5 The 'inter-disciplined' exhibition: Art meets science – *Weather Report. About Weather Culture and Climate Science*

5.1 Introduction

Like the first case study, which introduced a predominately transdisciplinary exhibition project, this chapter also aims to contribute to the critical analysis and transparency of the practical processes of interdisciplinary exhibition-making by identifying the academic discourse on interdisciplinarity as having the potential to provide a meaningful input to the theory formation on temporary exhibition-making. It does so by tracing the production process, from forming an *interdisciplinary* team, negotiating conceptual ideas and methods, on to object choices, interpretation and finally, exhibition design. This second case study investigates these development processes through what I argue was primarily an *interdisciplinary* exhibition.[1] *Weather Report. About Weather Culture*

1 This case study was published in an earlier version in November 2020 (Pleiger 2020). It was first drafted in 2018, shortly after the exhibition *Weather Report* had closed its doors. By the time the article was published in 2020 (and even more so by the time this book is published), our perception of the problems and dangers of climate change has changed considerably: The Fridays for Future Movement, starting in 2019, brought a yet unknown public attention to the topic that we could only have dreamt of in 2017 and 2018. However, the early months of 2020 briefly silenced this new spirit of activism and optimism, as the worldwide COVID-19 pandemic suddenly seemed to overshadow all other pressing societal and political issues. But apart from us standing in awe and wonder at amazingly low pollution levels during lockdown in spring 2020, the problem of climate change itself has not yet changed for the better. Instead, an increasing number of extreme weather events requires urgent action, also by museums and other cultural institutions. The current international museum definition negotiated by ICOM in August 2022 at least acknowledges this by including the aim to 'foster […] sus-

and Climate Science, which was developed and presented at the Bundeskunsthalle (Kunst- und Ausstellungshalle der Bundesrepublik Deutschland) in Bonn from 7 October 2017 to 4 March 2018. Based on the assumption that the global problem of climate change cannot be solved by one discipline alone (see, for example, Schipper et al. 2021), the exhibition attempted a multi-perspective take on its topic, combining objects from the fields of art, cultural history, and the natural sciences. I led this exhibition project as internal curator and exhibition manager of the Bundeskunsthalle, together with a team of two external curators. After introducing the exhibition *Weather Report* and its curatorial team in sections 5.2 and 5.3, section 5.4 is dedicated to a detailed analysis of the interdisciplinary production process, starting from forming the team (5.4.1) and jointly developing the exhibition concept (5.4.2), moving on to negotiating and choosing objects (5.4.3), and finally to struggling to achieve a joint curatorial language for interpretation and exhibition design (5.4.4). The conclusion (5.5) will discuss possible institutional consequences and collaborative standards.

In this case study, I am taking the exhibition *Weather Report* as an example to reflect on how it worked as an interdisciplinary project by documenting critical moments and developments during its production process. I hope that more general lessons might be learned from this example both for museum and interdisciplinary studies. My perspective[2] is that of a project participant, and as such I am again especially interested in the internal processes that took place before the exhibition was finally opened and presented to the public. Here, my focus primarily lies in the dynamics within our curatorial team for this exhibition.

As in the first case study (chapter 4), I will use Klein's taxonomy of interdisciplinarity (Klein 2010, p. 16) as a theoretical framework for a finer understanding and a more detailed description of this second exhibition case, again, understanding multi-, *inter-*, and transdisciplinarity as three different qualities or degrees of the integration of knowledge from a multitude of disciplines.

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tainability' (https://icom.museum/en/resources/standards-guidelines/museum-definition/, last accessed 14 March 2023).

2 As it turned out, I was not the only one taking a research interest in this specific exhibition, as two substantial BA dissertations and one MA thesis were completed about our exhibition *Weather Report*. Luisa Melloh's work *The Stories We Tell: Examining Climate Change Narratives Through the Art and Science Exhibition 'Weather Report'* in the field of Sustainable Development at the University of St. Andrews (Melloh 2018) brings a rewarding additional perspective on this exhibition, especially regarding its narrative and audience responses. See also Madea 2018 and Bathow 2020.

I aim to identify instances where these three forms of interdisciplinarity were at play, both during the production process and in the resulting exhibition itself, and to discuss their differences, benefits, and limitations. Although I am here focusing on *interdisciplinary* aspects in the narrower sense, the analysis will show that all three kinds of interdisciplinarity can be at work at the same time, and even in a meaningful way. Making an interdisciplinary exhibition means allowing for complexity, and it is this complexity that asks for a more precise, differentiated, and practice-oriented usage of the general term interdisciplinarity. In a more critical sense, interdisciplinarity can also mean placing a heavy burden on a project by aiming to emulsify sometimes incompatible views, work cultures, methods, and contents for political or institutional reasons, resulting in an 'inter-disciplined' project in an almost penalising sense, as the title of my case study suggests. So, this is in effect also a story about coping with a not entirely self-chosen interdisciplinary collaboration.

5.2 The exhibition *Weather Report*

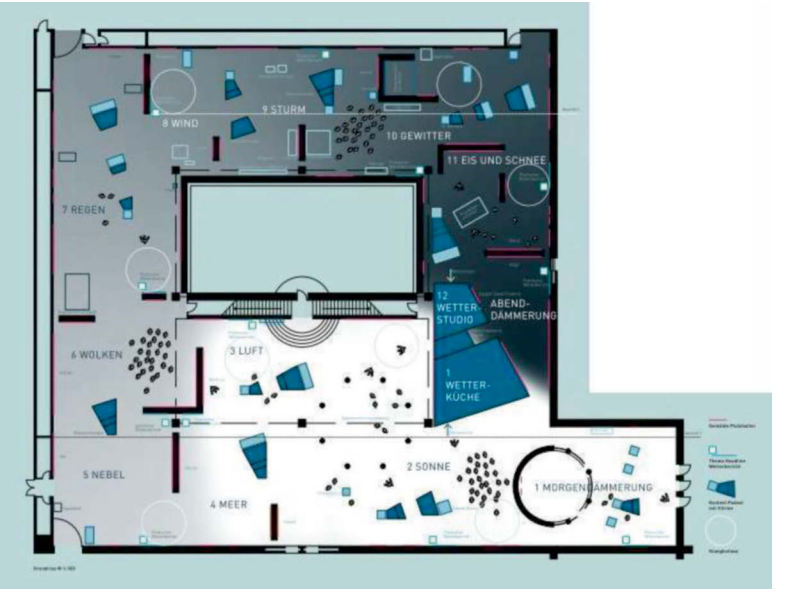
The exhibition *Weather Report. About Weather Culture and Climate Science* was developed and staged by the Bundeskunsthalle in Bonn in cooperation with the Deutsches Museum, Germany's largest science museum, with its main institution in Munich and a smaller branch, located in Bonn. In May 2017, as the exhibition entered the crucial phase of its production process, it became part of the cultural programme for the World Climate Summit COP 23 of the United Nations Framework Convention on Climate Change (UNFCCC) which took place in Bonn at rather short notice during the exhibition period from 6 to 17 November 2017. This perfect coincidence and the political elevation of our exhibition associated therewith, had significant curatorial implications as it changed the exhibition concept by further increasing our level of political awareness.

The main theme of the exhibition *Weather Report* was how short-term weather events and long-term climate change influence human civilization and culture. Our central presumption was that the term *climate* is abstract, while *weather* is all around us. Thirty years of weather data are needed to identify a climate state. Weather is climate made tangible, and it is therefore much easier to grasp and communicate. Adopting an experimental and interdisciplinary approach, this large show not only aimed to unite these two rather artificially separated terms, but also planned to include objects from the realms of art, cultural history, ethnography, and the natural sciences from

all around the world – altogether a maximum of 400 objects from around 100 lenders from all over Europe (Andreae et al. 2017, see also section 4.4 of this case study).

The original focus of the exhibition concept was on the poetic, existential and phenomenological qualities of the weather and humankind's approach to it, which oscillates between religious belief, superstition, and attempts of rational explanation, not following a reputed historical chronology of increasing rationality. As the project developed, scientific themes such as the history of meteorology and current aspects of global climate change became more and more important, ultimately also because of our cooperation with the UNFCCC.

Fig. 5.1: First draft of the layout for the exhibition Weather Report, *2017, © Bertron Schwarz Frey, Berlin/Ulm.*



The exhibition was divided into twelve rooms that described the constituting elements and diverse phenomena of the weather as they unfold over the course of a day. The visitors would move from a mythically charged 'Dawn'[3] to rooms dedicated to 'Sun', 'Air' and 'Sea' (which together with the land masses form the four constituting elements of the weather system), then – on the exhibition's fictional time scale around noon – moving on to 'Fog', 'Clouds', 'Rain' and 'Wind' in the afternoon, and from 'Gale', 'Thunderstorm', and 'Snow and Ice' into 'Dusk'. The exhibition grew darker from room to room (Fig. 5.1), culminating in a more or less apocalyptic night. The exhibition run's intensifying weather threat during its fictional course of a day was associated with the growing climate change threat on a larger time scale.

The aim was to give equal billing to the wonder and beauty of the individual weather phenomena and to their still fragmentary scientific explanations. The exhibition clearly wanted to serve educational purposes, but mainly aimed to reach its visitors emotionally and aesthetically in order to raise awareness of the essential importance of all weather phenomena in our daily lives and during our entire lifetimes (Fig. 5.2 and 5.3). Thus, it also aimed to raise awareness of the immense contingency, complexity and fragility of the Earth's atmosphere with its short-term weather and long-term climate systems.

3 This first room named 'Dawn' presented an array of weather gods from different parts of the world (Andreae et al. 2017, pp. 66–73), along with art works by Gerhard Richter (p. 65) and Hiroshi Sugimoto (p. 61). Although this entrance to the exhibition may have seemed like a chronological start, putting religious belief and superstition before scientific explanation and rationality in a historical timeline, references to the irrational aspects of our relationship with the weather were made throughout the exhibition.

Fig. 5.2: The exhibition room 'Sun' with historical parasols in the foreground, Parasolerie Heurtault, Paris. Photo: David Ertl, 2017, © Kunst- und Ausstellungshalle der Bundesrepublik Deutschland GmbH, Bonn.

Fig. 5.3: The exhibition rooms 'Gale' and 'Thunderstorm' with Germaine Richier's Storm Man (L'Orage) *and* Hurricane Woman (L'Ouragane) *in the foreground. Photo: David Ertl, 2017, © Kunst- und Ausstellungshalle der Bundesrepublik Deutschland GmbH, Bonn.*

5.3 The curatorial team

The curatorial team of this exhibition project was interdisciplinary in a more specific sense, as it involved curators from differing museum contexts, whereas other academic experts (non-museum-professionals) were only involved as advisors or lenders but were not part of the curatorial team. The most important external advisor to the exhibition was the renowned meteorologist and TV weather presenter Karsten Schwanke, hereafter referred to as the *meteorological advisor*. The actual curatorial team consisted of two external guest curators from very different museological backgrounds and me as the responsible institutional curator of the Bundeskunsthalle, taking on a predominantly coordinating, organizing, and synthesizing role. The two guest curators were an *art curator*, who had the initial idea for the exhibition, and a *science curator* who joined the team at a later point in time. Although these titles might suggest that the curatorial team predominantly involved a meeting of different disciplines, it, of course, also involved the meeting of three very different individuals and personalities.

Stephan Andreae (STA), with his consent, introduced and referred to as the art curator in this study, is an independent artist and very experienced senior exhibition curator, who worked at the Bundeskunsthalle for more than twenty years until his retirement in 2014. He had been developing the idea for this exhibition since 1999, but it took many years until the project made it into the institution's scheduled programme. His approach on exhibition-making is rooted in the conceptual tradition of the 1970s *Musée Sentimental* by the Swiss artist Daniel Spoerri, who invented a new associative, poetic, and anti-authoritarian take on historical exhibitions, including objects from everyday life and notwithstanding traditional museological material categories, narratives, and conventions. Objects were chosen according to their emotional and anecdotal qualities – meaning the stories behind them – rather than their established historical or art historical value[4] (Plessen 1979, p. 15). In this spirit, STA curated

4 For example, for the exhibition *Le Musée sentimentale de Cologne* (1979), the renowned German writer Heinrich Böll was asked to contribute a personal object and – much to the curators' joy – he sent in twelve pencil stubs which he had used to edit his manuscripts (Plessen 1979, p. 36). Instead of representing himself in this exhibition with a more prominent item such as an award or his autograph, Böll chose the simple but emotionally charged tools of his daily work.

several very successful exhibitions in the history of the Bundeskunsthalle, often approaching natural science themes from an artistic point of view, for example in the exhibitions *Arctic – Antarctic* (1997) and *Outer Space* (2014).

Ralph Burmester (RB), with his consent, introduced and referred to as the science curator here, is a member of the curatorial staff of the Deutsches Museum Bonn, the Bonn branch of the Deutsches Museum in Munich, which contributed a significant number of loans to the exhibition. His original expertise is military history (a surprisingly useful discipline in connection with the field of meteorology), but during his museum career he has become a very experienced and broadly interested science curator. His work focuses on the history of natural sciences as well as on new scientific inventions and developments, and he is especially interested in innovative ways to communicate complex contents to a general audience. He joined the curatorial team in 2015, two years before the opening in 2017.[5]

As the third team member, I led this project as the institutional curator and exhibition manager of the Bundeskunsthalle in a mainly organizing and synthesizing role from late 2014. Having originally majored in Chinese studies, I had mainly focused on ethnographic and cultural history exhibitions in my earlier years at the Bundeskunsthalle, but simultaneously had also developed a strong interest in contemporary art and natural science topics over the years since 2002. As already discussed, as a curator, or more precisely an exhibition-maker, I now see myself more and more as a thematic generalist, at the same time becoming a 'bridge-specialist' (Klein 1990, p. 131), as I am especially drawn to complex and interdisciplinary thematic exhibitions that require an 'intercultural competence' (Lerchster and Lesjak 2014, p. 86), amongst other curatorial and management skills.

In this team of three, the art curator, who had originally suggested the project, was more or less forced by our institution to enter into the collaboration with the science curator, the latter having the task to add a more educational approach to the already existing artistic exhibition concept. These

5 At that time the director of the Deutsches Museum Bonn, Andrea Niehaus, was also briefly an active member of the curatorial team, her original expertise being art history, which moved to the background of her research interests as she entered the science museum context. She stayed in the team but her administrative duties at the DMB did not leave her enough time for a continued active participation. That is the only reason why her supportive role is not further considered in this case study.

unequal tasks and conditions of the two external curators – explained in detail later in this case study –, along with a tight time schedule, were not ideal (but perhaps also not entirely untypical) for establishing a creative interdisciplinary team. The process of negotiating a joint exhibition concept (and of clarifying which type of exhibition was intended in the first place) oscillated between collaborative creativity and individual resistance.

While analysing our team structure, power-balance and production process in greater detail, I will draw on two semi-structured interviews that I separately conducted with both external curators shortly after our exhibition closed its doors in March 2018. For these interviews I developed a set of general questions for external exhibition/museum curators, who collaborated in interdisciplinary exhibitions co-curated and managed by myself at the Bundeskunsthalle (see Appendix). The interview questions aimed at a retrospective analysis of the process of making the exhibition, starting from jointly developing an exhibition concept, on to negotiating and choosing objects in an interdisciplinary team and to finding a joint curatorial language for interpretation and exhibition design. The questions especially focused on key issues and moments of decision-making as well as knowledge production. The set of questions allowed for a deep feedback conversation, which in itself was a most valuable undertaking as it was not an established milestone within the institutional project management procedures. And it allowed me to reflect on my own curatorial and managing role in this team system – especially my role of enabling and suppressing individual and even joint creativity, as the following discussion will show.

5.4 *Interdisciplinary* exhibition-making: Thickening the plot and being 'inter-disciplined'

5.4.1 Forming an interdisciplinary team

Admittedly, our team had a difficult start. The beginning of an interdisciplinary collaboration can be essentially important both regarding the development of the project content as well as the social team structure in order to avoid future conflicts (Lerchster and Lesjak 2014, p. 79). It is therefore recommended to clarify the roles of each team member regarding his or her professional identity, research interests, aims and motives, as well as the distribution of space, both literally and figuratively speaking (pp. 83–85). Furthermore, it is important that

the team members start working together in an atmosphere of openness and trust (p. 85). The actual circumstances of our exhibition project unfortunately did not allow for such a clear and open beginning of our teamwork.

When I was assigned the task to realize the exhibition *Weather Report* (scheduled for autumn 2017) in late 2014, the idea for this project had just been revived, after it had been postponed for an indefinite period around the year 2000. By 2014 the topic of weather and climate had become a matter of increasing public concern and had therefore finally been included in the scheduled programme of the Bundeskunsthalle. As a former colleague, the art curator had been working on this idea since 1999, and had from the beginning adopted a multidisciplinary approach, consulting with a large number of academics, artists, and museum curators to compile a preliminary database of around 500 possible exhibits. He had even started to set up an advisory board, but up to this point he understood himself as the inventor and sole curator of this exhibition.

In 2015, the art curator's renewed enthusiasm for his rediscovered project was slowed down by the institution's condition to collaborate with a science curator. This decision by the artistic director of the Bundeskunsthalle was explained with the notion that the art curator's previous exhibitions on natural science topics had been of exceptional artistic quality but might have profited from a clearer educational structure. So, in early 2015, shortly after I took on the project, we started to form a new curatorial team including the science curator from the Deutsches Museum – a very desirable institutional partner for the Bundeskunsthalle both regarding its scientific reputation as well as potential loans – and occasionally also the meteorological advisor mentioned above.

Instead of being clear about the roles, aims, and territories of each team member right from the start, the science curator diagnosed the initial situation in hindsight as 'unclear and unfortunate.'[6] Despite the attempt to integrate and encourage him by reassuring him that the exhibition concept was still open for discussion and yet to be re-developed in a joint effort – and also out of an initial indecisiveness on our institutional part – there was the underlying yet clear message that the basic structure of the original concept by the art curator (describing different weather phenomena during the course of a day) was 'sacrosanct'. This meant that the science curator should keep to adding an informa-

6 All direct and indirect quotes from the science curator are drawn from the interview I conducted with him on 8 March 2018 in Bonn. The interview recording cannot be accessed and will be deleted after a mutually agreed on period of time.

tive layer on top of it – a clearly limited space for creativity. He instantly had the suspicion that this exhibition was supposed to be an art exhibition in disguise of a science show, instead of both disciplines meeting on an equal footing. And from the start, he felt as the 'junior partner' with everybody deliberately trying to convince him that we were all meeting at eye level.

For the art curator the situation at the beginning of working in this new team was likewise rather unsatisfactory, as he had a clear idea of the exhibition and was trying to evade any kind of substantial curatorial interference. Feeling that he had been 'inter-disciplined' in an almost penalising sense, he initially still hoped that the science curator's input would only be 'supportive'[7] of his own ideas by substantiating them with scientific facts and objects, while at the same time not altering his artistic concept.

But the science curator – despite his own initial scepticism and the art curator's noticeable resistance – proved to be as enthusiastic as the art curator himself, determined to enter into an interdisciplinary 'battle', striving for nothing less than an integrative new exhibition concept. Against all institutional odds – such as a narrow time frame and the fact that I was simultaneously still curating and managing an earlier exhibition project which opened in 2016 – we embarked on this endeavour together, me trying to support and encourage both curators, while still searching for my own curatorial position in this project. As the institutional curator and exhibition manager, I was struggling with the aforementioned initial indecisiveness of our institution that had, on the one hand, embraced this interdisciplinary experiment and its necessarily open result (Heimerl et al. 2014, p. 304), and on the other hand kept the (in our context conventional) concept of an art exhibition with a few engaging scientific add-ons on standby, as one of several possible 'tried and tested formulae' (Macdonald and Basu 2007, p. 18). We all felt that 'inter-disciplining' this project meant taking a risk, but the yet unforeseeable result promised to be at least innovative, or as Macdonald and Basu put it: 'Experimentalism […] is a risky process of assembling people and things with the intention of producing differences that make a difference' (p. 17). What we tried to do was nothing less than creating a new – and on this

7 All direct and indirect quotes from the art curator are drawn from the interview I conducted with him on 18 March 2018 near Bonn. The interview recording cannot be accessed and will be deleted after a mutually agreed on period of time.

scale unprecedented[8] – exhibition in which different fields of knowledge and different categories of objects would be allowed to 'interact with each other, generating new and unanticipated outcomes' (p. 9).

5.4.2 Concept development: Negotiating ideas, methods and identities

The joint revision of the original exhibition concept by the art curator meant to transform an originally multidisciplinary – mainly additive and only loosely structured – concept into an interdisciplinary concept by negotiating, linking, focussing, and integrating (Klein 2010, p. 16) our mutual ideas and stories. The first step was asking the science curator to develop and formulate his own ideas for an exhibition about weather and climate, if possible, by keeping the basic structure suggested by the art curator consisting of a sequence of twelve rooms: Dawn, Sun, Air, Sea, Fog, Clouds, Rain, Wind, Gale, Thunderstorm, Snow and Ice, and Dusk. The original concept mainly concentrated on art works and anecdotally charged historical objects associated with each of these weather elements and phenomena.

An apparently not uncommon sense of mutual unfamiliarity (Heimerl 2014, pp. 303, 306) was palpable between both curators (and in hindsight confirmed by both interviewees), when the science curator set out to revise the exhibition concept. Before, we had mutually agreed on the most important premise of this exhibition: all rooms should include objects from the fields of art, cultural history or ethnography and the natural sciences. And these objects were not to be divided by disciplines but should be allowed to freely associate with each other. The science curator then developed a series of what he called 'weather stories' and 'climate histories' for each of the twelve rooms in which he wanted to unfold the history and future perspectives of meteorology and climate science.[9]

Perhaps the most prevalent research theme of both disciplines is the improvement of short- and long-term weather and climate change forecasts.

8 At least in Germany the topics weather and climate, and more recently climate change, have been dealt with in exhibitions either in the field of science or art, but not combining both fields on a larger scale.

9 For the majority of the curatorial team members, including the meteorological advisor and our institution, it was important from the start that our exhibition should take a stand for climate protection not only based on scientific evidence but also in a political sense, for example, regarding the social imbalance of global pollution. This politicization of the original exhibition concept was a joint achievement of the curatorial team.

Longing for a clear structure, he therefore suggested combining each weather phenomenon to its matching meteorological measurement: in the room 'Sun', for example, we measured the temperature, in the room 'Air' the air pressure, in the room 'Fog' the humidity etc., because only the collection of such diversified weather data allows a forecast. These measurements, exemplified with historical and modern instruments, were supposed to culminate in an additional educational room at the end of the exhibition called 'Weather Studio', in which the complexity and prevailing uncertainty of forecasts were explained. We all welcomed this idea and together with our meteorological advisor planned yet another educational room at the beginning of the exhibition called 'Weather Kitchen', which was dedicated to the explanation of the global weather system, its immense contingencies, and visible human influences.

With this additional narrative the science curator had successfully 'thickened' our 'plot'[10] (Rugoff 2015, p. 44) and had added a convincing structure to it. But when asked during the interview, whether he had been able to tell his story or whether he had to leave out important content for compromise's sake, he answered that he had only realized about thirty percent of his own ideas.

> In this collaboration I felt like a rejected organ during a transplantation. It fills me with great melancholy in hindsight that I never succeeded in entering the art curator's cosmos to initiate a truly harmonic interplay between us (Science curator).

This disillusioned and disillusioning reflection originated in his notion of never being able to fully participate in the content development of his counterpart in this collaboration, as the art curator not only had a very different approach towards exhibition-making in general, but also had a decidedly artistic, non-academic and rather evasive way of researching and conceptualizing.[11] While the

10 Although relating to group art shows and their potential to create new layers of content, I find Rugoff's straightforward and unpretentious word choice of a 'thickened plot' very useful for describing our practical process.

11 The science curator's notion of participating in an unclear and incalculable exhibition also resulted from a technical disadvantage on his part, as he did not have constant access to the ever-evolving loans database, which the art curator had originally set up while still working in our institution and which I continued to work with. The science curator was provided with regular updates of the list of loans but not with a direct access to the loans database. The art curator was allowed to keep his direct access after becoming an external curator, because joint access made it easier to handle and contin-

science curator's ideas and concepts were scrutinized by the curatorial team in great detail, the art curator's original ideas – manifested in his extremely inspiring but only loosely connected choice of objects, bursting with stories around them, rather than in larger structured narratives – were mostly treated as established facts. During the entire process both curators saw some of their ideas being rejected by the curatorial team, but admittedly in unequal proportions. This is mirrored in the quantitative proportion of their chosen objects, the art curator contributing around three quarters of the final list of loans, also due to his immense preliminary work in setting up a research database largely covering the artistic and cultural history aspects of the exhibition's theme.

> I am making exhibitions like a sculptor, I create. Which objects will I dare to bring together? What happens when two unfamiliar objects meet? Will there be a spark, or even a lightning between them? By the way, forming a team can be a similarly creative process (Art curator).

The art curator's idea of an exhibition as an artwork – a 'sculpture' on its own, a 'sumptuously laid table' on which 'the crumbs are as important as the centrepieces' – was not made for compromise, and in hindsight the art curator in fact also confirmed that this collaboration for him had involved 'too many compromises'. For the science curator the main purpose of an exhibition was conveying knowledge in a creative and attractive way, but he was *curious* to cross boundaries by entering the unfamiliar art world and experimenting with object categories and their interpretation. Ruth Phillips convincingly argues 'that wonder and curiosity can move us to accept messiness' (Phillips 2019, p. 338). Curiosity thus expresses 'a willingness to recognize and accept the irreconcilable multiplicity, plurality, and hybridity of the world' (p. 338). The science curator's curiosity was stifled, however, when the art curator was only reluctantly willing to admit him into his realm, which the science curator experienced as 'more unfamiliar than expected'.

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uously adjust the sheer quantity of loans between the art curator, who had chosen the majority of loans, and myself. In hindsight, I am considering this unequal treatment of the two curators as a mistake on my part regarding possible collaborative standards for interdisciplinary exhibitions, which should necessarily include equality amongst the curatorial team members. In this case equality was at least partly sacrificed for the sake of management efficiency.

> Our teamwork might be compared to the experiment of trying to dissolve iron filings in water. At the beginning you have the impression of an increasingly homogenous emulsion, but then you see the iron filings slowly separating again (Science curator).

The science curator also described this collaboration as working in 'parallel universes', in which each curator defended his individual creativity. We did have moments of collaborative creativity, but these were the exception rather than the rule. Our experience is reminiscent of Ken Arnold's notion that while 'research-led art curators still seem predominantly concerned with questions circumscribed by the world of art, […] science curators seem often intent on reaching out their home territory into other domains. Certainly, the considerable number of projects that champion an intermingling of science with art seem more likely to originate from science than the art side of the divide' (Arnold 2015, p. 333). In our case, the processes within our curatorial team proved Arnold right, but the overall decision for this art-science collaboration was made by a mainly art-oriented institution, a fact we perhaps should draw some satisfaction from in the light of Arnold's statement. In his interview, the art curator described his own attitude towards working on this exhibition as 'dancing and playing', while his colleague, the science curator, was 'walking' on a self-restricting line (referring to his 'science trail' through the exhibition, a line the science curator had only retreated to out of resignation). So, who was the freer thinker? Regarding the openness and flexibility to enter into an interdisciplinary collaboration, the answer is different to what might have been expected.

To take the art curator's metaphor further, I was aptly described as 'marching' through this process. These almost poetic descriptions of our differing working styles and attitudes have actually helped us to articulate and explore our roles within the team and within our institution at large, and it seems that poetry can offer a revealing 'alternative voice to the dominant organisational discourse' (Armitage and Ramsay 2020, p. 213). 'Exhibitions as a product are a complex interaction of institutional norms, wider cultural and political agendas […] and […] conventions' (Souhami 2011, p. 9). My role was to enforce and live up to these norms, agendas, and conventions, and at the same time I tried to create free spaces for creativity within our curatorial team. Especially interdisciplinary exhibitions require a certain amount of experimentation, which itself needs time, space, and other resources in order to flourish (Macdonald and Basu 2007, pp. 17, 18). And these collaborations need time for negotiation

and compromise, but time was a rare commodity in this project, and all too often I indeed felt like 'running' through the process. We did 'negotiate' this exhibition 'into being' (Macdonald 2002, p. 7), reaching perhaps a partial integration, but many creative ideas were suppressed during the process, and not only because of mutual resistance on the external curators' part. I myself as the exhibition manager had to suppress our individual creativities time and again, including my own. In a good sense, this perhaps served the task to stimulate and insert a larger, new layer of joint creativity to the exhibition concept. In a more problematic sense, my workload in this institutionally-regulated collaborative process forced me to press on with the production process just to meet institutional deadlines and eventually the opening date. No wonder that the science curator equally and rightly described me as 'dedicated but overburdened'. There are several reasons why we only partially achieved a creative synthesis of ideas and contents, required for characterizing this exhibition as *interdisciplinary* in the stricter sense defined above (Klein 2010, p. 16). Our exhibition, although having its *interdisciplinary* moments and aspects (for example its thematic instead of disciplinary order), largely remained multidisciplinary in combining its diverse contents and objects in an accumulative rather than integrative way. But what we did achieve was a multi-perspective and convincingly 'thickened plot'.

5.4.3 Object lessons: Blurring the lines

The exhibition *Weather Report* comprised 370 objects and 38 videos, graphics, audio-installations (soundscapes), and both informative and inclusive interactive stations from altogether 106 lenders from all over Europe. 168 lenders had been contacted with loan requests out of which we received 62 refusals. As the Bundeskunsthalle is an institution without a collection of its own, the exhibition completely relied on loans. In his book with the telling title *Müde Museen* (Tired Museums), Daniel Tyradellis identifies a weak spot when he observes that the practical requirements of loan negotiations and the resulting time pressures too often serve as arguments for preventing further changes and improvements to an exhibition's contents and main ideas, and thus for suppressing creativity, to put it in the terms I have used earlier. He criticizes the accumulative practice of researching and securing loans as a predominant part of curatorial work, which eventually leads to a significant lack in deeply thought through and carefully developed exhibition concepts that are allowed to grow and improve during the exhibition-making process (Tyradellis 2014,

pp. 73–75). Referring to museum collections, Gabriela Nicolescu speaks of 'curators (…) trapped in these everyday practices', restricting their own imagination (Nicolescu 2016, p. 485). A strong, diligently developed concept (without a preconceived outcome) is even more needed when it comes to meaningfully uniting the often disparate voices and materials in interdisciplinary thematic exhibitions, such as *Weather Report*.

It is a fact that the acquisition of loans constituted the major part of our work, especially of my own workload. But I cannot say that the process of choosing, requesting, and securing loans was altogether ruled by constraint. Although both curators had developed their lists of objects separately, it was when we discussed objects, the stories behind them, and possible connections between them, that we had our best moments of creativity and playfulness within the curatorial team. In an ideal setting, the 'continuous balance between liberty and constraint' and the need for compromise lead to a 'particular porosity' of museum displays, a productive space open for free ideas and interpretation on the curators' and audience's part (Nicolescu 2016, p. 486). Our intentionally disparate choice of objects left a lot of this desirable 'porosity' or 'interstices' between them. For the art curator these spaces – open to be filled with free thinking – could not be wide enough, while the science curator opted for closer-knit references and connections between the chosen objects. For example, in the exhibition room dedicated to 'Air', he narrated and explained the discovery and measurement of air pressure and the layers of the Earth's atmosphere with a number of outstanding scientific instruments, amongst them the original Magdeburg hemispheres and pump by which Otto von Guericke proved the existence of vacuum in the mid-seventeenth century (Andreae et al. 2017, pp. 118, 119). But what unfolded around him was very different. The materiality and the natural (and increasingly artificial) components of air, the aerosols, were for instance exemplified by twelve life size plaster casts of animal noses (sense of smell), an alto saxophone by Adolphe Sax junior (sound waves) and the wing skeleton of a black-headed gull (p. 121) alongside an old propeller (the dream of being able to fly). Watercolours by J.M.W. Turner spoke of ash contaminated air after the Tambora's eruption leading to a year without summer in 1816 (pp. 110, 111), while an eighteenth-century Chinese acupuncture mannequin (pp. 112, 113) referred to a possible cure for the unwanted symptoms of weather sensitivity.

Although the science curator reported in retrospective that he had often felt like making a separate science exhibition within a larger and for him seemingly unpredictable art and cultural history exhibition, he enjoyed the inspir-

ing one-two passes with the art curator and me evolving from surprising object encounters all the same. In his catalogue foreword, he wrote that the exhibition presented historically and thematically connected objects of different material categories which had often only been separated in the first place due to the specialization of museum collections (Andreae et al. 2017, p. 13).

Luisa Melloh, who completed a substantial BA dissertation on our exhibition in the field of sustainable development, described her 'first most obvious observation' when visiting our show, 'that this exhibition wants to bring together what belongs together' (Melloh 2018, p. 27). In this atmosphere of open dialogue, the objects themselves became 'accessible at multiple levels' (Thomas 2010, p. 9), blurring the lines between 'cultural' and 'natural' as well as 'human and nonhuman' (Baker 2015, pp. 63, 73). In an old hiking boot and sock lacerated by lightning (Andreae et al. 2017, p. 270), displayed in the exhibition chapter 'Thunderstorm', nature had forcefully manifested itself in a human product of everyday life, reaching us at the level of 'conscious thought' (Baker 2015, p. 63) as well as speaking to our 'affective intelligence' (direct sensation)[12] about the 'preconscious' (p. 69) qualities of weather phenomena. Our exhibition was therefore not just stuck somewhere in between being multi- and interdisciplinary in a narrower sense, but even had its transdisciplinary moments – or moments of 'transsector interaction' (see Klein 2010, p. 16) – by enabling a dialogue of disciplines from the fields of science, cultural history, and art with the realm of everyday life, at times even within a single object such as the old hiking boot. Antique scientific instruments were admired for their aesthetic value as well as the complexity of their function, whereas an exquisite landscape painting by Thomas Enders turned into a climate change witness depicting a long-lost glacier of the Austrian Alps in 1832 before the beginning of industrialization. The re-contextualization of this particular painting is a telling example of knowledge produced in this exhibition, showing that works of art – apart from

12 The latter form of perception was supported by a large installation called 'Shake Hands with a Flash of Lightning' in which visitors, protected by a Faraday cage, could put their hand in a metal glove (as part of the cage) to touch an artificial lightning produced by a Tesla coil every half an hour. Inspired by high-voltage demonstrations at the Deutsches Museum, this installation was a matter of controversial discussion within the curatorial team and with other members of our institution, because whereas science museums have a long tradition in such hands-on demonstrations, we had to cross our conventional boundaries to install this demonstration within what we still largely conceived as an art exhibition, for example because of the huge noise it created.

the well-known (and historically earlier) examples of Dutch paintings depicting the Little Ice Age – can make a significant contribution to climate science (Andreae et al. 2017, pp. 296, 297).

Despite all the controversies and the parallel instead of collaborative developments within and beyond our curatorial team, we all became more and more convinced throughout the process that the theme of our exhibition urgently required this multi-perspective approach. In her article 'The Liquid Museum', Fiona Cameron argues that museums should try more 'radical ideas' instead of retreating to a position of providing a 'safe place' (Cameron 2015, p. 347) of 'certainty' (p. 348) in a world of uncertainty. Instead of 'cleansing' an exhibition's theme 'of its 'controversial aspects', museums should 'embrace complexity' (p. 349) and 'acknowledge nonlinearity' and 'unpredictability […] in the way the relations between human societies and nonhuman actants operate as open-ended processes' (p. 350). Cameron explicitly applies this to the global matter of climate change.

In our case the diversity of objects and contents created a complex bigger picture in which also nonhuman things such as the air, the sun and the oceans emerged as 'stakeholders' (p. 357) in their own right, 'outside of human-centered linear historical time and space' (Baker 2015, p. 68). In the room 'Sea' (Fig. 5.4), human and nonhuman works of art like August Strindberg's psychologically charged, dramatic and timeless seascapes (Andreae et al. 2017, pp. 128, 129) and the sadly beautiful specimen of a dead Caribbean Elkhorn coral bearing witness to the acidification of the oceans caused by the increased uptake of carbon dioxide (CO_2) from the atmosphere (p. 134), stood side by side and seemed to belong to each other quite naturally. Cameron states that breaking the 'human/nature divide' may 'help build […] affective relationships between humans and the nonhuman world' (Cameron 2015, p. 357). And this is exactly what we tried to achieve, although it might sound pathetic at first glance: we wanted our visitors to simply fall in love with the weather around us in order to find the emotional and rational determination to protect our climate. As an institution we were operating as what Cameron calls a 'soft power' instead of a 'hard disciplinary power' (p. 375) within the climate change debate, but we were subtly but persistently trying to sneak into people's hearts.

While COP 23 was taking place in Bonn, this strategy was especially welcomed by a group of professional weather presenters called *Climate without Borders* from TV stations from around the world. During a discursive public tour on 16 November 2017, they experienced the exhibition as extremely inspiring regarding new narratives for enhancing the general public's climate

awareness. Today many scientists researching climate change are embracing a wider understanding of interdisciplinarity, which combines natural sciences with social sciences and humanities, also with regard to finding and 'accepting a plurality of narratives' (Schipper et al. 2021, p. 1). Such narratives should reach beyond conveying quantitative numbers and statistics by including qualitative methods such as storytelling (p. 3).

Fig. 5.4: The exhibition room 'Sea'. Photo: David Ertl, 2017, © Kunst- und Ausstellungshalle der Bundesrepublik Deutschland GmbH, Bonn.

5.4.4 Interpretation and exhibition design: The fear of complexity

As much as the curatorial team enjoyed the juxtaposition of disparate materials in order to draw a bigger picture, this process also saw a number of conflicts rooted in diverging working cultures regarding research and interpretation. These differences between the art curator and the science curator were reminiscent of Simon Sheikh's distinction between an artistic research practice which 'is not necessarily concerned with authorisation' (Sheikh 2015, p. 46) and a 'scientific model of research' (p. 37). While these differences were still mutually accepted during the process of compiling our list of loans, they became ever more perceptible and evident when it came to possibly finding a joint curatorial language for public relation and press purposes, interpretation, and the exhibition catalogue. A mutually agreed on short text for public relation and press purposes was achieved surprisingly quickly, but we struggled a great

deal with finding a single poster and book cover motif, representing our exhibition in all its diversity. This mirrors Macdonald and Basu's observation that experimental exhibitions can be 'hard to place' regarding their genre (Macdonald and Basu 2007, p. 19). We encountered this problem, for example, also when we were trying to find a publisher who was willing to produce a book fitting in more than one category, namely art, science, and cultural history. When both curators took on the task to write about their chosen objects for the label texts and the accompanying book, I was confronted with a severe problem, at least from our institutional perspective: While the science curator delivered too much text, the art curator seemed to write not enough. The science curator was used to a systematic and encyclopaedic method of interpretation and advocated a highly educational approach, whereas the art curator did not want to provide the audience with preconceived explanations in order to allow for ambiguity and free association. He strived for 'poetical and suspenseful' connections between intentionally unfamiliar objects and feared that too many texts in both the exhibition and the catalogue would hinder such an inspiring interplay.

This perhaps foreseeable but yet unexpected methodological discrepancy led the book editor (an art historian) and me to extend the art curator's texts while cutting the science curator's contributions in order to create a homogeneous flow of texts, that would support the desired blending of diverse object categories instead of unwillingly dividing them methodologically. But while the science curator largely supported this editorial strategy, the art curator was against it and was not convinced otherwise until the end of the project. Linn Burchert's review of the exhibition catalogue from an art historian's perspective makes it clear though, that this methodological gap is still apparent and has not been levelled out completely. Her criticism was that, although the exhibition *Weather Report* attempted to contribute to the question of the role of the arts in recent sustainability debates, the choice and interpretation of art works was lacking 'thematic contouring and analytical depth', as opposed to the systematically treated science themes in the exhibition (Burchert 2018, p. 215). This raises a fundamental question regarding interdisciplinary collaborations, as they obviously do not only involve the negotiation of different bodies of knowledge but also of a variety of methodologies (Heimerl 2014, p. 299). Are these diversities to be levelled out or to be made transparent? This question in itself should be a matter of discussion within an interdisciplinary team. But in our case these differences were not kept or overcome as a result of negotiation and compromise but were (or at least were attempted to be) institution-

ally suppressed by me, in my function as exhibition manager responsible for the timely delivery of a final product. Or did I perhaps contribute something positive after all, by acting as a third curator or 'bridge-specialist', constructively synthesizing disparate contents and ideas in order to create something new? Both explanations are true to a certain extent, but the act of suppression remains apparent in the fact that we ignored the art curator's wishes instead of jointly trying to convince him.

Another controversial matter within the curatorial team, which was quite revealing regarding our struggle with interdisciplinarity, was the exhibition architecture and design. Although we had mutually agreed that all rooms included objects from the fields of art, cultural history and the natural sciences, and that these objects should not be divided by disciplines but should be allowed to freely associate with each other, it turned out to be difficult to communicate this to the exhibition designer, who instead recommended a clear 'science trail' throughout the exhibition in the form of distinctly coloured (blue) islands. We spent some time arguing for a more integrative, floating architecture not clearly distinguishing between object categories, but eventually surrendered to the more conventional and educationally more convincing idea of the designer.

As much as we enjoyed the inspiring originality and complexity of our choice of objects, we were also afraid of a confusing kind of ambiguity that would be lacking a clear narrative and engaging structure. This fear, based on previous experiences in earlier exhibition projects, had been the initial reason for matching the art curator with an educationally more experienced science curator. In the beginning of our discussion with the designer the science curator had also advocated an integrative exhibition design not divided by disciplines, but the idea of a clear structured exhibition narrative was his priority as well as that of our institution, especially given the tight time schedule which regrettably did not allow for more complexity in this late phase of the production process. The emerging distinctive 'science trail' did perhaps deepen the science curator's notion of having created 'an exhibition within the exhibition', but from the audience's perspective – judging from frequent guided tours through the exhibition and our docent's feedback – this trail was welcomed as a visible additional narrative (apart from the exhibition's equally visible overall storyline of evolving weather phenomena during the course of day) in the midst of an inspiring but also enigmatic environment (Fig. 5.5 and 5.6).

Fig. 5.5 and 5.6: The exhibition rooms 'Air' (left) and 'Fog' (right). The blue islands served as a distinct 'science trail'. Photo: David Ertl, 2017, © Kunst- und Ausstellungshalle der Bundesrepublik Deutschland GmbH, Bonn.


Regarding other design decisions, our institution supported the art curator's ideas. While the science curator advocated a 'high-context' (Spock 2015, pp. 386–388) exhibition design, more frequently used in science museums, the art curator and I spoke in favour of an elegantly reduced 'low-context' design in order not to outshine the great disparity of art works and historical and scientific objects. This choice was more in line with an art museum's conventions but was in hindsight perhaps not 'meaningful' (p. 386) and 'captivating' (p. 398) enough, and we might have perhaps reached a more interesting result, if we had had more time. In the final design the rooms had a colour palette from white, light to dark shades of blue, towards a dark grey. The rooms were thus increasingly darkening and at the same time becoming narrower, starting from wide rooms like 'Dawn', 'Sun', and 'Air' in the beginning of the exhibition towards a rather claustrophobic end in the last two rooms called 'Snow and Ice' and 'Dusk'. This architecture was subtly trying to correspond to the global threat of climate change without using the usual 'depictions of natural disasters' or 'images of Climate Change mitigation methods' which have proven to be of 'limited efficacy' to 'spur both Climate Change awareness and action' (Melloh 2018, pp. 13–15). We added immersive measures such as occasional soundscapes, multi-sensual inclusive and interactive stations conceptualized by our education department[13] and hands-on demonstrations developed by the science curator.

Apart from the institutional final decisions, the exhibition design was at least to a certain extent the result of negotiations and compromise. Although each of the two curators regretted the necessity of too many concessions in

13 See Tellmann and Knaup 2019.

hindsight, it was just these compromises that elevated our exhibition at least gradually from a mere multidisciplinary towards an interdisciplinary collaboration, as a certain amount of interaction and even integration was involved. And although these compromises might have weakened and blurred the traditional forms of presentation and interpretation of both art and science contents and objects respectively, we managed to create something new and innovative by acknowledging the complexity of our topic, intentionally complicating the exhibition-making process, and thus 'reconfiguring the way in which exhibitions work' (Macdonald and Basu 2007, p. 16).

5.5 Conclusion: Institutional consequences and possible collaborative standards

This case study showed that interdisciplinary (in the general sense of the term) exhibitions do not necessarily belong to either the multi-, *inter-* or transdisciplinary type (Klein 2010, p. 16). By understanding these three terms as describing different qualities of interaction, they can serve as a finer vocabulary for a detailed description and analysis of the practical processes of exhibition-making – all three applicable even in one and the same case. The exhibition *Weather Report* was multidisciplinary in its choice of themes, objects, and even methods, as it lacked integration in these aspects. But it was *interdisciplinary* in some of its curatorially negotiated measures to unite disparate materials, and it even had its rare transdisciplinary moments. Taking a multidisciplinary collaboration to a more interactive level of being *interdisciplinary* (in a narrower sense), means to achieve a closer degree of integration amongst its participants, methods and contents. This is hard work and requires openness and flexibility – and a certain amount of experimentation – on all sides, and these claims themselves require a larger number of institutional resources (see Heimerl 2014, p. 308), different to monographic or mono-disciplined exhibitions.

When trying to formulate feasible collaborative standards, interdisciplinary projects (similar to participatory projects) first and foremost need a longer time frame – and thus also larger financial[14] resources – for nego-

14 I am aware of the fact that our institution is fortunate in having such funds allowing for disciplinary input by hiring external experts as co-curators or advisors, as our internal team of curators would not be able to cover the expert knowledge required for our institution's wide programme scope.

tiations and joint decision-making processes. The increasing speed of the production of temporary exhibitions stands against a more thoughtful and independent way of conceptualizing and realizing exhibitions, adjusted to the individual case at hand (Hegewisch 1991, pp. 13–14). Apart from resources, interdisciplinary exhibitions need equality amongst the curatorial team members regarding their honorary, decision-making procedures and a shared access to project development tools such as databases. Different methodological approaches must be negotiated in order to develop a joint methodological canon for the exhibition at hand. Emotional and intellectual differences in expression and understanding should not be disregarded or even eliminated. And the collaborative process should allow for joint critical feedback.

Another aim of this case study was to contribute to the transparency of the processes of exhibition-making from a curatorial and managing perspective. Undertaking this retrospective research and conducting interviews with my co-curators in this exhibition project was in itself both a revealing and healing process that unveiled conflicts but also possible solutions, personally as well as institutionally. In an ideal setting we would have developed a joint curatorial language, and also a joint approach to interpretation and exhibition design, but in this exhibition these approaches remained at least partly disparate. However, our discussions during the production process and the retrospective interviews were immensely inspiring and thought-provoking, especially with regard to institutional resources and consequences. Although the curatorial team has not succeeded in reaching a complete consensus – if at all possible or desirable – the mere fact that we saw the project through despite all conflicts and contradictions corresponds well with the determination needed to pursue the aim of climate protection despite all political odds, scientific complexities and social uncertainties. This type of interdisciplinary exhibition is certainly not useful for all themes, but it proved to be very meaningful in this context, especially as the global issue of climate change cannot be solved by one discipline alone, but definitely requires joint forces by political organizations, universities, cultural institutions, and all parts of society.