Specimens of writing played a critical role in the processes of transmission in calligraphy, and constituted a physical record that offered calligraphers repeated returns by which they gained valuable lessons in practice as well as insights into aesthetic values. This they did no matter how chronologically distant the exemplum — and exemplar — might have been from their age. It is no wonder that calligraphies and books penned by eminent calligraphers were eagerly collected in libraries or constituted into albums.

**From Training to Fair Copy**

Visual contemplation of calligraphy did not occur only after the specimens were made, absent the original calligrapher. This can be gleaned from references in “how-to” calligraphy treatises describing aspects of practice and training. Even less professionally directed texts, such as Ibn Khalidun’s monumental “prolegomena” to history (Muqaddima, completed before 1406), includes a subsection on calligraphy in a chapter treating the crafts. Comparing methods of instruction in Cairo to those in Spain and North Africa, Ibn Khaldun judges the Cairene system to be the best because a student there learns “to draw and form the letters well, as he learns them by sensual perception (al-his), becomes skilled in them through practice in writing them, and learns them in the form of scientific norms.” Sensual perception refers to the visual study of paper models.

This mode of practice — referenced in Persian sources by “looking” (P. naziri) as distinct from “by the pen” (P. qalemi) — is frequently mentioned in calligraphy manuals. For example, Sultan ‘Ali Mashhadi in his Strat al-sutar (“The Way of Lines of Writing,” 1514), instructs the reader:

- Collect the writings of the masters,
- Throw a glance at this and at that,
- For whomsoever you feel a natural attraction,
- Besides his writing, you must not look at others,
- So that your eye should become saturated with his writing,
- And because of his writing each of your letters should become a pearl.

Visual immersion occurred before the would-be calligrapher picked up the pen to write. This mode was essential to practice because it provided a source of instruction about the letter shapes and ligatures, about their independent, initial, medial, and final forms (the majority of letters making up the Arabic alphabet are connected to the letters following or preceding them, and conventions were developed for how the letter looks in that first, middle, or final position). Visual study also gave examples of the formal aspects of writing, including the contrast between light paper and dark ink, the spacing of words, intervals between lines, and the relative sizes of letters in exercises combining two, or more, different scripts. In other words, in addition to showing the effects of a proportional system of writing within a single script or across a canon of scripts, scrutiny of paper models permitted an understanding of elements of practice that could not be achieved without the material without a visual reference.
not be translated into words. Various orders of visual manifestations, fundamental to the master calligrapher’s mode of work, were wholly subjective and not ascertainable without models.

Beginning calligraphers trained on different surfaces over the centuries. Ibn al-Basis recommended that after visual study of the master’s specimens (A. mithal), the student should proceed to write on a wooden tablet (A. lauh) in case mistakes needed to be corrected. Then he was ready to translate a selected master specimen onto a scroll (A. darj). Most extant practice exercises are found on sheets of paper, particularly because the medium became more and more readily available, and the activity of practice takes on an increasingly formalized aspect.

In one form of practice sheet, known as a mifrâdat (a noun from the Arabic trilateral root “f r d” having the sense of “detached”), the exercise begins by writing in isolated form the individual graphemes used in the Arabic alphabet and continues with each letter in alphabetical sequence joined to the other letters of the alphabet in alphabetical order (FIGS. 47 and 48). Every single permutation is not shown because the same grapheme, or letter shape, can be modified to produce different phonemes by the addition of a number of dots, termed diacritics, above or below the letter shape (hence, while there are twenty-eight phonemes in Arabic, there are only eighteen graphemes). Mifrâdats (T. mûfaret) could be composed as single sheets arranged in tall columns of writing, or over several sheets of paper with writing combining different kinds of scripts—usually a pair of scripts—produced at different sizes. Although the combination of scripts—such as thuluth with naskh, or muhaqqiq with naskh—had become normative in manuscripts since at least the 1400s, the formalized custom of integrating them into a practice exercise appears to have been an invention of the Ottoman lands from the late 1500s onward.

After the first page of one mifrâdat, which begins with an alphabet of single letters written in the two kinds of script being practiced, the following pages write out in alphabetic sequence the letters ba’, jim, sin, sad, ta’, ‘ayn, fa’, kaf, mim, and ha’ connected to the letters of the alphabet, again in alphabetical sequence. Hence, for the letter mim (“m”), one finds ma, mab, maj, mad, mar, mar, mar (the soft, unvoiced “s”), mas (the hard, voiced “s”), mat, ma’a, maf, maq, mak, mam, maw (FIG. 48). As one reads through the practice exercise, the pace varies—because the thuluth lines are written at a larger size, they take up more space and quickly exceed the naskh. The different rate of flow in writing was accommodated at the end of the practice exercise by the addition of colophons in both scripts and by writing out a saying attributed to ‘Ali b. Abi Talib in the space left over by the smaller naskh script.

The mifrâdat exercise offered calligraphers an opportunity to practice the various means of linking letters to each other through a maximum economy, producing a key of sorts to the basic process of joining letters and showing the spatial relation between consecutive letters that are never joined (although the letters dâl, dal, dhal, ra’, za’, and way are joined to letters preceding them, they do not connect to letters following them). In addition to showing the initial position of the letters, one can see the final form of
Calligraphy exercises (T. miftath) in naskh and thuluth scripts, signed by al-Seyyid 'Abdallah, Turkey, 18th century, ink, opaque pigment and gold on paper, 6.9 × 10.5 inches (17.5 × 26.7 cm).

Al-Seyyid 'Abdallah’s exercise comprises eight folios set into tinted or marbled paper borders. Rulings were inscribed over the seams of the sheets of calligraphy and the borders, the outer edges of the folios finished in strips of red morocco leather. With the exception of the first and second pages, each subsequent page is divided into three registers, the top and bottom lines holding writing in thuluth script, the central line holding writing in naskh script, which is written at a smaller scale. Al-Seyyid 'Abdallah was a pupil of the master calligrapher Hafiz Osman (1642–1689).
the letters — how “linking” letters connect to the letter preceding them when they end a word —, and one also sees a few letters in medial form, but only those that do not connect to the following letter.

In addition to finished specimens or fair copies of different kinds of texts, students would presumably also work from these mifredats, which were made by calligraphers, even by masters like Sultan ‘Ali Mashhadi, throughout their careers in a series of returns to the first principles of penmanship. Album collections of calligraphies invariably include these practice exercises as well as finished pieces. Through endless repetitions, calligraphers maintained the memory of writing in their muscles and perpetuated their ability to produce the letters.

This mode of learning by duplication is preserved in abundance in the Ottoman lands of the late 1500s onward (Figs. 47 and 48). Thousands of albums, bound in codex or concertina fashion from the loose leaves of calligraphers’ practice sheets, survive. The Ottomans formalized the process of calligraphic training like no other culture before them in the historical Islamic lands, though their basic principles of pedagogy remained the same as those found in earlier and contemporary periods of other regions.

By visual immersion, students studied specimens usually given to them by their teacher, and once attached to a teacher, the students would also learn by observing practice. Sitting next to his teacher, the young calligrapher watched the process by which letters were generated. This was the least mediated form of pedagogical transmission: the student could see how the materials were prepared — how the reed pen was cut, the ink prepared, and paper polished — and then how these materials were applied to the process of writing. The student was privy to an entire series of physical prompts enacted by the teacher — how he sat, how he held the pen, how he moved it across the paper and between specimen and inkwell. After learning through observation — visual study of specimens and visual study of practice — the student graduated to the process of making his own writing.

Working in the canon of two paired scripts — usually thuluth and nasth, others would be learned separately — the teacher in the Ottoman lands provided the student with a mifredat. The student would then replicate these models, attempting to bridge the gap between his own physical action and what he had learned through two forms of observation — writing as completed object and writing as process. After he had succeeded in producing single and joined pairs of letters, the student moved on to another form of exercise called a mürkkebat in Turkish (the noun is derived from the Arabic triliteral root “r/l/k,” which has the sense of being assembled, in compound) (Fig. 49). Here the student writes verses from the Qur’an, sayings, or poetry to practice combining letters into words and sentences.

One sheet (Fig. 49) would originally have been bound among the several folios of a mürkkebat exercise, assembled into a codex or concertina-format album. But this piece was actually made at the end of the student calligrapher’s training process to demonstrate to his teacher that he had mastered all aspects of writing. At this stage, witnesses would
sign the exercise, attesting that the calligrapher’s formal training was now complete, and he received a certificate or “license” (T. isaz) to sign his own name and also to apply the phrase “he wrote it” (A. kataba)u. In this formalized custom, the text followed a largely standardized repertoire of content, beginning with an invocation to God and the famous prayer “O Lord, make things easy and do not make them difficult. O Lord, make everything come out well” (Rabbi yessir, ir battissir, Rabbi, tammim b’il-hayr) copied in the pair of scripts being examined (here thuluth and naskh). These opening texts were followed by the alphabet of single letters (A. abjad), the mufredat, and the texts constituting the murekkebat. In this example (FIG. 49), found at the culmination point of the murekkebat, the text is composed of an Arabic aphorism penned in large-scale thuluth, “Calligraphy is the tongue of the hand and the translator of infinite duration,” succeeded by two smaller lines in naskh, “and the delight of the lofty mind; and it was said that calligraphy is one of the two tongues and that it possesses two tongues and that its beauty is one of the two kinds of eloquence,” and concluded with still smaller text in taqm script comprising the signatures of the witnesses who granted the “license.”

A second folio from a murekkebat (FIG. 50) selects thuluth script for its upper line, the pious formula “In the name of God, the Compassionate, the Merciful,” or basmala. The majestic script could hold an entire page, but it is followed here by smaller writing,
which offers a saying attributed to the Prophet Muhammad: "The Messenger of God said, God’s prayers and peace be upon him: ‘Whoever writes in the name of God, the Compassionate, the Merciful, will be improved by God’s forgiveness.’ The Messenger of God confirmed [this].’" The page ends with the witnesses’ signatures. Like most other mürrekhebat, the final production stages of the exercise entailed adding a rich program of illumination in gold and opaque pigment, some of it executed by the calligrapher responsible for the exercise, and then set inside borders. These borders are flecked with gold and silver (FIGS. 49 and 50).

As a totality, the writing in the mürrekhebat showed full mastery of a number of challenges — the shaping and interconnection of letters, their production at contrasting scales (small and large), the attention to the letters’ seating or how they are positioned in a line, the relationship between lines, and the penmanship of signs used to indicate short vowels (A. damma, fatha, kasra), silences (A. sukun), and intensifications, or doublings of consonants (A. shadda). These exercises were not confined to the stages of training through acquisition of the license, but continued over the calligrapher’s career.

An aspect of practice and training not mentioned thus far concerns the fact that each type of script adhered to its own proportional system and that students needed to learn this. Calligraphy had been regulated by these norms since Ibn Muqla’s reforms.
in the 900s. Called the “the proportioned script” (A. khatt al-mansub), each letter of the alphabet in each script had a fixed proportional relationship to the height of the first letter, the alif, which was composed of a specified number of rhombic points. A rhombic point is the shape made by the pen when pressed hard onto the paper. By this means a fixed canon of proportion was applied to each letter of the alphabet within each script. These proportional systems were maintained over the course of several centuries and modified by later calligraphers, who found ways to add elegance to their writing through the means of trimming the point of their pen or by adjusting the number of dots making up the alif. Another means of modulating the rules of calligraphy and lending writing a unique autographic property was by manipulating the length of the ligatures connecting letters.

Some practice sheets (A. masāq; T. meş) are marked with the teacher’s interventions, registered in red or black ink, emending the proportional relationships between letters or adding thinly sketched lines to reveal laterally organized correspondences.\(^\text{80}\) Termed the “measurement of the letters” (A. mi‘yar al-haraf), the rhombic points are registered on specimens by a series of small circles to show proportional relations. In other examples (FIG. 51), however, the dots have not been added as a correction but function as a form of proportional scaffold rendered visible to the eye. The last two pages from this late-Ottoman mārekkebat signed by al-Hac al-‘Arīf are composed of two practice sheets where the writing has been annotated with black dots and lines. The apparatus offers a complete armature for the writing by showing its system of measurement and relation. A similar technique of proportional and spatial measurement is found in other examples in which the calligrapher reveals the proportional system he has followed, or in other instances reconstructs the proportions employed by another calligrapher whose specimens he has chosen to study and imitate.\(^\text{81}\)

All of these steps in teaching, from the visual study of specimens to the observation of a master at work to the actual performance of writing in response to models, produced a calligrapher of utmost skill and dexterity. He was so well-practiced in shaping the letters and in stringing them together to form words and sentences that writing could be generated at different sizes and in different scripts. Writing was a physically and visually memorized activity, so finely choreographed through so many rehearsals that the very best calligraphers could produce writing spontaneously according to the specific format of the surface designated to receive writing. Through the study of models, calligraphers assimilated lessons in the production of writing and had the capacity to imitate the hands of other master calligraphers or equally to write in their own idiom. A heightened sense of tradition and the processes of instruction that calligraphers underwent produced a history of calligraphic practice that organized calligraphers into “chains” (A. sīsil; T. sīsil). This system—a history of calligraphy conceptualized as transmission by pedagogical genealogy—was used to arrange accounts of calligraphers’ lives. This structure finds clearest written expression in the mid-1500s and continued to be used until the modern era.\(^\text{82}\)