Special Exhibition

OBJECT LESSONS:
THE STORY OF MATERIAL EDUCATION IN 8 CHAPTERS

Duration: September 16, 2016 – January 16, 2017
Opening: Thursday, September 15, 7 p.m.

Material Knowledge

Knowing about the origins and processing of materials is more valued today than ever before. This kind of knowledge doesn't only promise autonomy because it enables creating things yourself, repairing them, better understanding them, and evaluating them. It's also considered a basic prerequisite for a responsible relationship with resources and the environment today. Despite this, material knowledge is specialized and hidden, often remaining within the domain of experts — whether in craftsmanship, industry, or the natural sciences.

With the so-called *material turn* — the increasing research of the social and cultural meanings of things — the humanities react to the need for an engagement with the "real." However, most theoretical discussions are far removed from concrete objects and, above all, from unprocessed materials themselves. How can this distance be overcome? How can this coveted material knowledge be returned to the sphere of general knowledge?

Material Education

Our everyday lives offer relatively few possibilities in this regard, as increasing industrialization, globalization, and digitalization have greatly limited direct contact with material: the *Do-it-Yourself*-Movement takes place in niches; sustainability has become a trend in design; and manufacturers mislead with "green" marketing claims. If we want to know something about materials, we're dependent on test reports and Apps that decode ingredients for us.

Upon closer examination, however, one sees that there has been an explicit education about, with, and through materials since the 18th century. This "material education" propagates the examination of materials as a condition to understand the world. Its history nonetheless remains unwritten and its objects are hardly known because educational institutions — from schools to museums — have devoted themselves to finished things, neglecting unprocessed materials.

Object Lessons

The title of the exhibition*, Object Lessons*, refers to a learning concept that the siblings Elizabeth and Charles Mayo developed in England in the early 19th century based on Johann Pestalozzi's reform pedagogy. Together, the Mayos directed the first Pestalozzi school in the London area.

Elizabeth Mayo wrote the textbook *Lessons on Objects* (1830), which appeared in numerous editions. In addition to the book, she developed a small cabinet with four drawers to use in the classroom, an *Object Lesson Box*. Its different compartments contain over 100 different objects and materials that represent the children's environment and were to be examined, touched, smelled, and tasted. Sensual experience developed both concrete and abstract knowledge, as well as imparted an understanding of language, regional studies, nature, and technology. Each object lesson features a specific material and asks: what do you perceive?

Lessons

The exhibition takes the principle of *Object Lessons* as its point of departure and tells the story of the transmission of material knowledge in 8 different chapters. Exhibits from public, private, digital, and physical collections offer an overview of the selected areas, comparing historical to contemporary forms of material education. Many of these collections come in boxes or cases — a leitmotif that illustrates the mobile character of material education. From tree books, slag gravel, shell silk, hares' scuts, bluing, coffee grounds and galalith, the exhibition ranges from historical DIY books to a digital material archive in order to show that material literacy has always been relevant, why it was forgotten, and what it might look like in the future.

PROLOGUE
BOOK IMAGE CHAMBER

The prehistory of material education begins long before 1800. In order to systematically understand its qualities, origin, and use, material was already collected in the Early Modern Period, often as components of cabinets of curiosity in the natural sciences and practical crafts. However, these collections were usually only accessible to a small circle of experts or privileged enthusiasts. Non-exclusive teaching materials for schoolchildren, on the other hand, were based only on texts and images.

This prologue traces the path from exclusive material knowledge to material education intended for a broader public. It features the catalogue of a cabinet of curiosities from 1655, a box with earth pigments compiled by the elected Saxon gem inspector around 1750, the *Bilder-Akademie für die Jugend* (*Picture Encyclopedia for the Young*) — one of the first interactive learning tools for children — and three books from a woodlibrary, donated by Louis Napoleon in 1810.

In different ways, these objects illustrate how material became a part of general education while they were still absent from pedagogy. Soon after, the Mayos' *Object Lesson Box* would close this gap.

1 OBJECT LESSON
HEAD HEART HAND

The reform pedagogy of the Swiss educator Johann Pestalozzi (1746-1827) initiated the concept of material education for everyone. Pestalozzi was a pioneer of compulsory education. His concept of "elementary education" meant the equal deployment of "head, heart, and hand," and thereby a holistic schooling of intellect, feeling, and creativity. According to Pestalozzi, children would learn best through a direct interaction with their environment and develop language and the faculty of abstraction through this experience.

In order to experience his pioneering "object lesson" on-site, the Englishman Charles Mayo spent three years with Pestalozzi in Yverdon. However, he found the teaching practice, which used only things that happened to be at hand, to be chaotic. Back in England in 1822, Mayo developed an authoritative and systematic concept with this sister Elizabeth: the book *Object Lessons*, which included model teaching dialogues, and the accompanying *Object Lesson Box* that contained over a hundred different materials and things.

Friedrich Fröbel, the inventor of kindergarten and Maria Montessori are also part of the Pestalozzi tradition. Their touching boards and wooden blocks, which train haptic perception and design ability, are still used today.

However, this teaching method of looking at and touching materials and things is generally considered childlike because it comes from pedagogy.

2 OBJECT LESSON
SAMPLES SETS REFERENCES

This lesson focuses on the scientific material education of students. Material collections are used in many aspects of university teaching and examples are shown here from geology, pharmacology, and conservation sciences.

Different forms of teaching collections have emerged. Materials sometimes serve as reference pieces, like the textile conservators' delicate animal hair sample that is used to identify a particular fabric. Likewise, materials can serve in experiments, such as the stones in the so-called "scratch and bite seminars" in geology. What appears to be the same is differentiated ad infinitum, while other materials are destroyed, in order to become intimately acquainted with it.

The study of pharmacology not only necessitates looking, but also touching, smelling, and tasting
in order to attain a precise understanding of active ingredients. The boxes shown here were used to test students and train pharmacists to identify medical substances. This is the reason why the containers are not labeled.

3 OBJECT LESSON
COAL GLASS PAPER

Elizabeth and Charles Mayo's *Object Lesson Box* was produced and distributed in large editions.
It therefore marks the beginning of a standardization of material education, which also takes place in in Germany after 1900. Educational publishing houses did not only produce textbooks, but also specialized in the production of globes, maps, and showcases for teaching purposes. The showcases in *Räths Technological Collection* were produced in large numbers for school lessons, vocational training, or museums. Apart from a particular material, the boxes also displayed production, treatment, and residue — as well as the finished products made from it.

In contrast to the ideal of holistic education with materials that could actually be touched, the materials in this section are now shown behind glass like in a museum, thus strongly limiting the possibility of sensual perception. The paradox of a material education without material experience is likely also the cause of the disappearance of such educational show cases from lessons: since the 1970s they've been gathering dust as antiquated educational tools in school hallways or have been stored away entirely.

4 OBJECT LESSON
MODELS MERCHANTS MAKERS

The 19th century experienced a sudden, massive emergence of new and unknown materials through global trade and industrialization. At this point, little was known about the properties and potential applications of these materials. This both necessitated and advanced a material education in art, craft, and industry.

Material samples, sample cases, and the model collections of trade academies, arts and crafts schools, and museums are the tangible expression of this new mediation of materials, which enabled the exchange between industry and expertise, as well as consumers.

Numerous publications accompany this form of material education, which are precursors to today's *How-To* literature and *DIY*-Culture. *Hartleben's Chemisch-technische Bibliothek* [chemical-technical library], which comprises over 400 volumes, treated nearly every conceivable material subject from imitation ivory to the recycling of waste products to the production of soap.

A material revolution is once again underway today, requiring new knowledge and creating a corresponding culture of sample collections, material trade fairs, and material libraries.

5 OBJECT LESSON
„MY DEAR WATSON…“

The unprecedented diversity of new materials in the 19th century led to a broad fascination with processes, technology, and material that also manifested itself in popular culture. Thus, a fictional material education became an integral part of adventure, criminal, and science fiction novels. Beloved authors like Arthur Conan Doyle, Alexandre Dumas, and Jules Verne impart to their readers what one should know about materials through dialogues. The maverick Captain Nemo astounds the zoologist Aronnax with his innovative application of marine material. Ingenious Sherlock Holmes can solve murders through material analysis and, due to his material education, the poor sailor Edmont Dantès becomes the wise Count of Monte Christo. Whoever knows something about materials, so it seems, can save and avenge oneself, can survive, or convict others.

The dialogical structure, which also characterizes the *Object Lessons,* is particularly well suited for literary treatment and also remains an iconic motif in adaptations like films, radio plays, or comics.

6 OBJECT LESSON
SAND SOAP SODA

Valuable material knowledge in the household was traditionally handed down from mother to daughter. It was not only useful, but sometimes also indispensible in order to make do during hard times, to save money, and keep things in good shape for as long as possible.

While this knowledge used to be transmitted through handwritten notes or advice books, material education in the household has experienced an unprecedented Renaissance today in Internet forums like "frag-mutti.de" [ask mom] or "omis-wissen.com" [grandma’s knowledge] —and despite these titles, the users are not exclusively female anymore. The scope and circle of users has changed, but not the content: from furniture care made of olive oil and black tea to homemade toothpaste, knowledge about the effectiveness of simple substances, which supersedes expensive special products or elaborate expert missions, is once again extremely valued today.

The desire for healthy, wholesome products and a sustainable, careful use of resources has strengthened the return of "house-wife knowledge."

The exchange across generations is a central aspect of this *Object Lesson*: "old" material knowledge is once again sought after and needs to be protected before it’s forgotten.

7 OBJECT LESSON
GOOD AND BEAUTIFUL

This lesson focuses on programmatic material education. In the 1950s and 1960s, the German Werkbund developed its so-called "Werkbund Kisten" as part of its "education of taste" program, which were used in schools as teaching materials for art- and handicraft lessons. According to the motto, "we don't shape objects alone, objects also shape us," the proper use and combination of material, form, and function should be taught in product manufacturing. Therefore, there are boxes with plastic, porcelain, or wood, with chairs, glasses, or vases (among others). As with the Mayos, actual handling of the objects was important, in order to sensually experience modern design and "good form."
While the Werkbund educated towards a better taste, today, knowledge about the world's material condition is seen as prerequisite for responsible, environmentally conscious consumers.
On the right side, this lesson shows the historically "good" objects from the Werkbundkiste on the subject of plastic, while on the left side an attempt is made to show a selection of things made from material that is considered "good" today. Thus, this lesson shows how sustainable and recycled materials are invested with moral and ethic connotations, and often automatically considered as "good," and how such moral attributes can easily be commodified.

8 OBJECT LESSON
ARCHIVE LIBRARY NETWORK

With material libraries from public institutions as well as commercial suppliers, material education today is represented in more and more places.
The Swiss MATERIAL ARCHIV combines tactile materials with a digitally networked database and is presented here with a guest installation. The institution is a consortium of eight museums, colleges, universities, and art production facilities with physical collections, which are gathered into a collective online databank.
Each specimen is equipped with a chip, which enables inquiring about additional information regarding its extraction, production, and use — as well as its historical, cultural, social, and ecological contexts. In this way, expert knowledge becomes accessible to a broader audience.

The MATERIAL ARCHIV is a contemporary response to the historic *Object Lesson Box* from Charles and Elizabeth Mayo. The format of this little box, in which there was only room for 100 things, aimed at representing the entire material world — yet it had clear limitations. Through its expandability and networked structure, the archive can continue to grow and incorporate new materials. It embodies an accessible and forward-looking form of material education.

Werkbundarchiv – Museum der Dinge – Exhibition Texts
OBJECT LESSONS. THE STORY OF MATERIAL EDUCATION IN 8 CHAPTERS

The exhibition is curated by **Ann-Sophie Lehmann** (*University of Groningen*) and **Imke Volkers** (*Werkbundarchiv – Museum der Dinge*) and is supported by numerous loans (among others, from the *German Museum of Technology*, Berlin; *Technical Museum*, Vienna; *Geolgical Collection of the Humboldt University*, Berlin; *Mineral Collection of the Technical University*, Berlin; and the *Documentation Center for Material History/DOMA*).

A **supporting program and a closing conference** in January 2017 are planned for the exhibition. *Object Lessons* will be on display in the *Gewerbemuseum Winterthur* (Museum of Applied Arts and Design) April through October 2017.

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