Although Arabic is one of the longest-known oriental languages in Europe, it began to be studied scientifically only in the nineteenth century. Baron Silvestre de Sacy, a professor and later administrator of the Ecole des Langues Orientales, was one of the pioneers. This eminent linguist was also Inspector of Oriental Type at the Royal Printing Press and devoted himself to organizing the Arabic fonts of the state printing press.

As a result, the Imprimerie Nationale collection, which reflects the history of Arabic typography over nearly four centuries, is one of the best and most beautiful collections in the world. It includes, among other treasures, a number of Arabic punches and characters from the Medici Printing Press (Florence 1590) and the Propaganda Printing Press (Rome 1639).
Since the cursive naskh style was the most commonly used form of writing Arabic, engravers and type founders faced very specific problems from the outset.

The numerous forms for each letter, depending on its place in a word, and the graphic combinations of certain groups of letters (ligatures) meant that a large number of typographic types was necessary.

The serious constraints of using lead resulted in the transformation of a lively handwritten style into a somewhat rigorous linear alignment, which further increased the problems of joining up the letters.

Because each consonant had to bear vowel marks or reduplication and orthographic signs, it took between 300 and 600 characters to compose text in Arabic, whereas a hundred or so sufficed for Latin script.

The result of having to manipulate this extremely large number of types was that manual typesetting took a long time and there was a greater risk of error, which had to be corrected. Furthermore, the fine lead types were fragile and did not hold up well to being constantly repositioned or to the wear-and-tear of printing. Lastly, the very small size of the empty spaces inside certain letters easily clogged up.

Letters with kerning. In order to combine certain signs (vowels or orthographic signs) some types had to fit into each other, making them difficult to handle (Berthold No. 49 font).
Composition Using Lead Typeface

Mechanical composition (monotype).
1: the ligature lam-alf with cross-section; 2: vowel unit with kerning;
3: orthographic sign unit with kerning; 4: support unit with kerning.

Linotype composition: main and auxiliary keyboard for composing simplified Arabic.

As new methods of typesetting appeared they were adapted to Arabic writing. However, in order to respect traditional cursive writing styles, the manufacturers had to overcome a number of difficulties.

Manual typography
This is the oldest method of composition. For Arabic, the so-called Egyptian case was composed of between 300 and 450 boxes, excluding vowels.

Linotype
Mechanical composition was introduced in the nineteenth century. A keyboard activated the setting of the matrices to compose a line of text. After the matrices were filled with liquid lead, a block was obtained for the equivalent line of type. However, both the keyboard and the mechanics of this method were designed for the Latin alphabet and the multitude of forms in Arabic writing required an additional keyboard. The accuracy with which the characters were joined up was even less precise than in manual typography.

Monotype
As with linotype, the characteristics of Arabic script required highly complex technological adaptations, with poor results.

‘Simplified’ Arabic
The large number of characters required for the mechanical composition of Arabic text led to the design of fonts known as ‘simplified Arabic.’ In most cases this meant reducing the letter shapes to two per letter: an initial–medial form and a final–isolated one.

There was also a fairly radical removal of vowel and orthographic signs, although some ligatures were kept.

So despite the rapid spread of printing in Arabic in the twentieth century, the cost and quality of the printed work were rarely satisfactory for either printer or reader.
From 1933, the need to adapt Arabic writing to the demands of the twentieth century led the Cairo Academy to launch a competition to find solutions that would be compatible with technology but still respect reading habits. The Academy’s three guiding principles were:
• to reduce the number of signs in order to achieve a simple and economical way of typesetting and transmitting text by all available means;
• to include vowel and orthographic signs that would make full script Arabic easy to compose;
• to respect reading habits by maintaining the traditional written aspect as much as possible.

The Academy examined more than 250 proposals. Some focused on orthographic or grammatical simplification, others suggested graphic solutions that departed sharply from Arabic writing, even to the extent of using modified Latin letters. A few proposals suggested constructive solutions, but they were usually technically incomplete. In the end none of the proposals were approved by the Cairo Academy.

Some of the more serious proposals:
1- M. Taymour
2- K.B. El Farag
3- M. Laffdar-Ghazal
4- S. Ouaieda
Some Proposals Presented to the Cairo Academy

Ibrahim Muhammad Sadiq's proposal (1948):
One sign per letter, vowels following consonants, 'Latinized' script.

Some Proposals Presented to the Cairo Academy

Muhammad Metwalli Badr's proposal (1947):
One shape per letter, no vowels, letters not joined.

فلتست نبيد للحال ثان هناء
عدة كميات تماما كما تقول
يا نبيد فهذه الوسيلة تسمح

Roberto Hamman's proposal (1978):
One or two forms per letter, a 'letter joiner' that can take vowel signs, extreme standardization.

Letters superposed to show their standardization. The section in black highlights the role of the 'letter joiner,' which is treated as a character and can take vowel and orthographic signs.

Some Proposals Presented to the Cairo Academy

Nasir Hattar's proposal (1947–1956):
One shape per letter, no vowels, letters not joined, adapted to several fonts.
One of the proposals submitted to the Cairo Academy did bear fruit, thanks to help from UNESCO and the Arabic League Educational, Cultural and Scientific Organization (ALECSO).

Mohammed Lakhdar-Ghazal, a Moroccan linguist, presented his proposal in 1958. He was well aware of previous research as well as the technological constraints, and he created Standard Voweled Arabic, known as the Lakhdar system, which had the great advantage of being adaptable to all forms of typesetting and text transmission. This system finally enabled calligraphic writing styles to be transformed into printed letters.

The Institute for Study and Research for Arabization (I.E.R.A.) in Rabat, Morocco, worked for nearly 15 years to adapt the Lakhdar system to printing, typing, and computing, since this required the creation of several styles of lettering and the training of font designers.

Despite the relevance of the system, the quality of the work carried out, the cooperation between numerous type founders and manufacturers, not to mention the agreement in principle of several Arab countries, the project ran against the quasi-religious attachment of the Arab world to its traditional writing, and a general lack of political will to promote access to reading and knowledge.

Thanks to King Hassan II, who personally supported the project, only Morocco truly benefited from this work, and the system was used for newspapers, schoolbooks, and road signs.

One letter, one shape, one type
In order to reduce the number of types in a logical manner, each letter was given only a single shape, whatever its position in the word, thereby eliminating all variations that were not absolutely essential to reading.

بني بينيت وهبه

Final letters
A separate appendix was added to letter type in a final position, and three of these were deemed sufficient:

\[\begin{array}{c}
\text{kha' type} \\
\text{sin type} \\
\text{ba' type}
\end{array}\]

Complete vowel system
The traditional notation for vowels placed them above the consonants, obliging the reader to read at several levels. The Lakhdar system placed the vowel immediately after the consonant and made it possible to typeset and to read in a linear fashion.

Every vowel sign has two forms:
- above or below the carrier for connected letters
- between two unconnected letters without the carrier.

The basic alphanumeric system: 84 characters
Including numbers and punctuation marks, this basic system enabled Arabic to be written with only 84 characters. It could be used when the equipment (for instance, mechanical machines with keyboards) allowed for only a limited number of types.
The Lakhdar System

Complementary signs
Although it was entirely possible to read text printed with only 84 characters, the technical constraints involved in making the letter altered the aesthetics of certain characters, especially the final ones formed with the appendixes. Since most composition techniques did allow for the use of between 100 and 120 characters, a certain number of aesthetic letters were added to improve the resemblance to traditional writing:

<table>
<thead>
<tr>
<th>Primary esthetic letters</th>
</tr>
</thead>
<tbody>
<tr>
<td>م لا ع ن</td>
</tr>
<tr>
<td>ب د ء غ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary esthetic letters</th>
</tr>
</thead>
<tbody>
<tr>
<td>س ض ع غ</td>
</tr>
<tr>
<td>ژ خ ش</td>
</tr>
</tbody>
</table>

Standardized shapes
- all the letters were connected on the same horizontal baseline;
- the same baseline grid was used for all characters above or below the line of writing, for the thickness of the strokes, and for the angle of the vertical lines.

The Lakhdar System

The full alphanumeric set: 108 types
The full alphabet, including vowel signs, esthetic letters, special foreign letters, numbers, and punctuation formed a 108-character alphanumeric set that was compatible with all keyboards (the Latin alphanumeric set is composed of between 100 and 120 characters).

<table>
<thead>
<tr>
<th>Basic alphabet</th>
</tr>
</thead>
<tbody>
<tr>
<td>ا ب ت ث ح خ ج</td>
</tr>
<tr>
<td>د ذ ر ش ص ح</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Appendices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vowels and orthographic signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>أ ا ي ى ع ع ى ى</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Numerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Punctuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ) ؤ آ</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Esthetic letters</th>
</tr>
</thead>
<tbody>
<tr>
<td>م لا ع ن ج ح خ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special letters</th>
</tr>
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<table>
<thead>
<tr>
<th>Shadda</th>
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<td></td>
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</table>
إن محافر طريقة العربية المعيارية المشكولة (العٌمَّـشَع) قد صممت على

Naikh medium

إن محافر طريقة العربية المعيارية المشكولة (العٌمَّـشَع) قد صممت على

Naikh light

تشد الرحال في نفس الوقت فيقضي الناس بجوار المسجد

Rija’ bold

تشد الرحال في نفس الوقت فيقضي الناس بجوار المسجد زمنًا يؤدون

Rija’ medium

تشد الرحال في نفس الوقت فيقضي الناس بجوار المسجد زمنًا يؤدون

Rija’ light

تشد الرحال في نفس الوقت فيقضي الناس بجوار المسجد زمنًا يؤدون

Kufic medium

تشم الرحال وقت الحج فيقضي الحجاج يؤديون به الطاعة فإذا قم لازم أن تذهب

Standardized IS0NBRM 3098 B industrial script. Can be reduced for microfilm.

الرباط

40

الدار البيضاء

130

RABAT

40

CASABLANCA

130

Greater visibility in road signs and place names.
In the 1990s, the invention and rapid spread of microchips and personal computers made research into adapting Arabic writing to printing and computing partly obsolete.

Now a single key per letter was sufficient, since the software program selected the shape of each letter according to its position in the word, with or without a vowel sign. Freed of material constraints, virtual fonts could recreate all the traditional forms of writing with a precision and quality that had been previously impossible.

In addition, graphic and multimedia software provided new dimensions for creating headlines and logotype through the large possibilities of distortion, colors, and textures.

This has undoubtedly been the greatest revolution for Arabic writing since the invention of paper. The question is, will this influence its shape and will new styles emerge as a result? At present this still seems unlikely, since the 'modern' attempts we see on advertising hoardings and on television are far from convincing.
Visibility
With the emergence of modern communication techniques, writing has to adapt to different requirements. The proliferation of media has changed reading habits and brought about new writing functions. Mass media require rapid reading, often from a distance, which makes it vital to improve the visibility and legibility of texts in newspaper and magazine headlines, advertising and packaging, television and Internet, road signs and place names.

Bi-alphabetic texts
In texts with both Arabic writing and a translation using Latin script, the Arabic text is generally less visible than the Latin letters, though occupying the same area. This is due to the greater space between the lines and the unequal height of the letters, which give rise to empty spaces.

New Arabic scripts
It is mainly in the field of advertising that graphic artists try to improve the visual impact of Arabic, often inspired by monumental Kufic stone inscriptions. Unfortunately, many of these new designs reveal a lack of understanding of the deeper structures of Arabic writing and of type design. So-called ‘fantasy’ characters for fashionable graphics are often clumsy imitations of modern Latin letters.

To advance beyond this ambiguous stage, the graphic designer using Arabic must have an in-depth knowledge of the structure and styles of Arabic writing and extract the elements best suited to the desired type or logo.
Arabic Scripts in Advertising

HOTEL ****
MARRAKECH

Some designs by the author (Morocco, 1975-85):
From top to bottom: logo for Nas al-Ghison (musical group),
logo for Il Jiala (musical group), logo for a glue, logo for a hotel.

Twenty-first-century Arabic Scripts

A Return to Calligraphy

Artists are interested in exploring calligraphy and rediscovering it as a means of artistic expression. This may be where the twenty-first century Arabic scripts will emerge.

‘Go and cure your dignity, in hell if need be! And refuse humiliation, even in paradise!’
Glossary

**Alphanumeric:** the set of letters, numbers and punctuations marks used in writing.

**Character:** piece of metal (or wood, or plastic) with an alphanumeric sign, punctuation mark, or any other element of a font for use in composing and printing typographic text. By extension, name of signs for all systems of composition. A character is defined by:
- the name of its font,
- its thickness,
- the point size,
for instance: 16-point naskh semi-bold.

**Compose (text):** to prepare for printing by assembling and ordering the types required.

**Cursive writing:** writing made easily with ink on a smooth surface such as papyrus, parchment, or paper.

**Font:** an assortment or set of type or characters all of one style and size.

**Lapidary:** a script style originally carved on a hard material such as stone. On a smooth surface, the writing appears angular.

**Leading:** vertical measurement in type size corresponding to the space between two continuous lines of text. It is measured in points (6-point, 10-point, 12-point, etc.).

**Papyrus:** a paper-like medium for writing made out of the stalks of the papyrus plant.

**Parchment:** non-tanned, air-dried skin of lamb, sheep, or goats used as a medium for writing.

**Stylus:** a piece of reed that is cut and sharpened, and when dipped in ink is used as a pen.

**Type founder:** the person who casts the metal type.

**Typographic case:** box with compartments in which types are stored.

**Typography:** printing technique. The drawing or letters to be printed are cast in reverse and in relief to take the ink, which is deposited under pressure on to the paper. By extension, anything to do with composition of texts using movable types.

**Vellum:** the skin of a stillborn calf, treated to form a finer and smoother medium for writing than parchment.

**Weight:** the thickness of a letter. The same letter may exist in several versions: light, medium, bold, etc.
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