

Based on the researchers' notes and my own experience of the research process, I would regard engagement with defined research data as a way of heightening our self-awareness as artists and of pushing our disciplines in new directions through documented action and reflection. With this in mind, it may be more appropriate to speak of art and science as modes or mindsets of approaching shared objects and situations in the world, rather than as rigid disciplinary protocols or representatives of "two cultures"[5] (Snow, 1961). The First Person Singer project demonstrates how the same data can serve dual purposes and how an interdisciplinary – or perhaps more accurately, intermodal – research design can accommodate the prerequisites and development of both science and art. The present project was centred on art, and another project could obviously have a more general topic to investigate intermodally and hence place the issue of art as a problem in another light.

The fact that this project combined opera and cognitive science naturally gave rise to a specific constellation of interests that may not be directly transferable to other projects involving other sciences and arts.

5 C. P. Snow. *The Two Cultures and the Scientific Revolution.* (Cambridge: Cambridge University Press, 1961)

However, it may serve as a starting point for comparable insights from other projects and contribute to the broader puzzle of how to produce and interpret research data – and the world we share – together.

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