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The Weaver's Laboratory. Gunta Stölzl's Sample Cards as Materialities of Research

Traces of the Weaver at Work¹

Gunta Stölzl is mostly known as the woman who succeeded in becoming the first female *Werkmeister*² at Bauhaus Weimar in 1925, and subsequently *Leiterin* of the weaving workshop when the school moved to Dessau.³ However, what has been little researched safe for biographical accounts is that Stölzl actually had a long career after she had to leave the famous school in 1931 for political reasons.⁴ She moved to Zurich, Switzerland, where she ran her own weaving workshops and continued to design and produce woven textiles professionally – and with success – until 1967. And even after dissolving her business, she continued weaving until her death in 1983.⁵ She left a large estate behind, containing many pieces of cloth, which one might call the ‘textile traces’ of her long career, spanning from the early Bauhaus period in the 1920s to her death in Zürich in the early 1980s.

This chapter builds on the knowledge gained during my work for the Gunta Stölzl Archive (GSA) in Groningen, in which Stölzl's estate is being documented, registered and made accessible. In this chapter the focus will be on one particular category of objects that has until now received little to no scholarly attention. Many of Stölzl's pieces in the Archive can be defined as ‘end products’: wall hangings, rugs, throws, or textile samples that she would show and lend to possible clients for demonstration. However, there are also cardboard sample

¹ This research originated from my work in the Gunta Stölzl Archive in Groningen. Here, Stölzl's daughter, Monika Stadler, and I work together to build a database containing all Stölzl's surviving works, which will hopefully become accessible for all museums worldwide. Among these works are the sample cards I discuss in this chapter. I am greatly indebted to Monika Stadler for all her help and information, and for allowing me to closely research these cards. I also thank Ann-Sophie Lehmann, Professor at the University of Groningen, for valuable feedback, and weaver Franzi Kohlhoff for lending me her experienced weaver's eye.

² For an in-depth discussion of the difference between *Werkmeister* and *Formmeister*, see Ronny Schüler, *Die Handwerksmeister am Staatlichen Bauhaus Weimar* (Weimar: Verlag der Bauhaus-Universität, 2013).

³ Recently, the Bauhaus women have received increasing attention, also in the context of the 100th anniversary of the Bauhaus in 2019, see e. g. Elizabeth Otto and Patrick Rössler eds., *Bauhaus Women: A Global Perspective* (London: Palazzo, 2019). For an extensive account of the role of women at the Bauhaus, see Ulrike Müller, *Bauhaus-Frauen: Meisterinnen in Kunst, Handwerk und Design* (Berlin: Insel Verlag, 2014), as well as T'ai Lin Smith, *Bauhaus Weaving Theory: From Feminine Craft to Mode of Design* (Minneapolis: University of Minnesota Press, 2014).

⁴ She had married the Jewish architect Arie Sharon in 1929.

⁵ For an extensive bibliography see *Gunta Stölzl. Meisterin am Bauhaus Dessau*, ed. Ingrid Radewaldt, exh. cat. Stiftung Bauhaus Dessau (Ostfildern: Verlag Gerd Hatje, 1997), especially pp. 10–86. At the moment of writing, there is a new biography in press: Ingrid Radewaldt, *Gunta Stölzl* (Weimar: Weimarer Verlagsgesellschaft, 2019).

cards with one or more small samples stapled onto it. Sometimes these samples are neat, square woven designs, sometimes they are just leftover pieces (ill. 1). Many times Stölzl sketched out weaving patterns on graph paper, which she would also paste onto the cardboard. Sometimes we find written notes on the cardboard, mentioning materials, colors or techniques. Sometimes the notes on the cards reveal the purposes they could later be used for, such as a *Divandecke* (throw) but equally *Vorhangstoffe* (curtain material). In some cases we see that she wrote down something which was later crossed out again. Sometimes sketches show different patterns that she had tried out on the loom before being content with the result. By indicating for herself the right pattern, for example with the word “richtig” (ill. 2), she could remind herself later of the right way to proceed. In many cases, samples and paper patterns overlap, and so one would have to carefully flip back samples or paper in order to examine another sample or read the writing underneath (ill. 3).

One of the interesting aspects of these objects is that they are highly personal, bringing us very close to the weaver being at work. When I asked Monika Stadler, daughter of Gunta Stölzl, what she could remember about her mother using and creating them, she explained to me that they were not the same as the labeled samples, which the GSA also possesses, meant for clients who would choose for a commission.⁶ Rather, they were created during the process of making and, more specifically, during the process of experimenting. Stölzl would try out different variations of techniques and colors on her loom, until she was content with the result and had created a textile prototype that she could use in the future for different purposes. Later she would use these cards in order to reproduce the sample again, not only having the sample but also the process that had led towards the design and its material execution in one. Above all, these cards are the record of the personal experimentations of the weaver at work. They give us an interesting insight into the weaver’s laboratory, that is, into Stölzl’s processes of creating, the decisions she made, the way she would start working on a textile, or how she treated her materials. When I recently showed these cards to the German weaver Franzl Kohlhoff, she interestingly pointed out that it seems that Stölzl noted down only those things she thought were important for her and her weaving process in her workshop, rather than general remarks.⁷

We can thus approach these objects as archiving the different stages in the process of experimentation and (re)production, rather than being intended as end products. They are personal and unique archival records of the processes of creation, as well as experimentation,

⁶ Interview with Monika Stadler, 15 October 2018.

⁷ Personal conversation via e-mail with Franzl Kohlhoff, October 2018.

recording the different steps that lead to an outcome. This chapter will provide these cards with a theoretical background, starting with ideas on materials, working processes, experimentation and tactility that were developed already at the Bauhaus. I will compare Stölzl's cards to cards used at the Bauhaus to show their uniqueness. Then I will provide an account of how to understand specifically Stölzl's sample cards by relating them to what Hans-Jörg Rheinberger has called 'experimental systems'.⁸

Recently, these cards have received a growing interest from museums worldwide for exhibition purposes. Therefore, these cards also enable us to address a question which has to my knowledge not been studied before: what are the onlookers' processes of perceiving and engaging with these objects when they see them in a museum? Drawing on the theoretical framework presented, this chapter anticipates on this development by bringing forth some ideas concerning the way in which these objects could be displayed and experienced. After all, we do not deal with 'end products' here. Neither are Stölzl's notes always legible, nor are the samples always annotated for one specific purpose. In their combination of purposefulness and ambiguity, revealing information on the process of making while also leaving many aspects open, they do tell us a lot about the fascinating processes that are going on in the weaver's laboratory, and the relation between thought and practice, writing and materials. Displaying them might provide a beautiful and (almost) hands-on experience of the weaver at work.

Weaving at the Bauhaus: Materials, Tactility, Experimentation

To better understand these cards and Stölzl's working process it is helpful to see where she herself developed her ideas on textiles, materiality, tactility, and experimentation, namely at the Bauhaus, which she entered as soon as it opened in Weimar in 1919.

Walter Gropius, the first director, wrote in 1925 about the experimental character of the Bauhaus, writing that "die Bauhauswerkstätten sind im wesentlichen Laboratorien, in denen vervielfältigungsreife, für die heutige Zeit typische Geräte sorgfältig im Modell entwickelt und dauernd verbessert werden."⁹ This attitude of experimentation also found fruitful ground in the weaving workshop, established in 1920. The goal of the workshop was to return to the material and the tactile qualities of textiles at a time in which textile production had become increasingly industrialized, as for example described in 1924 by Anni Albers: "Heute steht der

⁸ Hans-Jörg Rheinberger, *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube* (Stanford: Stanford University Press, 1997), p. 28; Hans-Jörg Rheinberger, *Epistemologie des Konkreten: Studien zur Geschichte der modernen Biologie* (Frankfurt am Main: Suhrkamp Verlag, 2007), p. 351.

⁹ Walter Gropius, 'Grundsätze der Bauhausproduktion', in *Neue Arbeiten der Bauhauswerkstätten*, ed. W. Gropius (München: Albert Langen Verlag, 1925), p. 7.

Weber nur in loser Verbindung mit dem Webstuhl. Er hat nur mechanische Handgriffe zu leisten. Der Stoffe entsteht unabhängig vom Weber.”¹⁰ At the same time, the Bauhaus weavers sought to develop modern textiles meant for the interior, ‘*Gebrauchsstoffe*’, that could indeed become industrially reproduced on a larger scale, rather than to return to what Stölzl called in 1926 a “Bild aus Wolle”, an artistic picture made of wool.¹¹ The close engagement of the weaver with the material functioned not as opposed to, but rather as a condition for collaboration with the industry. As Regina Bittner recently captured it very adequately: “Wenn die Mechanisierung die Entfremdung vom Material befördert habe, so müsse es die Aufgabe der modernen Bauhausweberei sein, auf diese technische Welt durch experimentelle Arbeit am Handwebstuhl mit neuen Materialien und gestalterischen Beiträgen zu reagieren.”¹²

This condition of engagement with the material, exploring its tactile qualities, was embedded within a larger discourse at the Bauhaus, and can for example also be found in László Moholy-Nagy’s book *Von Material zu Architektur* (1929), which includes an entry on the so-called ‘*Tastübungen*’, tactile exercises in which the student was blindfolded and explored materials and their opposed or related qualities only through his sense of touch. Interestingly, the first material Moholy-Nagy mentions in relation to these exercises is *Stoffe*, textiles, and the first image accompanying them is a ‘*Tasttafel*’ containing different threads made by weaver Otti Berger in 1928.¹³ As is Moholy-Nagy’s book, the Bauhaus weavers were deeply concerned with the structure and the inherent qualities of their textiles, but importantly also with the effect of these qualities in relation to the space in which they would function.¹⁴ In her article ‘die entwicklung der bauhausweberei’, written for the *bauhaus* magazine when she left the school in 1931, Gunta Stölzl argues that in designing functional textiles one not only has to take into account the qualities of the material, but also the effect of these qualities in the interior. She beautifully relates this to the necessity of experimenting directly with the materials on the loom: “diese lebendigkeit der materie zwingt den textilmenschen täglich neues zu versuchen, sich immer wieder umzustellen, mit seiner materie zu leben, sie zu steigern, von erfahrung zu erfahrung zu klettern um so den bedürfnissen, die in der zeit liegen, gerecht zu werden.”¹⁵

¹⁰ Anni Albers, ‘Bauhausweberei’, *Junge Menschen* 5, no. 8 (November 1924), p. 188.

¹¹ Gunta Stölzl, ‘Weberei am Bauhaus’, *Offset Buch- und Werbekunst* 7 (1926), p. 405.

¹² Regina Bittner, ‘Vom Handwerk des Übersetzens in den Werkstätten des Bauhaus Dessau’, in *Handwerk wird modern. Vom Herstellen am Bauhaus*, ed. Regina Bittner and Renée Padt, exh. cat. Stiftung Bauhaus Dessau (Bielefeld/Berlin: Kerber Verlag, 2017), p. 137.

¹³ László Moholy-Nagy, *Von Material zu Architektur* (Passau: Passavia, 1929), p. 22.

¹⁴ On this topic, see also Glenn Adamson, *Thinking through Craft* (Oxford: Berg Publishers, 2007), p. 5.

¹⁵ Gunta Stölzl, ‘die entwicklung der bauhausweberei’, *bauhaus* 5, no. 2 (July 1931), p. 35.

Related to the importance of experimentation is the process of designing textiles and annotating this process. The Bauhaus weavers opposed the classical idea of designing, in which a weaver would draw a pattern on paper before executing the design on the loom, a way of working that had also become quite common in the weaving industry.¹⁶ Anni Albers put this into words in 1924, writing that the draughtsman (*Musterzeichner*) has taken over the process from the weaver, as an “isolierter Intellektueller” who no longer has contact with the material, but only creates patterns on paper for the industry.¹⁷ Instead, in the process of designing their functional fabrics the Bauhaus weavers would start from experiments with materials on the handloom, to work from there to a design that could later be reproduced. In 1933 Otti Berger wrote that the convention of starting from a pattern on paper would not work in the case of the so-called ‘*Strukturstoffe*’.¹⁸ The properties inherent to the yarns simply cannot be captured in a paper pattern (ill. 4).¹⁹

Nevertheless, some form of documentation needed to be developed. In 1926 Walter Gropius ordered the weaving workshop to provide reports of textiles that could be reproduced for the industry, containing both a paper pattern and a textile sample. These reports would then be gathered into sample books that could be sent to architects interested in utilizing Bauhaus textiles for their interiors.²⁰ Thus the strive for documentation through sample cards resulted from the aim of the Bauhaus for a renewed collaboration with the industry. Art historian Judith Raum recently researched such cards in the estate of Bauhaus weaver Lisbeth Oestreicher in the Textielmuseum in Tilburg (NL). Her description of these cards comes very close to Stölzl’s cards:

Alle Kartons sind gelocht, darauf sind eine oder mehrere Stoffproben aufgetackert. Oft tragen die Kartons einen Aufkleber *Bauhaus Dessau* und eine bestimmte Typenbezeichnung, etwa *Vorhangstoff*. In einigen Fällen ist dazu auch noch die Nummer angegeben, die der Stoff als vom Bauhaus offiziell geführter und bei Messen angebotener Stoff erhielt. [...] Neben den Stoffen kleben dann nur die Patronen, d.h. die diagrammatischen Kurz-Informationen zur Bindung jeden Stoffes. Häufig hat Lisbeth Oestreicher auf solchen Kartons auch Details zur Einrichtung des Webstuhls und zur Qualität der Garne handschriftlich mit Bleistift unter den Stoffen vermerkt.²¹

¹⁶ Smith, *Bauhaus Weaving Theory*, pp. 48–52.

¹⁷ Albers, ‘Bauhausweberei’, p. 188. For Anni Albers [see Jordan Troeller’s contribution in this volume](#).

¹⁸ Otti Berger, ‘Die besondere Rolle der Handweberei’, *Der Konfektionär* 48, no. 51 (1933), p. 10.

¹⁹ There do exist paper designs for wall hangings made at the Bauhaus. There survive a few watercolor designs by Gunta Stölzl in the GSA. However, for the ‘*Gebrauchsstoffe*’ this is very uncommon.

²⁰ Walter Gropius, cited in: Judith Raum, *Bauhausraum: Eine künstlerische Recherche zur Textilwerkstatt am Bauhaus* (Stuttgart: Institut für Auslandsbeziehungen, 2017).

²¹ Raum, *Bauhausraum*, p. 18.

Besides being sent to the industry Raum argues that Oestreicher's handwritten notes indicate that these cards were also used to be passed along the students of the weaving workshop for purposes of study and analysis. So Oestreicher's written notes do not necessarily have to indicate that she also wove the textile sample.²²

Although much of this description of Oestreicher's cards corresponds to those in Stölzl's estate, there is an important difference. In her Swiss workshops, Stölzl might have taken over this way of documentation from her Bauhaus years, but her cards were not meant for the industry, nor were they meant to be shared with assistants who could use them to execute a textile.²³ Her cards are, I stress it again, highly personal, only to be used by her in her workshop. They are her personal memory aids, thus it was not required that anybody else could understand her notes. In that respect, these cards to some degree disclose the process for us, while at the same time bringing us even closer to Stölzl being at work, to *her* working process. They do this to a larger extent than the cards used at the Bauhaus, which were meant to be shareable. Unlike the conventional way of pattern-designing, the notes on Stölzl's cards did not come *before* the weaving. And unlike the Bauhaus cards, Stölzl's notes did not come *after* the weaving either, but could be said to hold her thoughts into place while working.²⁴ She would start working on an experiment on her loom, note down what she was doing while working, then try something else again, note it down, and repeat this until she was content. She would then stick the textile results as well as her paper notes to a card to be used again if she wanted to reproduce the textile. Furthermore, by putting the written pattern next to the material, Stölzl emphasized the importance of the yarn's properties and structure, which cannot be caught, as Otti Berger already pointed out, by an inscription on paper. This makes these cards not only personal records of Stölzl's working process but also of her ideas on textiles and making, stemming from the Bauhaus.

Materialities of Research in an Experimental System

To better understand the function of Stölzl's cards, one might compare them to Hans-Jörg Rheinberger's "epistemische Dinge"²⁵ and experimental systems. In his book *Toward a*

²² Ibid.

²³ Interviews with Monika Stadler, 7 and 12 November 2018. Gunta Stölzl usually would not make her assistants responsible for executing the textiles.

²⁴ It might be interesting here to compare the cards to Bruno Latour's concept of the immutable mobile, a device which, he argues, helps to hold thoughts into place via inscriptions on a flat, two-dimensional surface, while at the same time functions to share these thoughts, in order to convince others. See Bruno Latour, 'Visualization and Cognition: Drawing Things together', *Knowledge and Society: Studies in the Sociology of Culture Past and Present* 6 (1986), pp. 1–40.

²⁵ Hans-Jörg Rheinberger, *Epistemologie des Konkreten*, p. 351.

History of Epistemic Things (1997) Rheinberger proposes a shift from the scientist's mind to his objects of manipulation and the process of research. Rather than being interested in the final results of scientific experiments, Rheinberger argues that his emphasis is on the "materialities of research".²⁶ Stölzl used her cards in a similar manner: rather than being final results, the cards are part of her experimental system in the weaving workshop, which makes them rather unique.

Rheinberger argues that scientists work on so-called "epistemische Dinge", scientific objects of which the boundaries are not yet known, but which are nevertheless the target of experiments and research in the laboratory.²⁷ What is often overlooked but deserves more attention, according to Rheinberger, are the "experimental conditions" of the process of experimentation: "The experimental conditions 'contain' the scientific objects in the double sense of this expression: they embed them, and through that very embracement, they restrict and constrain them. [...] The technical conditions determine the realm of possible representations of an epistemic thing."²⁸

This approach sheds a whole new light on the process of research and experimentation. Rather than being devices in the quest for an answer to a question, well-defined in advance, the process of research consists of "vehicles for materializing questions. [...] Practices and concepts thus 'come packaged together'."²⁹ Answers are not given at the beginning, but neither are the questions nor starts the process with a concept that is then materialized into practice. Rather, question and answer, concept and (material) practices are all intertwined in what Rheinberger calls an "experimental system", defined as a "basic unit of experimental activity combining local, technical, instrumental, institutional, social, and epistemic aspects."³⁰ Within this system, epistemic things and the technical objects are completely intertwined.

Thus the cards, containing both the written notes and the textile samples, provide traces of what Rheinberger elsewhere calls "Wissenschaft im Werden"³¹, or, in the case of Stölzl, her weaving workshop can be called a 'laboratory'. Unlike the classic way of proceeding, starting from a paper pattern that would then be translated into textile, there is no strict hierarchy between writing and sample in Stölzl's cards. Rather, it is the *combination* of both written and material traces that gives us the most complete account of the experimental system in the

²⁶ Hans-Jörg Rheinberger, *Toward a History of Epistemic Things*, p. 26.

²⁷ Ibid., p. 238.

²⁸ Ibid., p. 29.

²⁹ Ibid., p. 28.

³⁰ Ibid., p. 238.

³¹ Hans-Jörg Rheinberger, *Epistemologie des Konkreten*, p. 353.

laboratory of the weaver as for Rheinberger, both inscriptions, instruments, and models are experimental conditions' objects. "Epistemische Dinge" in this case are not only articulated through the two-dimensional, writing, but equally through the three-dimensional area of the textile sample with its functioning in space. Both are as materialities of research part of Stölzl's experimental system, as experimental systems contain *all* the materialities, whether in writing or in the tactile dimension of the textile sample. Consequently, following Rheinberger, it might be better to treat these sample cards *as a whole* as materialities of research in the experimental system of the weaver through which an epistemic thing is explored. The word 'card' might indicate a rather flat surface with written inscriptions, whereas in Stölzl's sample cards it is the combination of written inscriptions and three-dimensional textile samples that makes the cards so interesting and so useful in unfolding the weaving processes for us.

Sample Cards as Aesthetic Objects

As I am writing this article, with the centenary of the Bauhaus approaching, the Gunta Stölzl Archive receives many requests from museums worldwide that would like to use the cards for exhibition purposes. This might also be part of a growing interest in 'the hand of the artist' and insights into what happens in ateliers and workshops.³² The sample cards are traces of the experiments in the weaver's laboratory, but how to properly display them to indeed convey this to the visitor?³³

As was explained above, these cards point towards the initial entanglement of the weaver, her materials on the loom, and her notes, while at the same time unpacking this entanglement as archival records in which writing, patterns, and the textile materials are all visible as distinct aspects. Furthermore, they possess strong tactile qualities, not only because they involve textiles, but also because of the different layers on the cards. I would therefore propose that it might sometimes be necessary to touch these cards, to flip back the textile sample to discover the notes underneath, and to move from the notes to the material-specific qualities of the textile, and back again. I would even argue that the visitor in this way engages in a similar process as Stölzl when she created these cards during her experiments on the loom. Through our sensual engagement we think and reflect on the material. It is not a separate and linear process in which thinking follows from sensual experience. Restaging this dialectical process in an exhibition can teach us about Stölzl's ideas on weaving that were already developed at the Bauhaus, namely the intertwinement of ideas and practice, thinking and experimenting.

³² See for example the essays in Rachel Esner, Sandra Kisters and Ann-Sophie Lehmann eds., *Hiding Making, Showing Creation: The Studio from Turner to Tacita Dean* (Amsterdam: Amsterdam University Press, 2013).

³³ Judith Raum has explored possibilities of display to some extent, see Raum, *Bauhausraum*, p. 1.

Of course, it is not always safe to touch these objects from the perspective of conservation. But neither should it be forgotten that Stölzl never intended these cards to become exhibited as ‘art’. They were initially meant to be functional, not to be shown as museum objects behind glass. On the other hand, as historical or biographical objects they are worth preserving, and so we are searching for a suitable middle ground. What the GSA has been experimenting with is giving these cards to contemporary weavers to create reweaves of the textiles in question. These rewoven samples could be shown next to the original, as a copy that can be touched by the visitor.³⁴ This encounter could also result in interesting documentation material that helps both museum professionals and visitors of an exhibition in understanding how these cards might have functioned for Gunta Stölzl. Another opportunity we discussed is to reproduce these cards completely, not only the textiles. Technology nowadays allows us to make faithful copies of the cards and their notes. Concerning the textiles, one option would be to collaborate with weavers to reweave them. Another option, which is more radical, was proposed by Monika Stadler. In the estate of her mother Gunta Stölzl, there are pieces of textile, larger and smaller ones, that can also be found on some of the cards. She argued that she is willing to use and cut these ‘duplicates’ – as she sees them – to make faithful copies of the cards. These reproductions could then be displayed next to the original cards to be touched and explored by the visitors, which hopefully will give them a full insight in how these cards might have worked in the weaver’s laboratory. All these possibilities are still open and we would like to keep discussing this question with both museum professionals and weavers.

From Sample Cards to Materialities of Research

After having written this chapter, I am actually convinced that ‘sample cards’, the term that we use in the Gunta Stölzl Archive, is a restricted term, really. Drawing on my earlier arguments, the term does not adequately capture their experimental and processual character. Rather, I would propose to follow Rheinberger’s terminology and treat these objects as materialities of research in the experimental system of the weaver. As such, they embody a critique on the strict distinction between writing and material practice, a critique that was already voiced by the weavers at the Bauhaus. Instead, experimenting, designing, thinking and writing are all interconnected. Stölzl’s thoughts were entangled with the cardboard and the materials in a constant flow of ideas and creation. The cards as archival records bring together the materialities of research – written ‘laboratory’ notes and textile material from the

³⁴ Something similar was done by Tate Modern in the large retrospective *Anni Albers* (11 October 2018–27 January 2019), in which samples of the types of yarn she used were made into touchable swatches, inspired by her work, by weaver Louise Anderson.

loom –, arrest them for us, and allow us to unfold Stölzl's weaving process again if we in turn engage with them today.

I have also argued that these cards demand tactile exploration in order to be properly understood. Consequently, we have to accept that the tactile exploration of the three-dimensional might not always be the most ordered or direct way of learning, but certainly at least as valuable in the case of these objects. Therefore, it is useful to keep discussing possibilities of display with museum professionals, weavers, and also the visitors themselves. These are the lessons that can be learned from Stölzl's materialities of research, which I would very much like to further work on in the museum laboratories where future exhibitions will be created.