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Exhibition practices in design education

Conceptualising display principles for layered and multifaceted knowledge production

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Abstract

This article explores the knowledge-producing potential of exhibition practices in design education. Through the conceptualisation of five display principles – cosmos, series, table, milieu and staging – it investigates how different types of spatial organisation can produce different kinds of knowledge about artefacts in an exhibition context. These display principles are initially conceptualised by drawing on museological theory on museum display and are then used to analyse four examples of exhibition practices within design teaching at the Royal Danish Academy – Architecture, Design, Conservation. Through these case analyses, the conceptualisations of the five display principles are further developed, and their potential for investigating, advancing, and communicating design processes and outcomes within design education is discussed.

Introduction

Design practice will always involve moments of reflection and consideration regarding what is being created, both during the process of creation and upon completion of the final design product (Schön, 1983). These moments of reflective practice may occur within the individual designer's workflow, in conversation with fellow designers, clients and other types of stakeholders, and may be more or less formalised and planned. In design education, we typically support and conduct such reflections through tutorials, mid-term feedback sessions and exams and sometimes we use the exhibition as a format. That is, we create a spatial organisation of artefacts that allows us – students, teachers and audiences – to experience and understand the artefacts on display in particular ways.

At the Royal Danish Academy – Architecture, Design, Conservation, exhibitions are used in a variety of ways. Apart from the more formalised exhibition events, both on and off campus, where objects are curated and placed within an institutional exhibition framework, exhibitions also function as didactic tools within teaching, both during courses and as final events. This article will focus on the exhibition of design products and processes as a didactic tool within design teaching at the Royal Danish Academy and will raise the following question: What kind of knowledge can different types of spatial object organisation and display practices within design education produce? The aim is to develop and cultivate an awareness of knowledge production in exhibition practices within design education and to create a vocabulary and toolkit for analysing and discussing the knowledge that artefacts express and reveal when they are organised and displayed in different ways.

In recent years, the idea of 'exhibition as research', which emphasises how knowledge is produced in the planning, installation and experience of exhibition displays, has become

established in museum practice and research (see, for example, Bjerregaard, 2019; Bäckström, 2021). Rather than considering exhibition making as a matter of displaying pre-existing knowledge about museum objects and the stories they represent, the 'exhibition as research' approach emphasises the knowledge-producing practices of the exhibition itself. In a design exhibition context – both in design museums and design education – this means that the knowledge produced can go beyond the final design products and/or the fixed narratives and interpretations associated with them and can also have a more explorative and analytical outcome. That is, exhibition setups can be used as a way of getting to know the artefacts rather than presenting an already established idea about them. A similar position has also been taken up within practice-based and practice-led design research, where exhibitions are often an important part of the research itself rather than simply its dissemination (Jönsson et al., 2013; Niedderer et al., 2006; Tang & Nakarada-Kordic, 2022). Likewise, contemporary curatorial practices in design museums are beginning to focus more on the production of design objects, meaning that exhibition displays have shifted from emphasising the purely aesthetic qualities of design objects to a more plural engagement with design processes and contexts (Loveday, 2022; Myzelev, 2017). Thus, when the present article emphasises exhibition making as a knowledge-producing practice, where the specific display principles influence how and what knowledge is produced, it reflects broader tendencies within museology, (design) museum practice and design research alike.

As mentioned above, exhibition practices play a significant role at various levels in design education, from the small object arrangements students create on their desks in the studio to the presentation of student projects on external exhibition platforms. We have chosen to focus specifically on the organisations of artefacts that are explicitly framed as an exhibition and take place within the academy. We include cases where the exhibition activities took place within courses and where the intention was to communicate and analyse design work internally among the students and teachers involved. Furthermore, we include examples of more externally oriented exhibitions in which design work is communicated to both an internal academy audience and a wider public. However, when analysing the latter, focus is on the students' knowledge production and learning and not on the aspect of external communication as such.

The selected exhibition examples will be analysed through five different conceptualisations of spatial object organisation and knowledge production in relation hereto: *cosmos*, *table*, *series*, *milieu* and *staging*. The conceptualisations of these principles are initially framed according to museological perspectives on exhibition typologies and display principles derived from different periods of museum history and from different museum typologies. The decision to base the study of exhibition practices in design education on display principles developed in a museum context rather than, for example, design shops or design

fairs, has to do with the fact that the core of museum practice is about knowledge production, similar to teaching and research in academic institutions. Moreover, design museums play a key role in generating and communicating knowledge about contemporary and historical design objects in a way that reflects the purpose of an institution such as the Royal Danish Academy. However, as this article will show, there are several more similarities and potentials if we move away from the institutional level of 'museum' and 'academy' and zoom in on the very specific display principles used. This is especially true if we think of exhibition as a knowledge-producing practice.

Although the exhibition objects involved in the chosen cases are design artefacts and products, we do not limit the museological context of the study to design museums per se but include a wider range of museum types as well as historical museum practices. We partly build our conceptualisations on the early Kunstkammern, which were developed in the 16th and 17th centuries and are considered forerunners of museums as we know them today (Impey & MacGregor, 1985; MacGregor, 2007). Furthermore, we draw on display principles developed in the so-called 'modern museum' in the 18th and 19th centuries, as well as display strategies in contemporary museum practice. Of course, such an ahistorical approach has certain pitfalls, not least in terms of carrying forward 'outdated' epistemological systems and ways of knowing. It is therefore important to stress that even though we draw on organisational principles developed within historical epistemological systems, we focus on how these principles can produce knowledge within a design education context, where the exploration and development of ideas is more important than the production of definite and excluding knowledge. Thus, relating more to the contemporary 'exhibition as research' approach mentioned above, than to historical ways of producing museum knowledge. That said, the ahistorical approach can also be seen as reflecting the fact that museum display principles do indeed tend to travel through time and contexts. For example, in museums today – not least in design museums – we see collection displays that make use of a 'Kunstkammer effect', for instance, by collecting similar objects and/or types of material and emphasising the visual effects of their multitude. Similarly, the principle of chronological display, which developed in the 19th century, is still very much a part of museum display practice today and across a wide range of museum typologies. Overall, it can be said that although different stages in the development of museums have fostered specific exhibition strategies and standards, display principles have also travelled across time and museum/exhibition types and continue to do so today (Etz et al., 2024). In the present study, they make a further leap into the context of design education.

Five display principles

In the following sections, the five display principles – *cosmos, table, series, milieu and staging* – all of which involve a particular spatial organisation of objects, will be outlined. Some of the principles have already been formulated within museological research, while others will be developed and defined for the purpose of this study, drawing on museological research. Following these initial conceptualisations, the case analyses will function as catalysts for a further framing and understanding of the knowledge-producing potential of the five display principles within a design education context.

Cosmos

The first display principle that we wish to conceptualise belongs to the early Kunstkammern, also known as Wunderkammern and Cabinets of Curiosities, which developed in Continental Europe in the 16th and 17th centuries, mainly within the royal spheres. The cabinets of this time shared a universal approach and have often been conceptualised as microcosms – as a distillation of the entire universe (the macrocosm) into one single cabinet (Hansen, 2009; MacGregor, 2007). They would form a collected whole out of disparate objects (such as rare animal species, meticulously crafted art pieces and advanced instruments) and curious juxtapositions, typically using symmetry and visual spectacle and with indifference to scientific, rationalist ordering (MacGregor, 2007). We call this display principle cosmos, thereby emphasising the way a collected whole – a small universe – is produced to represent a larger one. We are not suggesting that exhibition practices in design education should be compared to the historical Kunstkammern, which had its own logic, purpose and object types. Rather we wish to distil the particular principle of cosmos, as it can capture the way in which a larger whole can be represented through the exhibition of a selected group of carefully arranged and visually persuasive exhibits.

Table

The second display principle is the *table*, which has been conceptualised by museum scholar Tony Bennett (1988) in relation to the spatial ordering of object collections in the 'modern museum', which developed in the late 18th century and during the 19th century. The *table* connects to the later Kunstkammern and early modern museums, where collections became more specialised than in the earlier Kunstkammern, representing a mix of theocratic, rationalist and proto-evolutionist systems of thought and where species and artefacts were arranged according to similarities and dissimilarities in their external appearances (Bennett, 1988). Thus, compared to *cosmos*, the *table* presents a more analytical display principle, where things are placed in a structured manner, one that is easily deciphered and where things are understood not on their own, nor primarily as an element within a collected whole but rather as how they appear in relation to other surrounding objects. We separate

the term from its historical context, where it was tied to particular scientific advances, using it to conceptualise a display principle in which objects are analysed and understood based on their comparison with other similar/dissimilar objects.

Series

The principle of the series, which has also been conceptualised by Bennett, can be understood as the modern museum's display format par excellence. It connects to the advancement of history as a discipline as well as scientific developments within geology and biology in the 19th century and orders things according to precession and succession (Bennett, 1988; Preziosi, 1996). Thus, the series presents a chronological organisation of things as they have progressed from one stage to the next, which is a display principle that is still very common today, especially in cultural history museums and art museums. We are using the term in order to conceptualise a display principle that is analytical and structured in the same manner as the table, but where the analysis and meaning making of the exhibition display is tied specifically to the chronological ordering of objects, which, in a design education context, can be used in order to unfold and explore the process by which different experiments and artefacts lead to and follow each other.

Milieu

The fourth display principle that is included in our analytical toolbox is *milieu.* This principle can be understood in connection to the period rooms that started to develop within decorative arts museums in the late 19th century, where a collection of objects that originate from the same or similar spatial and/or temporal context, create a contextualising milieu for each other (Aynsley, 2006). We conceptualise *milieu* as a display principle where objects create an immediate spatial and material context for each other, based on aesthetic similitude between them. For instance, in terms of materiality, size or shape. Thus, similar to the *table*, this display principle creates an exhibition in which objects produce meaning in close correspondence with surrounding objects. However, whereas *table* emphasises structure and analysis and will typically address a rather static, visual examination mode, *milieu* addresses a more exploratory and spatially engaged meaning-making process.

Staging

The final display principle, *staging*, connects to the scenographic contextualisation of museum objects that dominate exhibition design today, and which makes use of atmospheric and narrative spatial framing (Habsburg-Lothringen, 2015; Kossmann et al., 2012). Compared to *milieu*, which creates a self-contained spatial and material context within the exhibition, our understanding of the principle of *staging* has to do with pointing to a space that is placed/took place outside the exhibition. This type of staging, which is

often used in cultural history museums, can be produced through the use of supportive objects and materials that speak about the place and time in which the exhibited objects *used* to belong. Within a design education context, this can, for instance, involve the implementation of objects used in the production of the artefacts on display and, thereby, allude to the workshop space in which it was created.

These five display principles all have their own separate logic and way of knowledge production. However, they also have things in common. *Milieu*, *staging* and, to some extent, *cosmos*, will typically create a spatial setup that addresses the body of the viewer, but whereas *cosmos* and *milieu* produce spatial entities within the exhibition space, *staging* will allude to a space that lies beyond the exhibition space. Similarly, *table* and *series* have their structural logics by which things are placed in relation to each other in very specific ways, in common. However, whereas the *table* principle creates its own internal system of relations and addresses a statically positioned analytical gaze, the *series* entails movement from one stage to the next and could potentially extend itself in each direction.

Four cases

In the following analyses, we present four exhibition cases from design teaching at the Royal Danish Academy that reflect the five display principles in different ways. Not in a manner in which each case reflects *one* display principle. Rather, the cases involve several of the five display principles, depending on how you view the exhibition setup. For instance, whether you zoom in on one particular part of it or attend to the display as a whole. The individual case analyses will begin with an introduction to the course or event in which the exhibition took part, including an initial framing of the intended learning outcomes. We will then move on to the actual exhibition setup and its display principles. Finally, we will focus on how the display principles affected the knowledge production of the exhibition. The analyses draw on photo documentation of the four exhibition cases, on-site analysis (case #3) and insider knowledge about the different exhibitions and their contexts by course teachers Flemming Tvede Hansen (course teacher on case #1 and #2 and co-author) and Mads Ibenfeldt (course teacher on case #4, interviewed January 31, 2025).

When we point to the display principles at play in the four different cases, it is a conceptualisation that happens in hindsight. There was no prescription regarding particular display principles when setting up the exhibitions. Nonetheless, artefacts were chosen, organised and set up in particular ways, resulting in different knowledge outcomes. Since we do not have recordings of the discussions taking place when setting up the exhibitions or interviews with the students about the knowledge it generated, the analyses will, to some

part, make use of speculations about what the different display principles brought to the reflections and discussions and to the overall knowledge production.

Figure 1

Exhibition setup during the course Digital and Analogue Technology, exemplifying series as a display principle.T he work features Aleksandra Bukańska's systematic exploration of 3D clay printing Photo: Flemming Tvede Hansen, 2022.

Case #1: Digital and Analogue Technology

Exhibition context

The teaching module Digital and Analogue Technology took place in 2022 during the second semester of the Professional Bachelor programme in Crafts in Glass and Ceramics. The module's objective was to equip the students with skills and competencies in selected digital and analogue technologies related to glass and ceramics. Students were introduced to digital techniques, such as 3D digital drawing, laser cutting and 3D printing in both plastic and clay and to traditional analogue techniques, such as pulling plaster, clay press moulding and glass blowing, and they were encouraged to explore the intersection between the digital technologies and traditional craftsmanship.

The course prioritised an explorative approach, focusing more on processes and possibilities than on the design of a final product, such as a flower vase or an artistic statement. At the end of the course, the students presented their work in an exhibition setup in a large auditorium on campus. The aim of the exhibition was not to communicate the results to an external audience – although fellow students and faculty that did not take part in the course did visit the exhibition during the few days it was on – but to facilitate an internal reflection and discussion about the outcomes of the course's experimental work. Each student was given a table on which to display their experiments and was asked to highlight the experimental processes and stages.

Display principles

Figure 1 shows part of student Aleksandra Bukańska's systematic exploration of 3D clay printing. Bukańska explored how printing the same form in clay with progressively denser wall thicknesses would affect the overall expression, thereby creating a surface effect that emerged unintentionally. The display is organised chronologically, showing the progression from thinner to thicker wall density, which reflects *series* as the display principle.

Figure 2 shows student Marie Camille Schmitt's experiments with pulling plaster, glassmaking and 3D clay printing techniques. Focusing on the hand-blown glass objects on the left side of Figure 2, we see that it is not only the produced artefacts that are on display but also the tools used to create them: laser-cut tools for pulling plaster and models and moulds for glass blowing. These tools create a contextual *staging* that emphasises the production aspects of the exhibits and communicates the different techniques involved. By involving the production tools as 'supportive objects', the display points to and recalls what took place in the workshop. Thus, the tools create a setting for the artefacts that stages their space of production – that is, a space that lies *beyond* the space of the exhibition.

Figure 2

Exhibition setup during the course Digital and Analogue Technology, exemplifying staging and table as display principles. The work features Marie Camille Schmitt's experiments with pulling plaster, glassmaking, and 3D clay printing techniques. Photo: Flemming Tvede Hansen, 2022.

Next to this staging, on the right side of Figure 2, various results from 3D printing are showcased. These artefacts appear as related yet singular explorations, which can be

compared and analysed according to similarities and dissimilarities in patterns, densities, overall shape, etc., thus following the *table* principle. In fact, the collected display shown in Figure 2 can be understood as a *table,* in the sense that the artefacts, which are similar in dimensions and rounded shapes but different due to the use of various techniques and materials, create an analytical setup, where it is possible to compare them and, thereby, distil knowledge about the particular traits of the different techniques and materials. Examining, for instance, how the open, ornamented surfaces of the 3D-printed objects (far right) contrast with the smooth surfaces created by the pulling plaster technique (far left). Thus, the display makes use of both *staging* and *table* display principles.

Knowledge production

The overall exhibition setup, of which the displays shown in Figures 1 and 2 are only exemplary snippets, served as a focal point for group discussions and reflections between students and teachers at the end of the course, initiated by each student's presentation of their experimental journey. The intention was for the students to analyse, reflect on and realise whether their experiments, e.g., had mainly been about developing new tools or whether they could be understood as a systematic investigation of one tool or a combination of tools. Whereas the *series* example in Figure 1 demonstrates the process of exploring and developing practice in relation to one single technique, the *staging* and *table* principles in Figure 2 explore a set of different techniques, partly by evoking their spaces of production (*staging*) and by setting up a comparative analysis (*table*) of their different outcomes. Thus, the various display principles could support reflections regarding the development of artefacts through one technique/tool (*series*), through a combination of techniques/tools (*table*), or they could help students recall and reconnect with the workshop activities that had taken place (*staging*). Insights and realisations brought forth by the different display principles might have appeared already while setting up the exhibition, thereby steering the displays and their knowledge production in particular directions along the way. Realisations might also have taken place when taking in the final exhibition setup, discussing it in plenum and registering new aspects and outcomes of the work done.

Case #2: Experiment, Material and Technology

Exhibition context

Experiment, Material and Technology is the first teaching module in the Design BA programme Product+ at the Royal Danish Academy. It aims to provide students with a foundational understanding of artistic methods, emphasising the central role of experimentation in the creative process and helping students identify and explore their own artistic and aesthetic areas of interest through systematic investigations.

Figure 3

Exhibition of collective experimental work from the course Experiment, Material and Technology. Photo: Flemming Tvede Hansen, 2023.

Exhibition case #2 shows the results of experimental work done by students at the Furniture Design, Space, and Material track, which were put on display in a collective exhibition at the Academy library in Autumn 2023. The exhibition lasted approximately two months and addressed both an external audience and an internal Academy audience beyond the course participants. The experiments produced during the course were framed as a collective venture shared by the entire class and carried out in groups of three. This was reflected in the exhibition setup, which aimed at creating a common understanding of experiment outcomes rather than highlighting individual achievements. Prior to the exhibition, the students had developed the display over two days in a large auditorium. Here, they were grouped in new ways, and various ways of organising the objects were explored to analyse and reflect upon the collective work. Finally, a selection of the experiment results was arranged on large tables and podiums in the library with the intention of mapping and communicating the joint explorative processes (see Figure 3). Thus, compared to case #1, this exhibition was a much more collective endeavour.

Display principles

During the course, one round of experiments explored the patterns that could be created using a wood stick on a slab of clay. Figure 4 shows a display of the artefacts produced, where the vertical sequences demonstrate the progression within the work of different

student groups. Thus, reflecting *series* as the display principle. However, due to the close juxtaposition of the different chronological series and the overall grid structure, a *table* is produced. This combination of *series* and *table* display principles allows for a simultaneous analysis of experimental progression within individual groups while also making it possible to connect and compare artefacts between groups, both horizontally and diagonally.

Figure 4

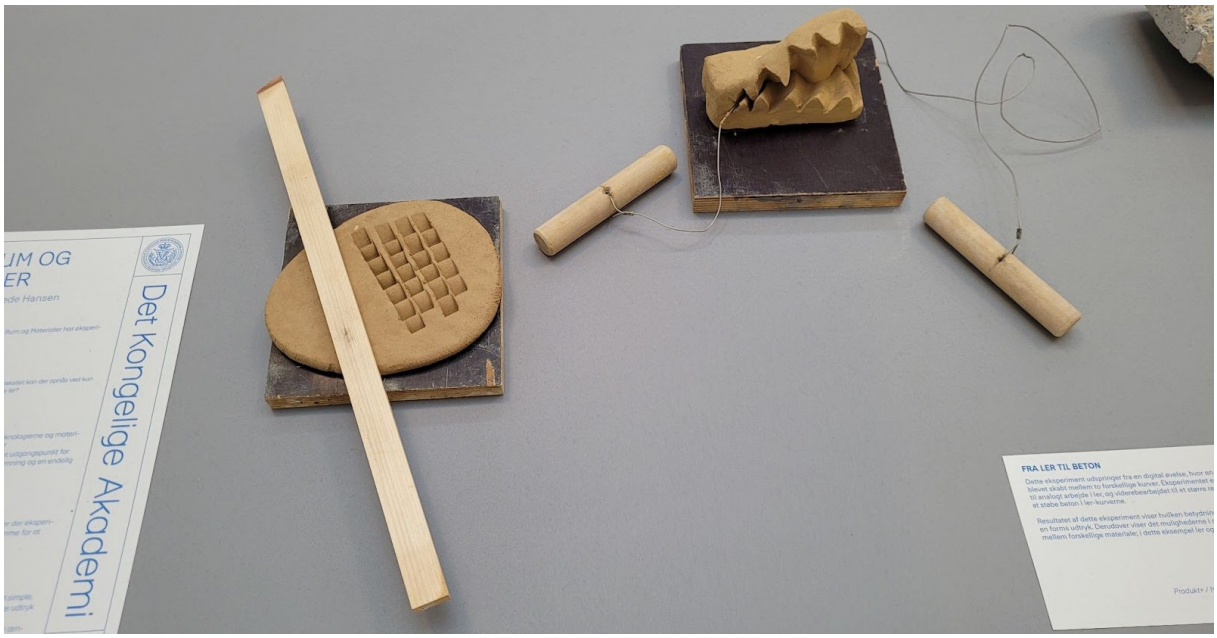
Results from exploring patterns created by using a wood stick on a slab of clay, exemplifying the display principles series and table. Photo: Flemming Tvede Hansen, 2023.

Placed next to this arrangement, in the corner of the exhibition table (see Figure 3, left), is a setup representing the particular technique of using a wooden stick on a slab of clay as well as the technique of using wire to cut through clay (see Figure 5), which was employed for creating the artefacts on display on the adjacent table side (see Figure 3, bottom). This is a display that, rather didactically, communicates the techniques used in the creation processes and, by doing so, points to the workshop space and the hands-on practices that took place there. Thus, it makes use of the *staging* principle. Again, similar to case #1, the three display principles *table*, *series* and *staging* are all at play, and this time they are partly overlapping (*series* and *table*). Were we to analyse the table as a whole, or the entire exhibition (two exhibition tables and five podiums), the combinations and overlaps of display principles would continue. It might be argued that the exhibition in total functions as one big *table*, where groups of artefacts are placed in a structured manner that is easily deciphered and

can be analysed and understood not on their own but rather in relation to each other. This leads us to the knowledge production of the exhibition and of the practice of setting it up.

Figure 5

Display of tools and techniques used in the course Experiment, Material and Technology, exemplifying staging as a display principle. The tools are accompanied by verbal descriptions explaining the experimental work. Photo: Flemming Tvede Hansen, 2023.



Knowledge production

As mentioned before, the exhibition was the product of two days of explorations and testing of different display strategies, and this process of reflecting upon which insights different ways of displaying the artefacts would provide and communicate, was an intended part of the course's learning outcomes. Thus, even though the five display principles developed in the present study were not used directly in the process, there were teacher-led conversations about how different ways of organising the artefacts would affect how they were understood. During this two-day preparation of the exhibition, the students examined how display setups emphasising, for instance, the order in which artefacts were produced, similarities between different experiment rounds and groups, etc., could bring forth different facets of the experimental outcomes. This accentuated the complexities within the collected experimental work and pointed to the potential for further development. The students discussed whether some investigations could have been extended further or whether different strategies and techniques could have been used. In this way, the display setups functioned not as final utterances about the experiments made but rather as starting points for further investigations of them. Moreover, the students developed ideas about

linking different collective experiments in the final exhibition, thereby uncovering further insights. The final exhibition setup within the Academy library reflected an extract of these discussions, aiming to communicate the multifaceted experimental outcomes of the course.

The collective venture of preparing and setting up the exhibition, together with the fact that the students were grouped in new ways, meant that a more detached and analytical approach to curating and setting up the different displays could be reached. In other words, the displays did not represent a single person's or group's pre-established understanding of the experimental insights but rather explored the collection of various experiments and experiment rounds in a new setting and on new terms. The use of the *table* principle is paramount in this respect, as it allows for a comparative analysis of groups of artefacts made by different students using different techniques and materials but within the same experiment round and teaching course. This emphasis on both similarity and dissimilarity makes the principle a productive exhibition tool for comparative, collective discussions across experiments and student groups. The *staging* principle, on the other hand, seems to have had a more didactic function aimed at communicating the work to an external audience. Thus, whereas the *staging* principle in case #1 could be understood as a way for students to recall their own workshop activities and share it with fellow students, in case #2, it functioned as an explanation of the experimental techniques, helping outsiders understand what had taken place within the course.

Case #3: Graduation Show

Exhibition context

The most common exhibition practice within design education is probably the concluding presentation of a 'final' project, where students create a collected and curated whole of their work. This type of exhibition takes place both in the exam room and in student project exhibitions, such as the yearly graduation show at the Royal Danish Academy, from which our third case is taken. The display we wish to focus on was created by two students – Kirstine Sejersen and Jon Hinrik Höskuldsson – graduating from the MA programme Furniture Design – Products, Materials and Contexts in Spring 2024. The two students worked together on their thesis project, which was developed throughout a full semester, and the exhibition showed their design of a chair (titled *Bundle*) made of biobased composite material. The project includes both material and production technique development as well as the design of the furniture itself.

The Graduation Show follows a strict format. Each student is assigned one 2 x 2 square metre wooden board, which can be placed either horizontally or vertically, with the possibility of adding smaller, custom-made podiums or other mounting equipment. Since the

display analysed here presented a group project, two wooden boards were used, as well as a smaller podium displaying the final design. Figure 6 shows an overview of the display, and Figure 7 zooms in on the left side of the podium.

Figure 6

Kirstine Sejersen and Jon Hinrik Höskuldsson's thesis project display, exemplifying cosmos as a display principle. Photo: Flemming Tvede Hansen, 2024.

Display principles

Similar to other graduation exhibitions, this display presents a curated version of the project. Some material, such as research, sketches, tests, etc., were left out, both due to the limited space and for the sake of creating a clear and comprehensible communication of the project. As such, the display can be understood as a microcosmos, representing the macrocosmos that is the full project, and can be seen to follow the *cosmos* display principle. That is, the exhibition presents itself as a distillation of the full thesis project – the 'project universe', one might call it – and creates a collected whole out of the project's disparate parts. Various aspects and phases of the project, such as the development of the textile compound (Figure 7, far left) and the design of different elements within the chair design (Figure 6 and 7), are represented in different sections of the display, and in a way where grouping, linearity and symmetry are used as ordering principles. These groupings, or sections of the display, can also be understood separately, where they follow the *table* and *series* principles and create small analytical investigations into different parts of the project. Based on similarity/dissimilarity with surrounding objects in the group (*table*) or chronological setups

that show the progress from one version of the design to the next, such as the row of 1:5 scale models of the chair design (*series*), small 'dives' into the design work are produced. However, it is still the project as a whole – the construction of a *cosmos* – that is prioritised in the display and which is brought forth by the creation of an ordered, comprehensible and visually persuasive organisation of the objects.

Figure 7

View of the left side of Kirstine Sejersen and Jon Hinrik Höskuldsson's thesis project display, exemplifying table and series as display principles. Photo: Flemming Tvede Hansen, 2024.

Knowledge production

As the graduation show is one of the very last activities taking place in the students' education, and the students usually set up their exhibition without the interference of teachers, it can seem less relevant to speak about knowledge production and learning outcome – at least in relation to a specific curriculum. However, the act of curating and setting up one's project – or rather, a distilled version of it – is something that happens all the time within design education, both in relation to exams and student project exhibitions. Thus, a more general learning outcome for this type of activity might be detected. First of all, it allows the student to get an overview of the entire project and its different parts, aspects and stages. Second, it can bring about an analytical reflection on the various processes that took place during the design development and how each affected the final design. All in all, this knowledge can help students communicate their projects in a clear, coherent and nuanced manner. The *cosmos* display principle is pertinent in this respect, due to its

emphasis on creating an ordered and easily decipherable entity out of disparate artefacts from different stages in the design process.

Case #4: Volume studies

Exhibition context

The final case that we wish to bring forth is the exhibition of various scale models produced as part of the second semester's design work at the architectural BA programme Whole and Part, spring 2022. The exhibition showed architectural models in scales 1:250, 1:50 and 1:25, mainly in plaster but also in aluminium and wood, made by the entire class and across different project stages. All the models were so-called volume studies, through which the students explored different aspects of their semester project site, design ideas and proposals, such as dimensions, shapes, interior and exterior and positive and negative spaces (see Figure 8).

Figure 8

Exhibition of volume studies from second semester teaching in architectural BA programme Whole and Part. Photo: Jacob Bang, 2022.

Three students were assigned to curate and set up the exhibition, drawing from the huge collection of volume studies carried out throughout the semester by all students in the class.

The artefacts were placed on a large 244 × 122 cm wooden board, and the exhibition, which was located in one of the entrance halls at the Institute of Architecture and Design, lasted for approximately one month. The aim of the exhibition was primarily to communicate the design work to students and faculty from other institutes and programmes at the Academy.

Display principles

The exhibition does not emphasise particular processes or results, nor is the display ordered in terms of who created the artefacts. Thus, compared to the other cases, this exhibition presents itself as a much freer composition of shapes, sizes, colours and materials, with no specific order or hierarchy besides a loose arrangement according to size, meaning that the larger 1:25 models are generally placed in the back, 1:50 models are placed in the middle ground and the smaller 1:250 models are placed in the front. It is a setup in which the artefacts create an immediate spatial and material context for each other, thereby following the *milieu* display principle, and where these interrelations, rather than the individual artefacts, become the main focus. Similar to the *table* display principle, the artefacts can be compared based on similarities and dissimilarities, albeit in a much less structured way, where the eyes will wander and explore the spaces in between, behind, within, above, below, etc. Besides following the *milieu* display principle, it can be argued that the exhibition reflects the *cosmos* display principle as well, since it can be understood as a small, curated universe, representing the larger universe that is the entire course's volume studies. It is, however, much less clear in its communication than the graduation show display in case #3, just as its visual persuasiveness lies not in the creation of a comprehensible order but rather in its engaging invitation for spatial and material explorations.

Knowledge production

According to the course leader, the process of setting up the exhibition was carried out in a rather intuitive manner, in which the composition of artefacts gradually took shape. The process of experiencing the exhibition is somewhat similar, which allows for a different kind of knowledge production than the more analytical investigations of the display principles *table* and *series* and the communicative, didactic outcomes of the display principles *staging* and *cosmos*. The knowledge production depends much more on individual preferences and attraction to particular shapes, patterns, surfaces, etc., which, together with the particular positions, angles and movements of the onlooker, create different meaning-making paths through the display.

Unlike case #1 and #2, this exhibition did not function as a framework for a final discussion about the results and learning outcomes of the course among students and teachers. Although it did materialise the joint and compiled outcomes of the course's volume studies, which could be taken in and reflected upon by the involved students, the main intent of the

exhibition was to communicate the course outcomes to an audience beyond the course participants. The three students who curated and set up the exhibition most likely learned a great deal about the different artefacts and, not least, learned new things about them according to where they got placed and which correspondences with surrounding artefacts – the *milieu* – they entered. However, as mentioned above, this type of knowledge production is less structured and more individual and, therefore, difficult to make general assumptions about. In terms of the *cosmos* aspects of the display, such a compilation of artefacts from different stages within the semester project made by different students could probably produce new perspectives on the course's outcome, adding to the knowledge production of each student's individual projects. Here, the explorative perception mode that the *milieu* display principle addresses can function as a driver of new ideas and potentials.

Discussion

Analytical, inventive and explanatory exhibition practices

The analysed cases show how exhibition practices in design education make use of various display principles and that these display principles produce different types of knowledge. Considering the display principles conceptualised here (of course, there might be others), these types of knowledge production can be categorised as being: 1) analytical – that is, interrogative in terms of very particular knowledge aspects that the artefacts on display can produce (*table* and *series*). 2) inventive – that is, explorative and open-ended, with the possibility of sparking new questions and ideas (*milieu*). 3) explanatory – that is, creating overview and communicating practices, findings and results (*staging* and *cosmos*). Table 1 shows an overview of display principles, their characteristics and types of knowledge production.

However, the particular context and design phase in which the display setup is carried out, as well as the intention behind the setup, also affects which knowledge-producing categories (analytical, inventive, explanatory) the different display principles generate. Thus, a *table* setup can be quite explorative and inventive in terms of recognising aspects of artefacts that had not been noticed before. This was what happened in the two-day preparations for the final exhibition in case #2, where different setups were tested and used in order to explore the collective experimental work. However, if the act of exhibiting takes its outset in a very specific question, such as, 'How does a thicker wall density affect the shape and statics of the 3D printed clay object?', as in the *series* setup in case #1 (Figure 1), or 'What patterns can be made by using a wood stick on a slab of clay?' as in the *table* setup in case #2 (Figure 4), the exhibition setup can produce a more focused and less open-ended knowledge result. And vice versa, display setups can, despite their inventive (*milieu*) or explanatory (*staging*

and *cosmos*) outset, bring about systematic, analytical interrogations within parts of the exhibition setup, as seen in cases #3 and #4. In case #3, an overview of the entire project combined with dives into its various components provided insight into how each process influenced the final design. In case #4, which features a more freely composed arrangement of artefacts, where the relationships between them take precedence over the individual artefacts, analytical dives can happen, for instance, when a particular correspondence between artefacts catches the eye and is explored in more depth. Such dives into the design work might not be intended and foreseen but still have the capacity to create very specific knowledge that, in turn, can affect back on the overall setup and contribute to its inventive explorations or explanatory endeavours.

Table 1

Overview of display principles, their characteristics and types of knowledge production

Display principle	Main characteristics	Display principles exemplified in cases	Primary type of knowledge production
Cosmos	A larger whole is represented through the exhibition of a selected group of artefacts.	Case #3: Figure 6	Explanatory
Table	Artefacts are understood in comparison with other similar/dissimilar artefacts.	Case #1: Figure 2 Case #2: Figure 4 Case #3: Figure 7	Analytical
Series	Artefacts are arranged in chronological order.	Case #1: Figure 1 Case #2: Figure 4 Case #3: Figure 7	Analytical
Milieu	Artefacts produce meaning in spatial and material correspondence with surrounding objects.	Case #4: Figure 8	Inventive
Staging	Artefacts are contextualised through the use of supportive objects and materials.	Case #1: Figure 2 Case #2: Figure 5	Explanatory

Layered and context-dependent knowledge production

At this point, it is clear how the different knowledge production categories (analytical, inventive and explanatory) should not be seen as working independently of each other. Rather, they function as layers in the exhibition setup that intertwine and overlap, as do the display principles as such. Furthermore, different audiences – external vs internal, designers vs non-designers – will see and learn different things from working with/experiencing an exhibition setup. Even though the focus of this study is on exhibition practices in design education – that is, the knowledge that students produce within educational contexts – it is

relevant to be aware of how external audiences and contexts affect this knowledge production. For instance, the principle of *staging* can have very different functions depending on who the audience is and for which purpose the exhibition has been set up. Whereas in case #2, the *staging* principle was understood as a way of recollecting and sharing the practices that took place in the workshop, in case #3, it had a more didactic, communicative function. In both cases, the display setups might be categorised as 'explanatory'; however, their function in terms of knowledge production varied greatly due to the different audiences and purposes for exhibiting.

Thus, a key insight here is that the same display principle can have different knowledge producing outcomes depending on the context, purpose and audience. Looking at it the other way around, we can also speculate about how the same artefacts within the same contexts might produce different kinds of knowledge, depending on the display principle used for its exhibition setup. For instance, if the clay, plaster and glass objects in case #1 had been set up according to the *milieu* principle used in case #4, thereby producing a less restricted, more entangled spatial composition, it might have revealed completely different insights into the volumes, shapes and surfaces of the artefacts. Thus, exhibition-making in design education is not just about what particular artefacts can tell us but also about how different display principles can tell us different things about the same artefacts. Knowing about these different ways, being able to name them and using them purposefully in the process of analysing, developing and communicating design work holds great potential.

Conclusion

How we organise exhibitions spatially is essential, as it shapes how we view and experience the artefacts on display. As the case analyses have shown, exhibition practices in design education can involve many different principles of spatial organisation. This study has pointed to and conceptualised five such display principles, but more may exist and be developed. By working purposefully with these display principles, using them as guides and tools – either separately or integrating them in the same exhibition setup – design students can investigate artefacts and develop and share nuanced knowledge from and about them. Furthermore, advancing the understanding of these display principles and the different types of knowledge they produce can deepen students' understanding and reflections not just about their design processes and results but also about the ways in which spatial organisation and exhibition contexts affect the meaning of their work. Whereas the *series* and *table* principles can enable systematic, analytical investigations into specific aspects of the work, *milieu* can explore design aesthetics on freer and more spatially engaged terms, thereby sparking new inventions and ideas. *Cosmos* and *staging*, on the other hand, are useful for creating overviews and for recollecting and explaining the design work, which in

turn can promote a deepened understanding as well as new ideas about the work that has been done. However, as we have seen, these principles can also overlap, intertwine and be integrated with each other, functioning as multiple layers in the overall knowledge production of an exhibition. Furthermore, the same display principle can shift its knowledge-producing potential depending on the specific context, purpose and audience of the exhibition. Together, the five display principles conceptualised in this study provide a flexible, layered approach to gaining knowledge and insights not just about design work as such but also about the practice of investigating, advancing and communicating design work through exhibitions.

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