2 Mapping out the scope of this research: A literature review

2.1 Introduction

In this literature review I want to delineate the landscape of my research which is spanning two academic fields – (1) interdisciplinary studies as a field in science theory and (2) exhibition-making as a theoretical and practical question in museum studies – and is incorporating a specific cultural practice, that is the practice of developing and realizing interdisciplinary temporary exhibitions. As a researcher and practitioner, I like to view myself as both a garden architect and an actual gardener building a small bridge over a creek between two different garden areas that have yet to form a joint landscape, thus hoping to create a new garden vista as well as a more direct pathway between the two fields. While this literature review constitutes the architectural plan for my interdisciplinary garden project, I will start using my shovel and other gardening tools to dig deeper into both fields and build my small bridge in chapter 3 which will discuss my methodology. This work will be continued in the analysis of the three exhibition cases in chapters 4 to 6.

I will start this second chapter with discussing the term 'interdisciplinarity' in general, incorporating sources from the academic field of interdisciplinarity studies (section 2.2). Then I will construct an overview of the history and typology of temporary exhibitions (section 2.3.1), exploring their potential and methods in both conveying and producing knowledge by using the existing literature on museum and exhibition theory and practice. While looking at specific aspects of temporary exhibitions such as innovation and experiment (2.3.2) as well as dialogue and narrative (2.3.3), I will explicitly focus on interdisciplinary exhibition-making. Following up on chapter 1, this literature review will also discuss the relationship between universities and cultural institutions – such as museums or exhibition halls (venues for temporary exhibi-

tions) – with regard to them both being sites of research and knowledge production (section 2.4). Here, national differences must be taken into account, as the United Kingdom has certainly been more advanced and experienced in collaborations between the academic and museum worlds than Germany, which is the site of the three case studies included in this book. In exploring the question how interdisciplinary exhibitions are developed and produced, I argue that the role of the curator/researcher as 'bridge-builder' (Klein 1990, p. 131; Klein 2010, p. 16) is essential and is in fact very similar to that of an interdisciplinary researcher (section 2.5). As a way to establish this position, I ask, what does it mean to practice interdisciplinary research? And can universities and cultural institutions learn from each other in this respect?

2.2   What is interdisciplinarity?

In order to answer the question what interdisciplinarity means in general, I would like to start with understanding its history. Was interdisciplinarity always there as a method of learning and producing new knowledge, or is it a newer research strategy? John Aldrich's book on interdisciplinarity includes a roundtable discussion titled 'Interdisciplinary Teaching in Political Science: Best Practices'. In this conversation Lisa Baldez associates interdisciplinarity with the mouldering and unrecognized angel in Gabriel Garcia Marquez's story 'A very old man with enormous wings.' In her view, this angel of interdisciplinarity was and is always there, but its importance and specific role has been forgotten over time and not been recognized again until recent years (Aldrich 2014, p. 264). Joe Moran supports this notion in his overview on the history and 'rise of the disciplines' (Moran 2010, pp. 3–13). He shows that the division of knowledge into disciplines, going back to the ideas of Aristotle, 'proved remarkably resilient' (p. 4) but was continuously challenged throughout history by more generalist – and interdisciplinary – approaches, aiming to unite what was becoming an increasingly fractured body of existing knowledge. The term university speaks to these debates, as it simply stands for universal or general knowledge (p. 5). Moran argues that philosophy played an important role in both classifying and at the same time unifying the developing disciplines as 'a kind of metacommentary' (p. 7), with the most substantial historical divide still relevant today taking place in the late 18th and early 19th century when the natural sciences were separated from the humanities and social sciences, the latter being stamped as the weaker 'non-sciences' as far as the use of rigorous

scientific methods was concerned (p. 10). Historical divides and subsequent alienations like this are still providing obstacles with regard to the increasing demand for interdisciplinary collaborations today. However, there is a growing recognition that interdisciplinarity is vital if we are to address the significant problems of humankind that require the input of several disciplines (see, for example, Jungert et al. 2010, p. 10; Schipper et al. 2021).

While the authors discussed above date interdisciplinarity back to the birth of academia, other authors have described interdisciplinarity as akin to an intellectual earthquake in the late 20[1] century turning the educational landscape upside down.

> Interdisciplinarity […] means the end of modernity: the breakdown in the separation of the public sphere and the isolation of the one kind of knowledge – scientific [meaning academic] – from other kinds of discourse. It also portends the end of academic autonomy, as knowledge becomes a common possession of society at large, most obviously via the Internet (Frodeman 2014, p. 191).

Here, Frodeman does not only talk about interdisciplinarity within the confines of academia but about a transdisciplinary development leaving these confines behind. His topic is therefore rather the question of academic outreach to society, which constitutes one aspect of the definition of transdisciplinarity. But let us now turn from the 'since when' to the 'what is it all about' in order to answer the question headlining this section: What is interdisciplinarity?

Moran's thinking about interdisciplinarity is interesting for my research, because he investigates the topic from the perspective of the humanities, whereas a lot of literature in the field of interdisciplinary studies originates from a science context. He finds this pragmatic definition of interdisciplinarity: 'I take interdisciplinarity to mean any form of dialogue or interaction between two or more disciplines: the level, type, purpose and effect of this interaction remain to be examined' (Moran 2010, p. 14). As an interdisciplinary researcher of English and Cultural History (combining textual criticism, history, and social anthropology) at the University of Liverpool, Moran takes on a broader view perhaps also because one of his own research interests is transcending the so-called academic world by focussing on the culture of everyday

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1   Machiel Keestra dates the term 'the interdisciplinary' back to around 1925 (Keestra 2019, p. 110, 111), but the concept has gained momentum from the 1970s onwards.

life. This aspect of his work is especially interesting, because the reality of our daily lives is naturally interdisciplinary, as it is not divided into disciplines, an observation that lets the academic structure of disciplines appear in a rather artificial light. As Moran unfolds the history and theory of disciplines as outlined above, he argues for interdisciplinary collaborations that do not dissolve the existing and established disciplines but make them more 'critically and self-consciously' aware of their own changing nature, and more 'open to different ways of structuring and representing their understanding of the world' (p. 181). Interdisciplinary exhibitions can be just like that, on the one hand deeply relying on the expertise of specialized disciplines, but on the other hand having an enormous potential for bridging disciplinary gaps and for being open-minded and creative. Moran concludes that 'interdisciplinarity can disrupt the deceptive smoothness and fluency of disciplines, questioning their status as conveyors of disinterested knowledge by pointing to the problematic nature of all claims to scientific objectivity and neutrality' (p. 180).

After these introductory observations that focussed mainly on the ideas of Moran, it is time to explain why the most important author this study is relying on in terms of a theoretical framework is Julie Thompson Klein (1944–2023), who was certainly the most prolific and influential author on the topic of interdisciplinary research. In 2019, a special volume of *Issues in Interdisciplinary Studies* was published on the work of Klein. In his contribution, Machiel Keestra explains why her book *Interdisciplinarity: History, Theory, and Practice* (1990) in particular was indeed 'groundbreaking' (Keestra 2019, p. 111). Klein's work is based on the 'ideas of unity and synthesis' (p. 111) of knowledge, and the 'defining feature' of interdisciplinarity for her is 'the process of integration' (p. 110). Together with William H. Newell, Klein provided 'a definition of interdisciplinarity that has found wide acceptance, [...] because it avoids defining interdisciplinarity in a [...] content-based way. Instead [her] definition focuses on the process of integration of disciplinary insights [...], describing it as a means to reach a more comprehensive insight into a complex problem' (p. 112). Her description of the characteristics of interdisciplinary research processes and the taxonomy she developed and refined for this purpose are generally applicable to all disciplinary contexts and therefore of huge relevance for this research.

Diving into the terminological discussion on interdisciplinarity can be very rewarding and revealing for a better understanding of the characteristics of interdisciplinary projects and their processes both in the contexts of universities

and cultural institutions. Thus, Klein's taxonomy[2] of interdisciplinarity (Klein 2010, p. 16) can serve as framework for a finer understanding and more detailed description of interdisciplinary exhibitions. As briefly introduced in the introduction to this book, Klein distinguishes three types of interdisciplinarity (here serving as the general term): multidisciplinarity, *interdisciplinarity* (in a narrower sense; put in italics throughout this book) and transdisciplinarity (Klein 2010, p. 16). These terms are often used synonymously, and it is therefore even more important to understand and discern their respective characteristics:

1. Multidisciplinarity is described by Klein as a 'pseudo interdisciplinarity' that can be understood as 'encyclopaedic', 'juxtaposing', 'sequencing', 'coordinating', 'complementing', and 'indiscriminate' (p. 16). Multidisciplinarity is basically 'additive, not integrative' (Klein 1990, p. 56). Many research projects that label themselves as being interdisciplinary are in fact multidisciplinary, lacking in integration amongst the involved disciplines.
2. *Interdisciplinarity* (in a narrower sense) is described as an 'integrating, interacting, linking, focusing, blending', and 'generalizing' kind of collaboration, which enables a 'partial integration' (Klein 2010, p. 16). It resembles an increasing degree of integration among the participating disciplines.
3. Transdisciplinarity is described by Klein as a 'transcending, transgressing and transforming' (p. 16) kind of interaction. It enables 'systematic', 'conceptual, structural', and even 'unifying' integration as well as 'transsector interaction' (p. 16), allowing for collaboration between universities and other 'extra-academic' (Keestra 2019, p. 113) parts of society. In recent years, Klein has especially focused on transdisciplinary research fostering academic outreach strategies and the integration of different forms of knowledge such as 'experiental knowledge' from the 'real world' (see Keestra 2019, pp. 113, 114).

These three types of interdisciplinarity can be viewed as gradually increasing qualities or 'degrees of collaboration': from 'shared' to 'cooperative', from 'complementing' to 'hybridizing', from 'bridge building' to 'restructuring', from

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2   For another useful analysis of the terminology of interdisciplinarity see, for example, Jungert et al. 2010, pp. 1–12.

'partial integration' to 'full integration' (Klein 2010, p. 16). Dahlgren and Hermes offer a similar discussion regarding 'degrees of *participation*' (Dahlgren and Hermes 2015, p. 123, emphasis added), another important keyword used both in academia and the cultural sector. They are describing these degrees as 'power balance between the interacting parties' (p. 123). It is certainly true that discerning the degrees of interdisciplinary collaborations also has a political dimension. This political aspect of interdisciplinarity will play an important role within the cases studies of this book.

But at this point I would already like to briefly focus on the important relationship between, particularly, transdisciplinary research and participation. There is a noticeable absence of the term participation in the science theoretical literature on interdisciplinarity in all its forms. Instead, the focus there is on the integration of knowledge to solve problems. But transdisciplinarity holds a 'promise' which Merritt Polk describes as joining the 'indepth participation of users and the integration of relevant knowledge from both practice and research in real-world problem contexts' to 'produce socially robust results' (Polk 2014, p. 439), thereby acknowledging the social aspects of scientific problem solving. Participation is, by definition, socially and politically motivated (see Huybrechts 2014, p. 11) and touches on concepts of 'social belonging', 'social inclusion and exclusion', and 'cultural representation' (Dahlgren and Hermes 2015, p. 120). Participatory transdisciplinarity thus takes seriously what Klein called the 'transsector interaction' (Klein 2010, p. 16) between academia and society. Polk writes about the practical challenges that participatory transdisciplinarity provides, but also about how 'tightly linked' participation and transdisciplinarity are through 'the integration of different types of values, knowledge, perspectives and expertise from different sources' (Polk 2014, p. 442). She also states that 'a high level of participation often presumes the integration of knowledge, values, expertise and perspectives' (p. 442). Reestorff et al. also claim that specific 'participatory and collaborative processes' are 'inherently transdisciplinary' in the way they 'move between and beyond disciplines' (Reestorff et al. 2014, p. 6) and they advocate 'transdisciplinarity that takes an empirical interest in cultural participation' (p. 7). This important discussion shows that perhaps the literature in interdisciplinary studies (or science theory at large) is still not talking enough about social and cultural participation, whereas the literature on participation is perhaps not sufficiently acknowledging the integration and production of knowledge as being part of the respective collaborative processes.

2.3 Exhibition-making and the production of knowledge

2.3.1 The history and typology of temporary exhibitions

When looking at exhibitions as sites of knowledge production – and eventually at how interdisciplinarity plays out in this cultural practice – the literature documents well how closely the birth of this genre is connected to both the industrialization and the parallel development of the specialization and particularization of knowledge at universities. The history of museums and exhibitions mirrors the historical developments in the economy, politics, and education (see, for example, Bennett 1995, Waterfield 2015). Since the 19th century at the latest, museums and exhibitions have largely contributed to the construction of knowledges and disciplinarity (Whitehead 2009, p. 7), especially after opening their doors to the general public (Bennett 1995, p. 59), transferring 'cultural and scientific property from private to public ownership' (p. 73).

Reesa Greenberg et al. have described their 'effort to delineate a difference between thinking about exhibitions and thinking about [...] "museum culture"', suggesting that the 'growing number and diversity of temporary exhibitions' today asks for a separate discourse entangled from the literature relating to museums (Greenberg et al. 1996, p. 2). And there is certainly more literature to be found on the topic of exhibition-making in recent years (see, for example, Bjerregaard 2020, Hansen et al. 2019, Macdonald and Basu 2007, MacLeod et al. 2012, Marincola 2015). Historically speaking, it is also important to distinguish between museums and temporary exhibitions as these two forms of presentation were entirely separate enterprises until the beginning of the 20th century (te Heesen 2012, p. 14). The second half of the 18th and the 19th centuries saw the separate development of the institution of the museum (divided in museums of art, history and natural science) as opposed to early forms of temporary exhibitions such as mostly commercial (and taste-building) art exhibitions, department stores, amusement parks, and local or global industrial fairs, among them the extremely influential world expositions (see, for example, Bennett 1995, Waterfield 2015). These new institutions and exhibition formats 'served as linked sites for the development and circulation of new disciplines (history, biology, art history, anthropology) [...] as well as new technologies of vision' (Bennett 1995, p. 59).

A basic difference between the museum and the temporary exhibition is their time frame. While museums were originally planned for the unlimited preservation of objects and thus were representing institutions of continuity,

the exhibition is, by definition, of ephemeral nature (te Heesen 2012, p. 15). 'In the context of the traditional museum, the temporary exhibition is an anomaly' (Waterfield 2015, p. 175). The original purpose of exhibitions has been the display of new and exciting objects and contents either of art, science, or industry (te Heesen 2012, p. 22) and has thus been closely linked to the concept of innovation as well as to economic interests from the start. Exhibitions 'were born on the marketplace', says Giles Waterfield (2015, p. 175), and he states that 'even its most scholarly modern form, the temporary exhibition, […] still operates as a spectacle' (p. 176, see also Bennett 1995, pp. 59–88). Tony Bennett adds the political dimension, describing both museums and temporary exhibitions as 'displays of power' (Bennett 1995, p. 59), or as the German art historian Ekkehard Mai puts it, 'every presentation is at the same time representation' (Mai 1986, p. 50, transl. HP).

Katharina Hegewisch questions the increasing speed and mobility of the 'exhibition merry-go-round', especially with regard to temporary art exhibitions, and advocates a more thoughtful and independent process of exhibition-making, which is not working according to schemata (meaning theoretically categorized exhibition types or economically successful exhibition models) but is adjusting to the individual case at hand (Hegewisch 1991, pp. 13–14, transl. HP). Still, it might be rewarding to take a closer look at existing typologies of temporary exhibitions. Waterfield investigates the historical development of exhibition types and genres such as art exhibitions, industrial art exhibitions, historical exhibitions, and what he calls 'scholarly' (Waterfield 2015, p. 194) or 'thematic' (p. 178) exhibitions. He observes that this last format emerged comparatively late in the last decade of the 19th century (p. 178).

In 1986 Mai published a history of exhibition-making also including a detailed discussion of the established spectrum of exhibition types in the 20th century in post-war Germany (Mai 1986, pp. 51–84). He states that these exhibition types have clearly developed out of political and disciplinary motifs and interests (pp. 83–84). While, after WWII, art exhibitions already thrived again in the 1950s, especially the renewed calls for public education in the late 1960s created a growing demand for various exhibition types (p. 53). At that time in Germany, art historical and historical exhibitions served the consolidating purpose of redefining national and regional identities in a yet still fragile international context (p. 54). In search for a 'utopian past', and thereby avoiding the more recent past, archaeological and ethnographical exhibitions started to emerge (p. 54). Apart from exhibitions on contemporary art, art history and the specific types of treasure and masterwork exhibitions, Mai discusses the cul-

tural history exhibition as a type (pp. 65–72), which seems to be close in defi-
nition to what Waterfield calls the scholarly or thematic exhibition mentioned
above. Mai describes the cultural history exhibition – mostly focussing on his-
torical epochs, eminent persons in history, or on national or regional cultures
– as 'the type of the highest political and factual complexity, as it is related to
a multiplicity of motifs and functions' (p. 65, transl. HP). This type of exhibi-
tion has mostly been conceptualized and displayed in a large and representa-
tive manner, inviting the fields of art, academic research, and politics to join
forces serving governmental political, social, and economic purposes (pp. 65,
69). Such large thematic exhibitions do have the potential to display new re-
search and to test its relevance to current society (p. 65), but an obvious danger
is that they exploit objects and ideas to fit a bigger narrative (p. 66), reminis-
cent of Bennett's 'narrative machinery' (Bennett 1995, p. 179). Mai argues that
the 'aura and authenticity' of objects should rather serve the conveying of his-
torical contents in a situational and subjective way, than exploiting them for
so-called objective histories (Mai 1986, pp. 66–67), an observation which seems
still relevant almost 40 years later. Another danger of thematic exhibitions has
been (and occasionally still is) their at times blind chase for 'superlatives' (p. 72)
that could lead to a 'non-committal, arbitrary, and random' choice of objects
and contents (p. 67, transl. HP). Steven Dubin's book *Displays of Power* from 1999
shows arguments which are similar to Mai's critical description of this type of
exhibition from 1986. In the introduction to his detailed analysis of several ex-
hibition examples at museums in the United States, Dubin stresses the impor-
tance of museums (and exhibitions) as 'venues in which a society can define
itself publicly', being one of the few places in which culture becomes tangi-
ble. But this unique potential of museums can only too easily be misused for
'displays of [political] power' and 'academic power plays' (Dubin 1999, p. 3). In
recent years there have been several examples of cultural history exhibitions
in Germany[3] which were not governed by a certain ideology and were con-
sciously questioning the 'power and knowledge relations' (Bennett 1995, p. 59)
mentioned above.

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3   An outstanding example was the exhibition *Racism. The Invention of Human Races* at the
     Deutsches Hygiene Museum in Dresden in 2019: https://www.dhmd.de/en/exhibition
     s/archive/racism (last accessed 4 April 2023).

An institution internationally known for its cultural history exhibitions is the Bundeskunsthalle[4] in Bonn, German's federal exhibition hall, which has already been introduced in chapter 1 of his book. After decades of planning, it was opened in 1992 (shortly after the political decision was made to move the capital to Berlin) and was modelled after the Centre Pompidou (founded in 1977 in Paris) regarding its large-scale and multidisciplinary exhibition programme (see Heinich and Pollak 1996, p. 236), but without a collection of its own. Pontus Hultén, who was the founding director of the Centre Pompidou, later became the founding director of the Bundeskunsthalle as well. Following the Centre Pompidou's lead, the Bundeskunsthalle especially developed exhibitions that were 'thematic/encyclopaedic (grouping various categories of works – visual arts, architecture, literature, music, etc. – around a subject)', and aside from that mainly three other large-scale exhibition types: 'monographic (of a single artist), [...] historical (covering a period), [and] geographic (from a region or country)' (p. 236). Thriving in the era of the so-called blockbuster exhibitions, the Bundeskunsthalle, where I have been working as an exhibition manager and curator since 2002, is specialized in making large-scale temporary exhibitions. Apart from art exhibitions of a large variety, many of them were cultural history exhibitions often combing historical, geographic, and thematic contents (using Heinich and Pollak's vocabulary) and thus being interdisciplinary (or at least multidisciplinary) exhibitions – some of them with official political backgrounds and motifs that would be worth a critical investigation in hindsight, but amongst them also a number of very progressive examples, especially in recent years.[5]

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4   The institution's full name is Kunst- und Ausstellungshalle der Bundesrepublik Deutschland (Art and Exhibition Hall of the Federal Republic of Germany), accessible at: https://www.bundeskunsthalle.de/en/ (last accessed 2 April 2024).

5   As I will introduce three interdisciplinary exhibitions of the Bundeskunsthalle in great detail in chapters 4 to 6 of this book, I would like to mention two examples of this exhibition type from two other German institutions at this point. (1) The exhibition *Weltwissen: 300 Jahre Wissenschaften in Berlin* (World Knowledge: 300 Years of Sciences in Berlin) was presented at the Gropius Bau in Berlin from September 2010 to January 2011 (https://www.berlinerfestspiele.de/en/berliner-festspiele/programm/bfs-gesam tprogramm/programmdetail_10195.html, last accessed 6 April 2023). Although mainly a historical exhibition on academic research, *Weltwissen* advocated a critical attitude by society and its citizens towards the results of academic research emphasizing the university's social responsibility and relevance. Furthermore, the exhibition did support the importance of networking and outreach across disciplines and institutional barriers. It also extensively explored different methods of research like measuring, draft-

I am interested in such thematic exhibitions not only as a practitioner but also theoretically speaking – even more so, if they draw a broader picture on a theme of public concern or interest, for example, by setting exhibitions on specific historical epochs or national cultures in a larger historical or societal context, while also opening up towards other disciplines such as the natural sciences. This type of exhibition is more open to interdisciplinary and participatory work than other types of exhibitions, as the mere complexity of its content is asking for collaborations among participants from diverse academic and cultural backgrounds. To enhance the social and political relevance and openness of such exhibitions in a democratic sense, it is nevertheless important to bear in mind that 'exhibitions actually talk not only about the objects on display but also about the people who prompted them and the ideologies at work' (Nicolescu 2016, p. 466). Analysing the actual processes of exhibition-making seems thus an ever more important methodological task which promises to be both revealing and rewarding with regard to future exhibitions.

In her *Introduction to Museology* (2014, a handbook published in German language), Katharina Flügel states that in museums studies a consensus regarding the categorization and classification of exhibition types has not been reached yet. The only clear distinction so far is drawn between permanent museum exhibitions and temporary exhibitions. Apart from their limited duration, temporary or special exhibitions are mainly characterized by possessing a greater amount of conceptual and aesthetical freedom, and by providing more possibilities for collaboration (Flügel 2014, pp. 117–119). Especially this last characteristic is relevant for my research question regarding interdisciplinary exhibition-making as a collaborative cultural practice. In contrast to this careful approach to classifying exhibition types, Barry Lord and Gail Dexter Lord (in their

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ing, experimenting, travelling, and interpreting through the medium of the exhibition (Hennig et al. 2010, pp. 7, 18). (2) Another unusual exhibition example was *Wunder: Kunst, Wissenschaft und Religion vom 4. Jahrhundert bis zur Gegenwart* (Wonder: Art, Science and Religion from the 4th Century to the Present) shown at the Deichtorhallen in Hamburg from September 2011 to February 2012 (https://www.deichtorhallen.de/en/ausstellung/wunder, last accessed 6 April 2023). This interdisciplinary exhibition was, all in one, a cultural history exhibition, a science presentation, and an art exhibition. In its attempt to look at wonders of all sorts from a multitude of perspectives, it combined religious beliefs, artistic interpretations of the inexplicable, miracles of everyday life, and wonders of modern technology (Tyradellis et al. 2011, p. 11), thereby also questioning our modern belief in unlimited progress.

Manual of Museum Exhibitions) divide museum exhibitions into four types, relating them to four different modes of apprehension: art as being related to aesthetic contemplation; history, archaeology and ethnography as being related to contextual or thematic comprehension; natural science as being related to the mode of discovery; and science centres as being related to interaction (Lord et al. 2002, p. 22). Although the authors admit that these types and modes of apprehension may be combined and used by all types of exhibitions, I doubt the usefulness of such a stereotypical categorization in the first place. A more recent publication such as the *Curator's Handbook* by Adrian George from 2015 seems to take on a more 'anything goes' approach by not offering a detailed analysis of exhibition types at all, but just stating instead that temporary exhibitions 'could have almost any theme, from historical to contemporary, and can be any type of show' (George 2015, p. 38). Instead of looking for a schematic typology of temporary exhibitions, it is more useful to explore the growing number of case studies and 'ethnographies of exhibition-making' (Nicolescu 2016, p. 466, as already cited in chapter (1) in my quest for possible collaborative standards of interdisciplinary exhibitions, a genre within the academic literature of museum studies to which this research tries to contribute.

2.3.2   The innovative and experimental potential of temporary exhibitions

Museums have been described as 'retrospective prophets', reading and narrating the past to predict the future, but both museums and especially the short-lived format of the exhibition 'came increasingly to embody [...] ideologies of progress' (Bennett 1995, p. 179). The claim for novelty and innovation is something exhibitions and academic research do have in common, as both are searching to find or create new insights or even new intellectual or aesthetic phenomena (see, for example, Flügel 2014, p. 107, Norton-Westbrook 2015, p. 350). Macdonald and Basu identify 'claims to novelty' as 'part of the standard discourse of exhibition-production,' but they warn of 'the characteristic Euro-American obsession with novelty'. Exhibitions which are striving for novelty are not necessarily inventive and experimental in the sense 'that they trouble existing knowledge and practice' in a constructive way (Macdonald and Basu 2007, p. 19). As, for example, Leila Tabassomi's collection of interviews with Swiss exhibition curators and designers shows curators were nevertheless emphasizing that exhibitions should strive for novelty (Tabassomi 2010, p. 17), but in recent years, goals like societal relevance, equity and participation have

certainly taken the lead (see, for example, Simon 2010 or Janes and Sandell [eds] 2019).

Exhibition-making means theorizing and structuring objects, and 'establishing specific knowledge relations' (Whitehead 2009, p. 134). It means the 'physical, intellectual and territorial bringing together of objects' and ideas, and at the same time the 'separating and silencing of others' (p. 134). This can take place either divided by material categories or across such categories. Whitehead describes museum collections and displays (exhibitions) as 'embodied theory', making the point that 'cultural actions such as collection, classification, conservation and display are in fact ways of theorizing the world' (Whitehead 2009, p. 20) and thus are means of knowledge production. I argue that exhibitions can play a significant role in the organization, structuring, mapping, simulation, visualization, and communication of knowledge, especially as these methods have become an integral part of the production of knowledge itself and thus are used in both universities and museum alike. For example, Katy Börner's *Atlas of Science* is based on the exhibition *Places and Spaces: Mapping Science*,[6] which has described and displayed not only the scope and interwovenness of today's existing knowledge by employing techniques of mapping and visualization but is also aiming at enhancing interdisciplinary collaboration and outreach to the public. 'Ultimately, the inner workings and impact of interdisciplinary research should be communicated and understood by scholars and the general public alike (Börner and Boyack 2010, p. 460). Methods such as structuring and mapping are, of course, used in both monodisciplinary and multidisciplinary exhibitions.

What then, do museum studies scholars and practitioners believe, are the vital components for a meaningful and successful exhibition? Macdonald and Basu state that all exhibitions involve the assembling of different 'people, things, ideas, texts, spaces, and media' constituting a complex apparatus, in which the 'different components interact with each other, generating new and unanticipated outcomes (Macdonald and Basu 2007, p. 9). It is this often unpredictable outcome that makes authors like Jens Hoffmann describe exhibitions as an 'anthropological endeavour' that provides a 'passage through unfamiliar territories' (Hoffmann 2015, pp. 56–57). In his commentary 'Museum as Method' from 2010 (see also Thomas 2016, pp. 65–114), Nicholas Thomas, similar to Hoffmann, uses the term 'discovery' as one ingredient of

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6   An exhibition touring since 2005: https://scimaps.org/about (last accessed 6 April 2023).

a good exhibition, along with a careful contextualization through captioning and juxtaposition: 'A good exhibition should make material accessible at multiple levels' (Thomas 2010, p. 9), offering 'problems rather than solutions' (p. 10). In raising questions rather than presenting answers, exhibitions are clearly contributing to the production of knowledge instead of simply presenting already existing knowledge unquestioned. It is the process of making exhibitions and the process of receiving them that has the potential to generate new knowledge. Peter Bjerregaard edited an important and more recent collection of essays titled *Exhibitions as Research* in 2020, already cited in chapter 1, in which he further develops this understanding of exhibition-making 'as a particular way of doing research, a way of exploring the world around us rather than mirroring it' (Bjerregaard 2020, p. 1).

Thomas also raised a crucial question with regard to my own research: as much as museums – in his context anthropological museums – were rooted in academia, their work has been gradually overlooked because of the university disciplines' preoccupation with theory as the 'locus for invention in disciplines', considering practices as 'sub-theoretical' (Thomas 2010, p. 8, see also Arnold 2015, p. 322). In a similar way to Whitehead, Thomas argues that the encounter with objects and the curatorial work with these materials can 'challenge many every-day or scholarly understandings of what things are and what they represent' and can thus create new knowledge (p. 8). In her compilation of essays on *Things that Talk* (2004), Lorraine Daston writes that things are far from being 'speechless' (similar to Latour 2005 as cited above), 'things communicate by what they are as well as by how they mean' (Daston 2004, p. 20), they talk when fusing matter and meaning. Citing Thomas on the 'mutability of things in recontextualization' (p. 17), Daston tries to bridge the gap between academic facts and cultural readings (as stated on the book cover).

Following Thomas and Daston, I argue that the methodologies of academic research and museum work (and academic work and museum research) may seem to be different, but they both have the potential to be innovative theoretically and practically. When taking a closer look at these methodologies, one finds distinct similarities. For example, John Pickstone's definition of the scientific methods of analysis and experimentalism (exploring ways of knowing in science, technology, and medicine, but using a much wider understanding of the term 'science' not limited to the natural sciences, Pickstone 2000, p. 207) is relevant in this context. Analysis – the traditional or 'ideal-type way of knowing' (Pickstone 2000, p. 130) – aims to achieve an order among known elements

by 'taking things apart', by dissecting, comparing, rationalizing, and classifying things.

Experimentalism builds on analysis (the deep understanding of the material in question) but is about a controlled act of synthesizing and putting things together to create something new – a new context, or even a new phenomenon (Pickstone 2000, p. 12). The process of exhibition-making does necessarily involve these two and other methods, and museums – and more specifically exhibitions – can very well be understood as 'laboratories' in that sense (Macdonald and Basu 2007, p. 2). Macdonald and Basu insist that exhibition-making involves an 'experimental practice' and that exhibitions are 'sites for the generation rather than reproduction of knowledge and experience', being 'experiments in meaning-making' (pp. 2–3; see also Hauser 2010, p. 52). Referring to Paul Feyerabend's understanding of a 'really creative science', relying rather on 'imagination and critical faculties' than on methodological rules, Pickstone advocates a pluralistic understanding of ways of knowing and the breaking down of 'the supposed boundaries of "science" and the supposed exclusivity of "scientific" method' (Pickstone 2000, p. 208). Drawing on the ideas of Charles Newton, Whitehead even takes an all-encompassing way of knowing into consideration, in which all human-made objects might be viewed as works of art, thus overcoming both established museological hierarchies and disciplinary boundaries (Whitehead 2009, pp. 135–136). These positions are all at least worth considering when it comes to achieving a better understanding of the making of interdisciplinary exhibitions, which may also involve the encounter of art and science.

2.3.3 The dialogical and narrative qualities of temporary exhibitions

Apart from innovation and experiment, two other key methods of exhibition-making have been discussed increasingly in recent years – dialogue and narrative (see, for example, MacLeod et al. 2012). The following statements by professionals underline the social and dialogical potential of exhibitions and their communicative aims and challenges. Nicholas Thomas describes the 'museum as method' as a 'distracted meditation on larger histories [...] that throws wide open the questions of history – what [...] are we to remember and consider significant?' (Thomas 2010, p. 8). The Swiss exhibition curator Angeli Sachs says, 'A really good exhibition has to leave an overall impression that stays in your mind for a long time.' And she adds that this impression 'is incorporated within the bigger picture which constitutes our understanding of culture' (Tabassomi

2010, p. 17), reminiscent of Whitehead's above cited notion of exhibitions contributing to our 'theorizing of the world'. In the same publication (a collection of interviews), exhibition curator Francesca Ferguson describes an exhibition as a 'social room which brings together the broken pieces of our times, in a conscious opposition to the fleeing images of the media world' (p. 25). Following this argument, she underlines the importance of thematic rather than monographic exhibitions. Exhibitions are 'rooms for reflection' and have the 'potential for dialogue' (p. 26, see also Latour 2005, p. 15). Macdonald and Basu emphasize that exhibitions 'must be understood as sites of cultural mediation […], a process that partly constructs that which it mediates' (Macdonald and Basu 2007, p. 11). 'The challenge for exhibition makers is to provide within exhibitions the contexts and resources that enable audiences to choose to reorganize their knowledge' (Karp 1991, pp. 22–23) or to even learn something entirely new. Baxandall describes the exhibition as an active (not static), dialogical field involving at least three independent players or 'agents': 'makers of objects, exhibitors of made objects, and viewers of exhibited made objects' (Baxandall 1991, pp. 36–37), all three of them forming a 'social occasion.' He stresses that the exhibition-maker's role is rather a stimulating one, which takes into account that they are not the only player on the field (p. 41).

The dialogical quality of exhibitions is closely related to the notion of some authors describing exhibition-making as storytelling, for example Hoffmann who uses the phrase 'dramatic construction' for exhibition concepts (Hoffmann 2015, p. 56). Heinich and Pollak have discussed comparing exhibition curators to 'auteurs', similar to the role of film directors, in order to stress the creative and artistic aspects of curatorial work (Heinich and Pollak 1996, pp. 238–241, see also Arnold 2015 about Robert Storr, p. 331). For Peter Jetzler, former director of the Historisches Museum Bern, exhibition-making is all about good storytelling. In addition to other skills, an exhibition curator should have an 'artistic attitude' as curating is, for Jetzler, an 'applied art' and 'an exhibition can become an artwork in its own right' (Tabassomi 2010, pp. 13–14). As a historian, Jetzler is not only talking about art exhibitions here but about exhibitions in general. Crew and Sims, taking a similar stance to Baxandall, have made the very important point that it is not only curators who create an exhibition's narrative, because an independent 'narrative is being constructed by the audience, whether the exhibition developers like it or not' (Crew and Sims 1991, p. 173). Robert Storr has analysed and questioned the stories told in art exhibitions and their accompanying catalogues, arguing that it is important not to 'impose meaning' but rather to 'offer proposals for meaning', and that 'exhibition-

makers [should] contribute by facilitating this expansion of meaning rather than containing it' (Storr 2015, p. 31) – a piece of advice that is certainly true not only for art exhibitions. The exhibition designer Xavier Bellprat is more confident about storytelling than Storr, saying that exhibitions are still a very powerful medium – despite the internet – because they are creating 'narrative environments' which provide a context and structure for the shown contents and materials' (Tabassomi 2010, p. 9).

However, exhibition visitors are comparatively free in how they understand and move within this narrative, and they have the possibility to interact with objects, which are in most cases not part of their everyday lives. Thus, the exhibition can be received as an immediate experience by its visitors, setting it apart from other indirect media of presentation (Flügel 2014, p. 110). For exhibition curator Roger Fayet exhibitions are also still important because of this specific way of reception, a 'mature' way, in which the recipients have 'a great amount of freedom' (Tabassomi 2010, pp. 21–22), also for developing an exhibition narrative of their own. As Hanks, Hale and MacLeod have pointed out, 'all narrative is constructed, and therefore contested [...], but that capacity for provocation is precisely where its creative potential lies' (Hanks et al. 2012, p. xxiii).

Summing up this part of my literature review, it can be stated that exhibition-making combines both academic and artistic methods (obviously being fluid categories) such as analysing, structuring, classifying, focussing, selecting, experimenting, contextualizing, visualizing, storytelling, and enabling dialogue and public discussion. Exhibitions 'being fictional constructions as well as based on scholarly factual research [...] reside at the interface of scholarly and artistic practice' (Hauser 2010, p. 49).[7] And exhibition-making means being prepared to discover new knowledge, not only on the visitors' side, but primarily by curators during the process of developing exhibitions (p. 50). How these research processes of exhibition-making play out in interdisciplinary settings, will be subject of the case studies in chapters 4 to 6.

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7   The first case study of this book about the transdisciplinary exhibition *TOUCHDOWN. An exhibition with and about people with Down's syndrome* will be a good example of an exhibition matching this definition.

2.4 Outreach and interdisciplinarity: The academic world in relation to the collaborative cultural practice of exhibition-making

Pleas for reaching out to society and engaging with the 'real world' can be found in both the recent literature in museum studies (see, for example, Lehmann-Brauns et al. 2010; Dahlgren and Hermes 2015) and the literature on academic research (see, for example, Jungert et al. 2010; Barry and Born 2013). Museums and universities have both discussed and developed strategies for outreach and for opening up to the public, in order to play an important role within society, both for idealistic and economic reasons. The Deutscher Museumsbund together with ICOM (International Council of Museums) Germany published the revised 'Standards for Museums' in July 2023,[8] stating that: 'Museums are forums of public discourse [... and] react to social, political, and economic changes' (p. 13). Furthermore, museums are 'social meeting points that actively include their environments and communities into their own work' (p. 13, both quotes transl. HP). The visitor's perspective seems to meet these goals. According to the 2013 report 'Unpacking exhibitions' by the research consultancy Morris Hargreaves McIntyre (a market analysis commissioned by sixteen cultural venues in London), exhibition visitors are longing for cultural activities which provide a social and meaningful experience,[9] and they are very much interested in activities that increase their knowledge or enable them to take on a new perspective, learn a new skill or a new appreciation (Morris Hargreaves McIntyre 2013, p. 9), a result that would certainly also apply to the German situation.

Although closely linked in many ways, both institutional entities being places for the production and transfer of knowledge, the relationship between universities and museums is sometimes still described and experienced as 'delicate' (Lehmann-Brauns et al. 2010, p. 5) or 'uneasy' (Souhami 2011, p. 8, see also Norton-Westbrook 2015, p. 351). One of the reasons for this might be the assumption that there must be a dividing difference between academic and cultural or artistic products. Academic products have been described as indulging in 'exclusionary practices', and as being too complicated and aloof, and have been viewed as being disconnected from the 'ordinary' world (Dahlgren

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8   https://icom-deutschland.de/images/Publikationen_Buch/dmb-leitfaden-standards-fuer-museen-online.pdf (last accessed 24 August 2023).

9   This is probably even more the case after the COVID-19 pandemic.

and Hermes 2015, p. 132, see also Huber 2011, p. 232). Whereas cultural products – meant here as products of popular culture which are accessible by the public – have sometimes been regarded from an academic point of view as being too simplistic or even populist, and in their attempt to convey knowledge to a wider public supposedly not reaching up to academic standards (Huber 2011, p. 232). Marilyn Strathern and Elena Khlinovskaya Rockhill, two social anthropologists who have critically analysed the public engagement strategies of the Cambridge Genetics Knowledge Park, an interdisciplinary research centre, nevertheless stated (at least for the realm of the natural sciences) that 'the relationship between science and society has shifted from a deficit model of public understanding never catching up with science to a proactive hope for public engagement with science' (Strathern and Khlinovskaya Rockhill 2013, p. 119). Dahlgren and Hermes are citing and supporting John Hartley's[10] plea for overcoming the divide between the 'knowledge class' and the 'ordinary people', 'as both are relevant sites of knowledge production' (Dahlgren and Hermes 2015, p. 132). Furthermore, they are supporting the development of public knowledge by saying that 'if democracy is deliberation by many on the best life possible for all, popular culture is the place where it will happen' (p. 131).

With regard to recent developments in the social and natural sciences, Andrew Barry and Georgina Born analyse the relatively new interdisciplinary field of 'art-science' (Barry and Born 2013). This field is dedicated to a curiosity-driven and science-inspired production of art as an interpretation of scientific knowledge, which has the potential to be inventive and to re-inspire academic research, forming a 'heterogeneous space of overlapping interdisciplinary practices at the intersection of arts, sciences and technologies' (p. 248). This space is not only seen as an internally productive experiment for innovation within universities, but also as a powerful instrument for outreach to the public, using the arts as a means of communication (p. 254), contextualization and potentially even as a research method (see also, for example, Hansen et al. 2019). In this respect Barry and Born are citing Helga Nowotny (Nowotny et al. [2001] *Re-Thinking Science: Knowledge and the Public in the Age of Uncertainty*. Cambridge: Wiley, pp. 256–257):

> The idea of 'contextualization' […] depicts a greater level of interaction than before between the production of knowledge, the context of its application and relations with citizens or publics. […] At stake is a process in which the

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10   Hartley, J. (1999). *Uses of Television*. London: Routledge, pp. 58, 59.

context of knowledge production is something that has to be made, not just through the work of scientists but through interdisciplinary practices involving a series of other institutions and professions as well as publics (Barry and Born 2013, p. 247).

Amongst the theoretical literature on academic research (and more specific on the history and theory of science, in a broader sense, and the disciplinary structure of universities), the debate on interdisciplinary research in particular is, by definition, advocating the crossing of disciplinary and even institutional boundaries, reaching out to other places of knowledge production and education as well as other stakeholders of society. This most radical form of academic outreach within the scope of interdisciplinary research activities is defined as transdisciplinarity. The body of literature about interdisciplinary research (summarized in the substantial handbook by Frodemen et al. 2010) is of great interest regarding my research question which aims to explore the potential of interdisciplinary exhibition-making to produce knowledge.

Both in the academic and cultural sectors the complex reality of interdisciplinarity projects seems to be leading to a considerable number of obstacles as 'doing interdisciplinarity differs from "talking" interdisciplinarity' (Graff 2015, p. 236). However, from an academic point of view, interdisciplinarity is more and more understood as a necessary condition when it comes to being inventive and to '"solving problems" that fall outside the domain, traditions, or intellectual resources of any given discipline' (p. 236). Like many other academic institutions, the University of Manchester, for example, also states that its vision and strategic plan 'points to a future where we will expand our world-leading research to address the most challenging global questions and exploit our capability for interdisciplinary research.'[11] At least in the last two decades interdisciplinarity has sometimes been used as an almost inflationary 'buzzword' (see, for example, Moran 2010, p. 1), a fact that causes Harvey Graff to ask, 'Is there more heat than light in all the fuss over interdisciplinarity?' (Graff 2015, p. 215). Both academic and cultural projects are increasingly demanded to be interdisciplinary (and participatory) in their respective research strategies not only by their own claim and design, but also by decision makers and funding organizations (for museums, for example, Arnold 2015, pp. 321, 322). This is especially true with theme-oriented projects and mission strategies that transcend the still persisting disciplinary structures (Weingart et al. 2014, p.

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11   https://www.manchester.ac.uk/discover/vision/ (last accessed 5 April 2023).

155) and seek for societal and political legitimacy (p. 163). Although a self-acclaimed 'believer' in interdisciplinary collaborations, Graff states that 'the history of interdisciplinarity is littered with great expectations and disappointed hopes' (Graff 2015, p. 215) and warns of 'the dangers of exaggeration, excessive claims of novelty, and imitation' (p. 236).

Apart from Graff's well-balanced discussion of the history of interdisciplinary research, the available literature on interdisciplinarity includes a considerable number of theoretical books and articles as well as practical handbooks, the latter promising to help with the obviously difficult reality of interdisciplinary collaborations. Peter Weingart describes the problems of implementing interdisciplinary research in great detail (Weingart et al. 2014, pp. 163–167). The theoretical and practical discourse on this only seemingly new, and politically highly acclaimed, academic practice ranges from the fear and rejection of 'dissolving disciplines' and 'undisciplined knowledge' (for example discussed by Robert Frodeman in: Weingart 2014, p. 191), to praising the creative potential and productively chaotic qualities of interdisciplinary research (several of the listed sources, for example, Moran 2010), and further on to even turning interdisciplinarity itself into a discipline of its own (see, for example, Bammer 2013). Weingart rightly says that 'the juxtaposition of disciplinarity and interdisciplinarity is misleading as the uptake of problems that arise outside science is but the continued expansion of the scientific method to new phenomena'. In this quote Weingart is supporting an inclusive and, by definition, transdisciplinary understanding of academic knowledge and 'real world' issues, advocating what he calls a 'knowledge society' (Weingart et al. 2014, p. 172), a phrase which I would understand as a generally educated society. Most academic and cultural institutions claim in their mission statements to have an educational mandate. The term 'education' traditionally has a very important function in synthesizing, uniting, and combining disciplined portions of knowledge (Hartmut von Hentig, in: Kocka 2015, pp. 48–49). Furthermore, the concept of general education (the general knowledge and abilities of an educated individual) is clearly acknowledging the fact that our daily lives – our realities – are interdisciplinary, and not (only) structured in disciplines (see Klein 1990, pp. 22–23).

From reading the literature on interdisciplinary research, I conclude that much can be learnt for the territory of interdisciplinary exhibitions, a territory that still seems to be rather unexplored theoretically. And, as discussed above, this type of exhibition could also very well serve as an experimental field or laboratory for the academic world. Museums and other exhibition spaces should

therefore try to establish closer ties with universities in order to further introduce them to exhibition-making processes and their potentials as possible research methods. The UK seems to be leading the way in such collaborations,[12] whereas for example in the otherwise impressively comprehensive *Handbook for Inter- and Transdisciplinary Projects* (Defila et al. 2006, published in German language), which was funded by the Austrian, German, and Swiss Education and Research Ministries, exhibitions are not listed or even mentioned as an educational option in a long list of possible academic products (p. 152). Although this handbook states that the academic world should not isolate itself and instead play a certain role within the overall cultural realm (p. 30), culture as such is merely considered as a competitor for financial resources, and not as a potential collaborator (p. 247). This gap may not be as wide anymore today as it was almost two decades ago, but it is certainly true that at least in the German speaking countries exhibitions are still not automatically seen as a potential tool in higher education,[13] and even less so as a possible research method. Apart from looking at temporary exhibitions, it might be worth exploring and comparing the conditions and experiences of university museums in the UK and Germany to achieve a better understanding regarding this question beyond what can be achieved within this book.

In comparing the theoretical and practical debate on interdisciplinary academic research to the museological discourse on the role and function of curators and the process of exhibition-making, very interesting parallels can be found, as the methods and experiences of interdisciplinary researchers at universities are seemingly very much alike to those of exhibition curators in gen-

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12   In the UK for example AHRC Skills Development funded projects or networks like the National Co-ordinating Centre for Public Engagement (NCCPE): https://www.publice ngagement.ac.uk/do-engagement/partnership-working/working-with-museums-an d-libraries and its Museum-University Partnership Initiative (MUPI): https://www.pu blicengagement.ac.uk/nccpe-projects-and-services/completed-projects/museum-un iversity-partnership-initiative (both last accessed 5 April 2023).

13   Experiences from my latest interdisciplinary exhibition *The Brain. In Art and Science* at the Bundeskunsthalle in Bonn (28 January – 26 June 2022) have again shown how inspiring and, in fact, educating the format of the exhibition can be, in this case, for several groups of students in neurology, philosophy of the mind and other related disciplines. And this effect was not only experienced in a passive receiving mode but inspired seminars and workshops, for example, at the philosophy department of the Otto von Guericke University Magdeburg, which has an interdisciplinary focus on neurophilosophy chaired by Sascha Benjamin Fink.

eral and more specifically curators of interdisciplinary exhibitions. Klein has offered a very telling and still valid analysis of the 'rhetoric of interdisciplinarity' (Klein 1990, pp. 77–78). Disciplines tend to describe themselves and their relationship to others in the language of geopolitics. They control their 'territories', 'properties', 'patrolled boundaries', fearing 'alien intrusion' and 'intellectual migration', whereas interdisciplinary programs are called 'poorly charted waters' or the 'Switzerland of academia'. Klein writes that the ideal 'interdisciplinary individual' should rather be 'combining the résumés of Aristotle and Alexander' (quoting Walter Baer)[14]. Aside from being characterized 'as a good "ringmaster", a "bridge specialist", "gatekeeper" [...], "dynamo" [...], "metascientist", "generalist"' (p. 131), the following abilities are additionally ascribed to 'interdisciplinary individuals: not only the general capacity to look at things from different perspectives but also the skills of differentiating, comparing, contrasting, relating, clarifying, reconciling, and synthesizing' (p. 183). Clearly, interdisciplinary researchers must have abilities that are very similar to the abilities and skills of exhibition curators. Could both interdisciplinary researchers and exhibitions curators perhaps learn from each other regarding the theorization of their production processes as well as their practical methods and experiences?

2.5 The curator's role in interdisciplinary exhibition-making

What exactly is a curator? The term 'curator' is nowadays 'at once remarkably vast and dangerously undefined' (Basualdo 2015, p. 60). In his pointed analysis of what he calls 'curationism', David Balzer deduces the term curator as follows: '"Curious" and "curator" both have the same Latin root, "cura"; "care" in Latin connotes both custodianship and taking an interest in something' (Balzer 2015, p. 28, for an etymological explanation see also Arnold 2015, pp. 327–328). Curators are rooted in academia as they have studied there themselves – for example, history, anthropology, art history, archaeology, natural sciences etc. – and have initially become specialists. Many of them work as curators of specific collections: they are 'researchers, commissioners, keepers, interpreters, producers, and collaborators' (subtitle of *The New Curator*, Milliard et al. 2016).

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14   Baer, W. S. (1976). 'Interdisciplinary policy research in independent research centers', in: *IEEE-TEM (Institute of Electrical and Electronics Engineers) Transactions on Engineering Management*, 23(3).

On top of their academic qualification and specialist knowledge they have acquired a number of these very practical skills. McCarthy states that this is not a linear process, but rather a flexible exchange in which 'academics are immersed in practice' and 'professionals in the field become researchers' (McCarthy 2015, p. xliv). Apart from collection based curators there are independent exhibition curators – mostly in contemporary art, some of them having reached stardom (see, for example, Balzer 2015, pp. 7–21; Arnold 2015, p. 332) – and curators like myself who work in institutions without a collection (for example exhibition halls or centres) developing and producing temporary exhibitions on various topics from the fields of art, art history, cultural history, ethnography, and natural sciences. Exhibition curator Roger Fayet describes curators as 'hybrid all-rounder[s]', saying that 'making exhibitions means to be an academic, a philosopher, an artist, a designer, a manager, a coordinator, a coach, an accountant, a speaker and a museum education officer' (Tabassomi 2010, pp. 21–22). 'This hybrid quality of curatorial work – caught somewhere between thinking and doing – makes it all the more challenging to examine', writes Halona Norton-Westbrook in her very useful summary of curatorial theory (Norton-Westbrook 2015, p. 343).

Thus, curating is defined as a practical profession based on profound academic knowledge and longstanding experience (Norton-Westbrook 2015, p. 349), rather than an academic discipline in itself. However, it has been widely discussed (and the discussion is dominated by curators of contemporary art), whether curating has the potential to become an independent academic discipline or even a sort of meta-discipline comparable to philosophy, which viewed itself as such for centuries (Moran 2010, p. 7). I would not want to overrate the curator's function and position to that extent, but their ability to mediate and cross-cut between academic disciplines should not be underestimated either. Whereas Norton-Westbrook describes the growing professionalization of curatorship (though with changing and accumulating purposes) in an historical overview (Norton-Westbrook 2015, pp. 344–348), Heinich and Pollak have observed a de-professionalization in the fact that the curatorial field especially in the realm of exhibition-making has opened up to people with all sorts of careers and qualifications claiming the title of a curator (Heinich and Pollak 1996, p. 238, see also Arnold 2015, p. 327). The admittedly confusing reality is probably that both observations have weight depending on the context.

The question, whether curating is a discipline in itself, again shows interesting similarities to the academic discussion, whether interdisciplinarity has

the potential to become a discipline in its own right. In 1990 Klein offered a still convincing definition, although the science theoretical discipline of interdisciplinary studies has since been established all the same.

> Interdisciplinarity is neither a subject nor a body of content. It is a process for achieving an integrative synthesis, a process that usually begins with a problem, question, topic, or issue. [In this process] individuals must work to overcome problems created by differences in disciplinary language and world view (Klein 1990, p. 188).

Analogous to this crucial basic definition of interdisciplinarity as a process instead of a discipline, curatorial work could simply be understood as the process of making exhibitions, and I personally like the more hands-on ring of being called an exhibition-maker. Just like interdisciplinary researchers, exhibition curators employ methods such as the translation (see Souhami 2011) between different terminologies, object categories, and media, as well as the development of a visual and rhetorical curatorial language that is able to unite heterogeneous contents and materials, and the mediation between different working cultures, in order to create a bigger picture on a given topic.

Working in a cultural institution that conceptualizes and produces a multidisciplinary programme, I am especially interested in curators that are able to take on a generalist's perspective – like interdisciplinary researchers – based on their original academic knowledge, but transcending it for a wider approach, while at the same time still being capable of focussing on detailed questions when required (very similar to the concept of 'bridge scientists', Klein 1990, p. 131).

In 2015, Paul O'Neill and Mick Wilson have published an anthology on the question of research within contemporary curating, in which Simon Sheikh's contribution is especially thought-provoking. Sheikh tries to define curatorial ways of knowledge production and research – for the realm of art exhibitions – and their relation to other forms of research (Sheikh 2015, p. 35), differentiating between the terms 'recherché [...] understood mainly in terms of journalistic research' and 'forschung' which 'implies a scientific model of research' (p. 37). Whereas almost any exhibition involves research in a journalistic sense, 'not all exhibitions can truly be thought of as forschung – lacking a thesis, proposition or laboratory' (p. 39). But Sheikh is, in fact, questioning this exclusive duality of research modes and 'forms of authorisation' within the 'overall culture of research' and advocates an artistic research practice which 'is not necessarily

concerned with authorisation' (p. 46). One might ask though whether the urge to (unnecessarily) legitimize this artistic practice explains the attempt to subsume it into an 'overall culture of research'.[15]

Jens Hoffmann argues in a similar direction, saying that

> curators should ideally be curious and inquisitive human beings. They must feel compelled to wrestle with, study, and analyse essential questions of the human condition. And since these questions relate not only to the production of culture but also to the creation of histories and even reality itself, curators should consider themselves as operating outside the borders and the confines of traditional academic modes of inquiry (Hoffmann 2015, p. 83).

Though supporting Hoffmann's emphasis on curiosity as an important ingredient of curatorial work, my notion would be that exhibition curators and academic researchers, while preserving their different perspectives, should rather build even closer ties within and across the respective 'borders and confines' than they are doing already, instead of curators 'operating outside' these boundaries, especially when it comes to joining forces to tackle socially relevant topics.

Whereas authors like O'Neill, Sheikh, and Hoffmann discuss a wider curatorial approach from the perspective of art curators, Ken Arnold, a former curator at the Wellcome Collection, investigates the role of curators from the perspective of an interdisciplinary science museum (see also Barry and Born's discussion of the interdisciplinary field of art-science, mentioned above). In his handbook contribution 'From Caring to Creating. Curators Change Their Spots', Ken Arnold advocates the role of the curator as a 'public investigator', identifying a 'new breed of science curators' who intent to reach out 'from their home territory into other domains' (Arnold 2015, pp. 332–333), exploring their topic 'within a broad cultural context, rubbing shoulders with concerns emanating from the arts and humanities' (p. 334). Arnold (p. 322) and Norton-Westbrook argue for conceiving disciplinary boundaries as 'more fluid than they appear', saying that there is a yet 'unexplored commonality [...] between the curatorial work performed in museums of art, science, history, and anthropology' and an obvious shift toward interdisciplinary curatorial work in

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15   I also find the stereotype choice of the terms *recherché* (implying the cliché of a more relaxed French attitude) as opposed to *forschung* (implying the cliché of a sterner and stricter German attitude) problematic.

recent years (Norton-Westbrook, p. 342). In this respect Norton-Westbrook is in line with Oey and Skramstad's notion of the intrinsic interdisciplinarity of museum work quoted in the introduction to this book.

2.6 Conclusion

In this literature review I have focussed on discussing a specific type of exhibition that is characterized by being temporary and thematic regarding its content. Furthermore, I have established arguments showing that this type of exhibition-making can serve as a research method. This is even more the case in a knowledge-integrating setting of an interdisciplinary exhibition, especially on themes that require multiple perspectives. Throughout this book I advocate the making of temporary interdisciplinary exhibitions that involve a certain amount of experimentalism. Moran writes, 'If a certain *messiness* [emphasis added] goes with the territory of interdisciplinarity, this is also what makes that territory worth occupying' (Moran 2010, p. 180). Talking to a very experienced exhibition curator and former museum director about my research question, he volunteered a very interesting piece of advice. He had just finished curating a large exhibition on the rain forests involving several academics from various disciplines. He said to me, half in earnest, half in jest: 'Always remember to speak to those people individually, and never let them speak amongst themselves, or you will end up in a complete mess.' This piece of advice left me quite surprised and, by the way, taught me the important terminological difference between a multidisciplinary and an *interdisciplinary* exhibition. A multidisciplinary exhibition would present its topic with an encyclopaedic selection of pieces of content arranged by a single curator. The result can be very enlightening, but probably not so much the curatorial process itself. Whereas, in my understanding, an *interdisciplinary* or even transdisciplinary thematic exhibition would attempt to create something new by allowing a productive and creative dialogue between the participating disciplines. Exhibitions like these will at some point within the process of making them inevitably be a mess – a chaos –, but a creative one. Thus, interdisciplinary exhibition-making requires openness and flexibility instead of a set recipe, but, on the other hand, the same openness can only too easily lead to a random and unsatisfactory result. The necessity of deeply thought through ideas and carefully developed concepts has therefore to be emphasized (see Tyradellis 2014) in order to meaningfully unite the often disparate materials in interdisciplinary thematic exhibitions. Addi-

tionally, on reviewing the literature, it seems there is a need to think about collaborative standards for such exhibitions, as suggested in the introduction to this book. Two theoretical and methodological tools that have emerged in this literature review seem to be most promising to that end.

Firstly, for understanding what interdisciplinary exhibitions are and how they are conceptualized and produced, the method of individual case studies or 'ethnographies of exhibition-making' (Nicolescu 2016, p. 466) seems to be more useful than starting from analysing already established typologies of temporary exhibitions, because this specific type of exhibitions has not been thoroughly theorized yet. Therefore, one of the aims of my research is to contribute to a better understanding and perhaps even a typological description of interdisciplinary exhibitions. The focus of studying such individual cases will be on the processes of exhibition-making and on the relationships and hierarchies amongst the involved participants. How can a disparate group of specialists develop a joint clear and convincing exhibition concept? Does it take both specialists and generalists to create the format of interdisciplinary thematic exhibitions, and what are their respective roles? What is the curatorial work like that is capable of bridging disciplinary gaps in an enlightening, engaging and perhaps even entertaining way? And how is the relationship between the academic and museum worlds affecting the production of temporary exhibitions? By comparing their respective ways of using and working with an interdisciplinarity method, I want to advocate a productive and inspiring relationship between the worlds on and off campus.

Secondly, for a detailed description of the processes of making interdisciplinary exhibitions it seems helpful to develop a more refined vocabulary with regard to the general term interdisciplinarity and its application to a museum context. Therefore, the most important theoretical and methodological tool for my research will be Klein's taxonomy of interdisciplinarity (as described in section 2.2) as it allows to differentiate between multi-, *inter-* and transdisciplinary exhibitions.

When differentiating between these subtypes of interdisciplinary exhibitions, as I will do in greater theoretical detail in chapter 3 and in a more practical analysis in the case studies (chapters 4 to 6) of this book, it must be taken into account that each has their strengths and weaknesses, and perhaps – if seen as different methods – they could even be fruitfully combined within one exhibition. Therefore, it does not make sense to be too strict about these cat-

egories.[16] I suggest treating them as sometimes overlapping, open categories. Similar to the degrees of interdisciplinary collaboration defined by Klein, the scale from multi-, *inter-* to transdisciplinary exhibitions describes a growing intensity of cooperation and integration among different partners. Here, I will primarily look at the process of exhibition-making from the perspective of its participants, rather than the audience's perspective. Of course, the different levels of audience engagement and participation must likewise be analysed but they are not the research focus of this study. The following three paragraphs will offer an initial description of multi-, *inter-* and transdisciplinary exhibitions borrowing Klein's taxonomy. This description will be elaborated on in chapter 3.

Multidisciplinary exhibitions can be characterized as encyclopaedic and accumulating pieces of knowledge often grouped by disciplines. They can be of high didactical value, for example, by providing an overview on a specific topic. But exhibitions of this type do only rarely have the potential to produce new knowledge in the process of making them. They are typically conceived by a single curator controlling their development and production process, drawing on various disciplines without enabling a discourse between them.

Interdisciplinary exhibitions (in a narrower sense) involve a productive exchange of knowledge and a joint process of exemplifying, visualizing, displaying and conveying knowledge. These exhibitions are not necessarily ordered by disciplines but rather by thematic questions, often problematizing them in a discursive and intellectually inspiring and productive way. By asking questions and suggesting solutions, they have the potential to spark new ideas and research questions. This type of exhibition could serve as an academic product and experimental territory for academic researchers.

Transdisciplinary exhibitions are bridging the gaps between the academic, cultural, and social worlds, overcoming hierarchies of knowledge, for example by including artworks and objects of everyday life in a more radical way. They are experimental (and sometimes unconventional) in a wider sense, creating larger narratives that reach their audiences in a multifaceted way – intellectually, emotionally, and aesthetically. But the most important feature of this kind of exhibition is that they involve a more heterogeneous group of participants on the producing end, and often also a more intense level of participation by

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16   See Vienni-Baptista, B. (2023). Bianca Vienni-Baptista is arguing for a productive fluidity of the taxonomy of interdisciplinarity, which allows for different understandings of *inter-* and transdisciplinarity.

visitors. They specifically aim at including other stakeholders of society into the production process.

The Wellcome Trust with its collection and exhibitions has certainly been a very good example of *inter-* and transdisciplinary exhibition-making:

> We believe the arts are an effective way of stimulating debate and engaging people with biomedical science. Visual arts, music, moving image, creative writing and performance can reach new audiences which may not traditionally be interested in science. Collaborative and interdisciplinary practice across the arts and science can help to provide new perspectives on both fields (Wellcome Trust 2009, in: Barry and Born 2013, pp. 253–254).

Arnold emphasizes that this and other similar institutions are encouraging 'idea-led' temporary projects 'to bring into intriguing, sometimes iconoclastic, juxtaposition elements and demonstrations of real things, real expertise, and real experiences' (Arnold 2015, p. 334).

Another outstanding example for an *inter-* and transdisciplinary exhibition including 'artistic insights and practices' was *Assembling Bodies: Art, Science and Imagination* at the Museum of Archaeology and Anthropology of the University of Cambridge in 2010. The curators described the process of selecting and contextualizing interdisciplinary concepts and objects of how bodies are known and imagined as a most fruitful research process itself. The exhibition succeeded in both being 'research-driven' and 'question-raising' and at the same time amounting 'to a visual and sensory feast'. It emerged from a 'cross-disciplinary project' and set in motion a 'process of exploration and experimentation' that carries on in the discussions and reflections of both exhibition-makers and visitors alike (Nicholas Thomas in: Herle 2009, p. 5, see also Herle 2013 and Bjerregaard 2020, p. 21).

Ken Arnold's description of the curator as a 'curiosity-led public researcher' (Arnold 2015, p. 335) brilliantly sums up the kind of curatorial work I strive for and would like to reflect on in this research. This is a curator who has the sovereignty and institutional means and possibilities to do both – creative and artistic work as well as profound research – in public, enabling them as well as the audience to 'think out loud' (p. 335).