TYPOGRAPHY
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Typography in Publication Design

Usage of Nasta'liq in the Modern Publications

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Abstract: Nasta'liq is a beautiful calligraphic and most widely used style of writing Farsi (Persian)/Urdu using an adapted Arabic script that has 36 and in Urdu 39 characters as against 28 in Arabic. In Nasta'liq, many character shapes have multiple instances. The shapes are context-sensitive too – character shapes changing with changes in the preceding character or the succeeding one. At times even the 3rd, 4th or 5th character may cause a similar change.

Farsi/Urdu typography has been a great challenge for the printing and publishing industry. Because it is composed of complex and shifting letters, typesetting technology, based on separate letter.

In addition of illustrating the history of Nasta'liq printing, this paper discusses the complexity of Nasta'liq and experiments the usage of Nasta'liq in modern publishing requirements. And it tries to portrait the different efforts made in different countries.

Key words: ***Nasta'liq Font, cursiveness , ligature, Farsi typography, Urdu typography, Farsi DTP, Urdu DTP***.

1. Introduction

Creating coexistence between traditional elements and modern technology is one of the major challenges of the graphic designers today. Nasta'liq is the core script of the traditional Persian writing and equally important in the areas under its cultural influence. A single script with its basic character shapes is adapted for writing in multiple languages e.g. Roman script for English and French while Arabic for Persian, Urdu etc.
In Iran Nasta'liq is used as a national writing system for most of the nonreligious manuscripts and documents for at least the past five centuries. In Pakistan and Bangladesh, almost everything in Urdu is written in Nasta'liq, concentrating the greater part of Nasta'liq usage in the world. In Hyderabad, Lucknow, and other cities in India with large Urdu-speaking populations, Nasta'liq is very popular too.

Although there are many styles for writing Perso-Arabic script, there are two common styles: Naskh (the linear style used typically) and Nasta'liq (has characters within a word placed at multiple levels). While in Arabic/Farsi most of the typefaces designed on Naskh base, Nasta'liq is widely used for writing Urdu and in Iran it's the favorite style of writing as its one of the national identities. Nasta'liq is one of the most beautiful and aesthetic styles of Islamic Calligraphy.

1. Aer	33. Farsi (Persian)	65. Kohistani Indus	96. Semnani
2. Arabi Malayalam	34. Fula (Ajami)	66. Koli-Kachi	97. Seraiki
3. Arabic	35. Garshuni	67. Koli-Parkari	98. Shahmukhi (Western Punjabi)
4. Arebica (Bosnian)	36. Gawar-Bati	68. Koli-Wadiyara	
5. Arwi	37. Ghera	69. Kurdish	99. Shina
6. Azerbaijani	38. Gilaki	70. Kyrgyz	100. Shina-Kohistani
7. Badeshi	39. Goaria	71. Ladakhi	101. Sindhi
8. Bagri	40. Gowro	72. Laki	102. Sindhi-Bhil
9. Balochi	41. Gujarati	73. Lasi	103. Somali
10. Balochi	42. Gurgula	74. Loarki	104. Songhay
11. Balti	43. Harari	75. Luri	105. Sorabe
12. Bateri	44. Haryanvi	76. Makrani	106. Swahili
13. Bedawi (Beja)	45. Hausa (Ajami)	77. Mandinka (Ajami)	107. Tajik
14. Belarusian Arabic	46. Hazaragi	78. Marwari	108. Torwali
15. Berber Arabic	47. Hindko	79. Marwari (Rajasthani)	109. Turkish (Ottoman Turkish)
16. Bhadrawahi	48. IPSL		
17. Brahui	49. İske imlâ (Tatar)	80. Mazandarani	
18. Brokskat	50. Jadgali	81. Memoni	110. Turkmen
19. Burig	51. Jandavra	82. Multani	111. Urdu
20. Burushaski	52. Kabutra	83. Nubian	112. Ushojo
21. Chambeali	53. Kachchi	84. Od	113. Uyghur
22. Changthang	54. Kalami	85. Ormuri	114. Uzbek
23. Chilliso	55. Kalasha-mun	86. Pahari-Pothohari	115. Vagri
24. Chinese Xiaoerjin	56. Kalkoti	87. Palula	116. Wadaad
25. Chitrali	57. Kamviri	88. Pashto	117. Wakhi
26. Comorian	58. Kashmiri	89. Pegon	118. Waneci
27. Dameli	59. Kati	90. Punjabi	119. Wolof (Wolofal)
28. Dari	60. Kazakh	91. Purik	120. Xiao'erjing
29. Dehawri	61. Kermanji	92. Qashqai	121. Yaña imlâ (Tatar)
30. Dhakti	62. Khetrani	93. Sansi	122. Yidgha
31. Dogri	63. Khojki	94. Saraiki	123. Yoruba
32. Domaaki	64. Khowar	95. Savi	124. Zangskari

Table 1. List of languages using the Perso-Arabic script

Lots of languages rely on Nasta'liq. The main ones are: Farsi, Azeri, Kurdish and Turkmen in Iran; Dari, Baluchi and Uzbek in Afghanistan; Punjabi, Urdu and Saraiki in Pakistan;

Urdu, Rekhta, Kashmiri and Sindhi in India, and the Turkic Uyghur language of the Chinese province of Xinjiang. Beside the above list, nastaliq has also been beloved by Ottoman and Arab calligraphers. In general, all Perso-Arabic languages partly use Nastaliq as one style of writing. There is a list of languages using the Perso-Arabic script in table 1.

2. Nasta'liq properties

Farsi and Urdu use an extended Arabic adapted script; Farsi has 36 and Urdu has 39 characters while Arabic has 28 only. Each character then has 2-4 different shapes depending upon its position in the word; initial, medial or final. When a character shape is written alone, it is called an isolated character shape. Each of these initial, medial and final character shapes can have multiple instances, the character shape changing depending upon the preceding or the succeeding character. This characteristic of having multiple instances of these character shapes is called context sensitivity. A complete language script comprises an alphabet and style of writing.

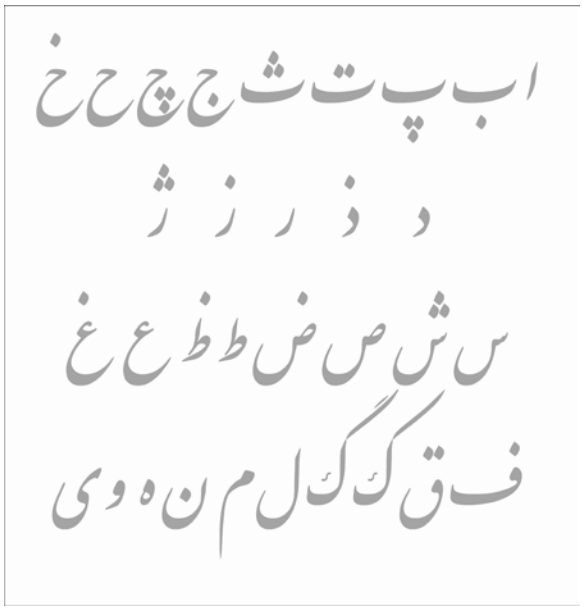


Figure.1 Farsi Alphabet with Nasta'liq

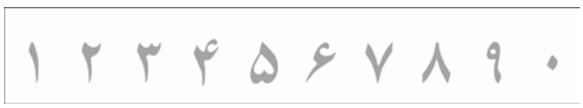


Figure.2 Farsi Numerals with Nasta'liq

2.1 Properties of Nasta'liq Fonts

The complexity of Nasta'liq makes it one of the world's most challenging writing styles. Nasta'liq has a strong contextual dependency. Nasta'liq is a cursive script, featuring elongated horizontal strokes and exaggerated rounded forms. The diacritical marks were

casually placed, and the lines were flowing rather than straight. The overlapping shapes make the Noqtah (rhombic dots) and kerning problem even harder.

Nasta'liq script has the following characteristics:

- Text is written from right to left while Numbers are written from left to right
- Nasta'liq script is inherently cursive in nature
- The shapes of individual letters change forms depending on whether the letter is alone, at the beginning of a word, the middle of a word or at the end.
- A ligature is formed by joining two or more characters cursively in a free flow form
- A ligature is not necessarily a complete word, rather in most of the cases a part of a word, sometimes referred to as a sub-word
- A word in Nasta'liq is composed of ligatures and isolated characters
- Word forming in Nasta'liq is context sensitive i.e. characters in a ligature change shape depending upon their position and preceding or succeeding characters
- Kerning in Nastaliq text are designed in a way to remove extra interword space which will give a calligraphic style
- Ability of Kashida Insertion for extended letter forms

2.2 Problems of Nasta'liq Font

Nastaliq, with its inherent cursive nature, makes a complex script. A single word in the script can comprise several ligatures formed in turn by combining several characters cursively joined together, along with isolated characters.

Ligatures in Nasta'liq are unique combinations or units of characters that change their shape according to their position within the unit. An initial "BA", for example, which is the second character in the alphabet, is quite different from medial, final or an isolated one. Added to this is the dependence of each character on the preceding or succeeding characters it joins with. A character might take more than 20 different shapes according to the character it is joining with. Sometimes even the 3rd, 4th or 5th preceding or succeeding character may initiate a change in shapes.

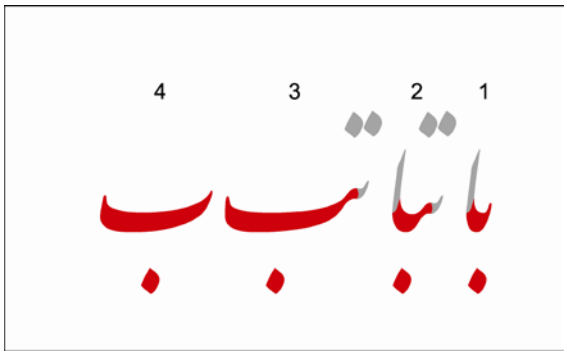


Figure.3 Four forms of “Ba”- 1) beginning 2) middle 3) end 4) isolated

Figure.4 Some of the different shapes of beginning of “Ba”, each shape has change according to the next character.

Several Nasta’liq characters (17 out of 36 in Farsi and 39 in Urdu) are differentiated by the presence of dots placed over, below or within them. Therefore, position/number of rhombic dots are very important. Positions of dots and diacritical mark have a great role in aesthetic aspect of Nasta’liq too.

Figure.5 Similar letters with different position of dots and diacritical mark

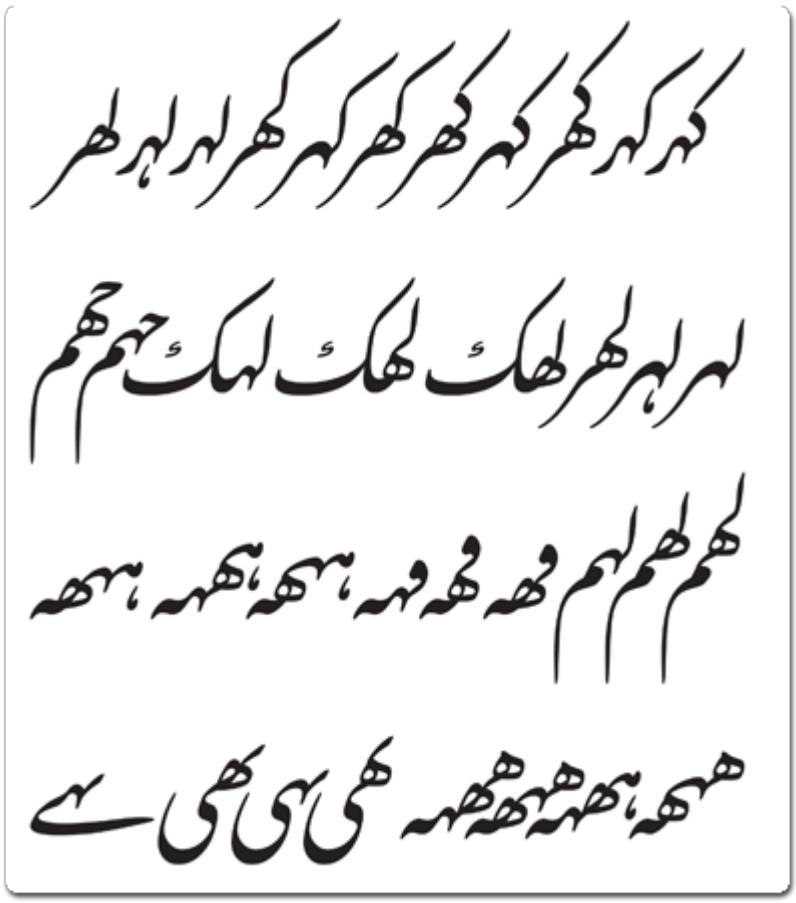


Figure.6 Some of different shape of "Ha" (34th letters of Farsi Alphabet)

Figure.7 Some joining of letters in Nasta'liq

2.3 Tradition of Nasta’liq

Nasta’liq style was developed in Iran in the 14th century. Soon it got spread to large territories of Islamic world from Ottoman Empire and North Africa in east to India and the West of China in west and central Asia in North. The Mughal Empire used Persian as their courtlanguage. During that time, Nasta’liq came into a widespread use in South Asia. The influence remained to this day. Nasta’liq is a common style of several scripts of Indian Muslims. In Pakistan, almost everything is written in nastaliq script.

Figure.8 The richly illuminated double frontispiece of the Shahnameh in the Baysonqori manuscript, copied by Ja'far Baysonqori in a Nasta'liq script.

3. Nasta’liq in Publications

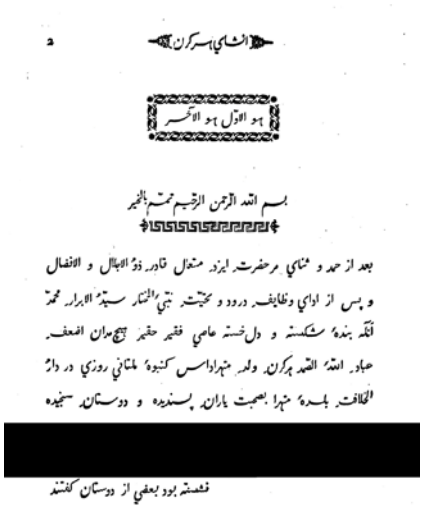
Farsi/Urdu typography has been a great challenge for the printing and publishing industry. The Perso-Arabic publishing and computing world has long been looking for a new font especially in the case of Nasta’liq. A font that is not only aesthetically fine but technically supportive.

Today many Nastaliq typefaces are available in the market. But they have a lot of shortcomings. Example of such fonts and software could be Dehalvi-type Nastaliq, Lahori Nastaliq and Faiz Nastaliq fonts as well as Inpage software from India, Irannastaliq font as well as chlipa, kelk and Mir Emad software from Iran.

3.1 Typesetting

Nasta’liq Typography first started with the attempts to develop a metallic type for the script, but all such efforts failed. Fort William College developed a Nasta’liq Type, which

was not close enough to Nasta'liq and hence never used other than by the college library to publish its own books. The creation of introducing the first printing press in India also goes to John Borthwick Gilchrist (1759-1841) a Scottish surgeon and Indologist. He was head of the Fort William College, and professor of Persian and Hindi in early 19 century. All Urdu works of the Fort William College were printed in Nasta'liq script for the first time. State of Hyderabad in India also attempted to develop a Nasta'liq Typewriter but this attempt miserably failed and the file was closed with the phrase "Preparation of Nasta'liq on commercial basis is impossible". Basically, in order to develop such a metal type, thousands of pieces would be required.


انشاي هرکرن

هو الاول هو الآخر

بسم الله الرحمن الرحيم تمتم بالخير

بعد از حمد و ثناي مرحضرت ايزد متعال قادر ذوالجلال و الافضال
و پس از اداي وظايف درود و تحيت نبي المختار سيد الابرار محمد
فگذ بندهٔ شکسته و دل خسته عاصي فقير حقير هيچ مدان اضعف
عباد الله الصمد هرکرن ولد مهراداس کنيوهٔ ملتاني روزي در دار
الخلافت بلدهٔ شهرا بصحبت يارانِ پسنديده و دوستانِ سنجيده
[redacted]
نشسته بود بعضي از دوستان گفتند

Figure.9 Inshā_yi_Harkaran on of the first book printed by Nasta'liq typesetting in Kolkata1781

Similar efforts were made in Egypt too. The metallic types were not close enough to Nasta'liq and hence never used other than the creators who use to publish their own books or newspapers; therefore all of those were left immature.

The earliest books printed in Urdu type were either in Persian or partly in Urdu. Some English newspapers in Kolkata were using Nasta'liq types in the eighth and ninth decades of the 18th century. The popularity of Urdu type soon spread to England also, where Haileybury College.

Today, according to the mentioned Nasta'liq features, all of the Farsi metallic types were designed on the base of Naskh style because of its simple structure.

3.2 Lithography

In the case of Persian/Urdu printing, lithography method or planographic printmaking technic was a good alternative for typesetting. This method invented at the end of the

18th century. Nasta'liq type did not acquire popularity and was replaced by the litho system of printing in which calligraphed matter is transferred on to a flat stone from which it is printed off. While Nasta'liq typing was difficult and costly, calligraphists were easily available. In addition to the superior aesthetic appeal of the Nasta'liq style of calligraphy over the Naskh style, it was also more convenient and practical to adopt in litho printing. The overriding consideration in switching over to calligraphy was, however, the high cost of books printed in Nasta'liq type. Consequently, there have been very few champions of Nasta'liq type since the establishment of the first litho press in Delhi around 1835.

For the aim of keeping the rich tradition of Persian bookmaking and employ the elegance Nasta'liq, publishers used the lithography technic in most of the Farsi published materials such as books and newspapers in Iran and India during the 19th century. In the process of lithography which its impressions were taken from a stone that has been treated with an oily substance and then coated with ink, calligraphers were a part of these printings technic. This method use to take a lot of time and was useful for a few number of copies.

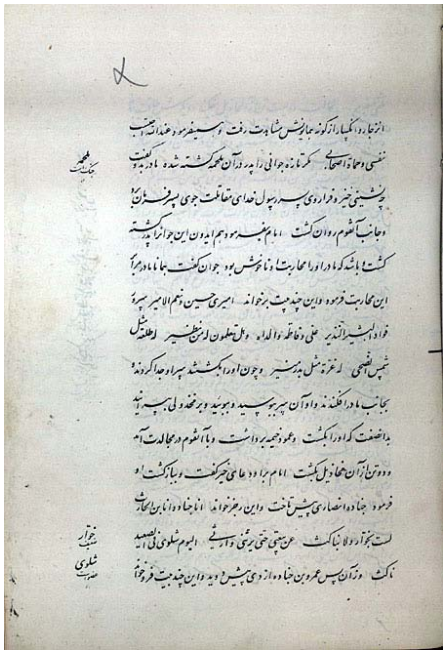


Figure.10 An old sample lithography printing of Persian book in Iran by Nasta'liq in 19 C

In Iran, although Iranian Armenians began printing with movable types in 1638 and it was the first long lasting printing enterprise in the Middle East but lithographic printing press was brought from Russia (Tiflis in Georgia,) to Iran in 1821 and the first Persian books were printed in the early decades of the 19th century.

The first printing press of Persian language in Iran with the necessary printing machinery, equipment and materials was established by Mirza Mohammad Saleh Shirazi. He was

graduated from university in England. Lithography, introduced to Persia in the early decades of the 19th century. The first book published by lito was Holy Qur'an in 1834 and the first book by Nasta'liq style was printed in 1843 too. He returned to Iran in 1855 and brought Lithography technic which made printing prevalence in Iran and various newspapers and books were published by this method.

3.3 DTP Software

Calligraphy is traditionally a pen-to-paper craft but even the fluidity of the pen can be replicated on a computer. Using a computer to create calligraphy can prove to be more efficient for calligraphers and graphic designers of all levels. Moreover, they keep the possibility to edit and modify it.

The computer facilitates the shape variations per letter to open up new creative possibilities for advertisements, front pages, greeting and business cards. It brings the possibility to create sophisticated Arabic literary and academic books as well as shape prose and poetry. Nasta'liq font is a ligature based typeface. The first step of preparing Nasta'liq typeface is to find unique ligatures in Farsi (Persian) language as well as in Urdu and Arabic.

We can find 12,000 unique ligatures in the first survey but with a rigorous search this number increase to approximately 30,000, with repetitions. There are more than 3500 unique Qur'anic ligatures included in it too. While a normal Farsi font has 220 glyphs only. Though the number of unique ligatures looks amazingly huge, it is not easy, first to find it and then to sort out the unique ones. Typing these unique ligatures is equally tough. Many books, magazines, newspapers and Holy Qur'an have to be typed.

After collecting unique ligatures, the second phase is to get the basic structure of the ligatures written. This task must be done by a professional calligraphers. After that technicians must transfer the handwriting works to digital characters. Then it passed on to the font developing team for its final conclusion.

Modern Nasta'liq typography began in 1981 by The Monotype Corporation. Although this was a ground-breaking solution employing over 20,000 ligatures (individually designed character combinations) which provided the beautiful results, and allowed newspapers to use digital typesetting instead of an army of calligraphers, it suffered from a variety of problems. With the advent of desktop publishing, different solutions have been proposed and implemented.

Presently there are couples of software and fonts capable of authentically handling Farsi or Urdu Nasta'liq typesetting work. There are verities of typeface and DTP software which are specifically developed for Farsi/Urdu publishing world. They have been used for a wide variety of publishing requirements ranging from heavy duty page layouts for Newspapers, Magazines, and Books etc. to some rather simple designs for brochures and greeting cards in Iran, Afghanistan Pakistan, Bangladesh and India without a good relationship between publishers, designers, software programmers, etc.

The new Nasta'liq writing software give the designers and publishers the most indispensable high quality typesetting for printing works. They provide ligatures to shape writing of different genre, poetry, prose, blank verse, etc. It is a delight of designers. It will help them enhance the designs of the magazines, hoardings, posters, advertisement and newspapers. The new Nasta'liq typeface and DTP lets the users to fully express the enormous calligraphic variability in modern typography. Using those publishers can returns to the sources of the Nasta'liq script traditions, providing today's generation of high-tech designers with greater freedom and offering them a real Farsi/Urdu-friendly design environment.

Unfortunately, there is incomplete implementation of creating correct way of typing the complicated joining and curves of word and combinations of them in a line or a page in all of the software packages yet.

Figure.11 Some Urdu Newspaper that used Nasta'liq typeface by DTP software.

بخش بزرگی از این رشد فکری وقتی به دست آمد که وی توانست بر نقص در زبان فایق آید.

کل ابداع، بطبیعه فعل تجاوز، وکل کتابة مغامرة غیر مضمونة النتائج فهل تتبع الثقافة...

اِنَّ الَّذِینَ کَفَرُوا سَوَاءٌ عَلَیهِم ءَاَنذَرتَهُم اَم لَم تُنذِرهُم لَا یُؤمِنُونَ ﴿٦﴾

Figure.12 A part of a book by Modern Nasta'liq typeface with Farsi and Arabic text

Figure.13 Noori Nastaliq with Kashish

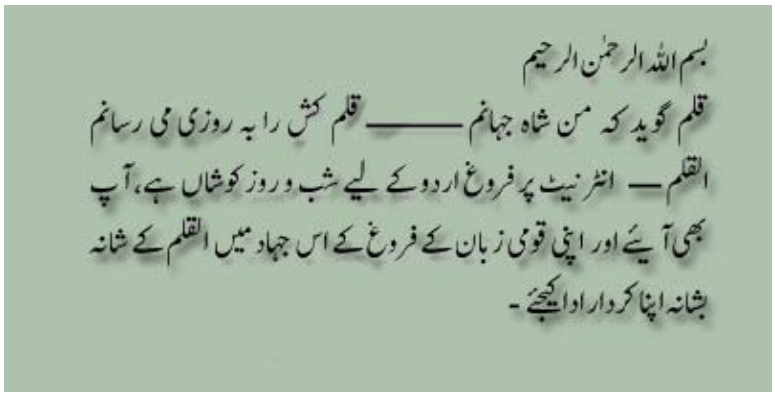


Figure.14 Alvi nastaleeq

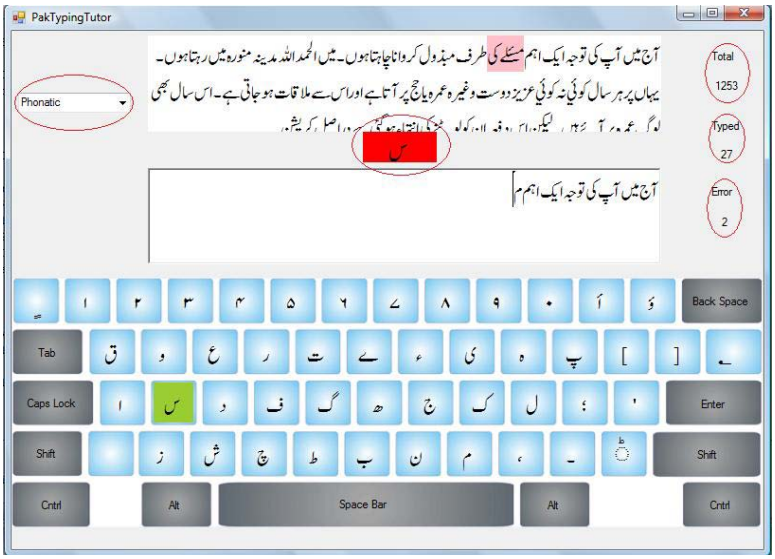


Figure.15 Pak Urdu

اٹھا نہ شیشہ گرانِ فرنگ کے احساں

سفالِ ہند سے مینا و جام پیدا کر

اقبال

Figure.16 Nafees Nastaleeq

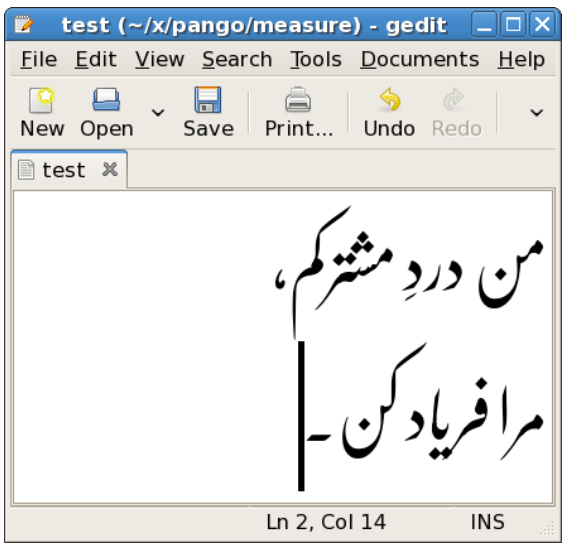


Figure.17 Gedit interface

Tasmeem

Tasmeem is a set of Arabic enhancements for Adobe InDesign Middle eastern edition developed by an international software company called WinSoft International which was found initially in France. Tasmeem allows users to create typographically advanced text in Arabic in the Middle Eastern and North African versions of InDesign, turning it into a typesetting and design tool for Arabic. Tasmeem integrates Arabic and Perso Arabic traditional calligraphy with modern typefaces.

Tasmeem 4 proposes a new collection of high-quality fonts such as Naskh, Emiri, Hasan Hiba. Tasmeem fonts may only be used with Tasmeem. The Word Shaping presents all the possible calligraphic alternatives for the selected letters of a word. Text Shaping of Tasmeem also deals with the same calligraphic parameters as the Word Shaping, but automates it for large amounts of text.

Distribution of shape alternates, dissimilation of the same letter through a variation, Kashida distribution and frequency can be precisely controlled and applied on a long text, just like a regular paragraph style. The Position Tuner feature allows dragging and positioning a segment of a word with the mouse in normal, searchable text.
It intuitively adjust spacing, kerning and create calligraphic arrangements.
Moreover it lets select and colour vowels independently. Arabic Spacing also allows adjusting space between words and space between word segments.

Figure.18 Tasmeem 4 interface, The Selection helper and word shaping

Figure.19 A handful of sample panes showing the Tasmeem Word Shaper at work

Figure.20 Sample of Nasta'liq typesetting by Tasmeem

InPage

InPage (commonly known as InPage Urdu) is an industry standard Page Making software for Urdu and related languages, Since its introduction in 1994, InPage has been used for a wide variety of publishing requirements ranging from heavy duty page layouts for Newspapers, Magazines, and Books etc. to some rather simple designs for brochures and greeting cards. Some of the features that made InPage popular with its users are Calligraphic style handling of Nasta'liq script using Noori Nasta'liq font, Handling of all Perso-Arabic scripts correctly, Easy to use and Standardized MS Windows interface with support for all MS Windows platforms.

To cater to different economic and user segments, InPage provides two versions; InPage Basic for the end user and InPage Professional for the advance user. InPage Professional has all the features of InPage basic plus some meant for the professional user. While Automatic Kerning for Nastaliq script allows you to layout very compact and sually appealing Urdu text, other features like rotation of text and objects indexing and table of contents, four color separation gives you more power while designing and outputting pages of published text.

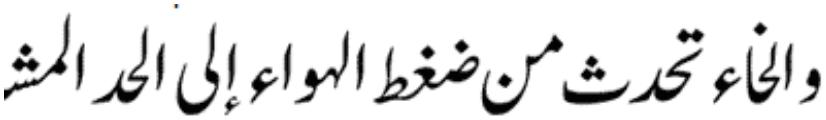


Figure.21 "Noori Nastaliq" designed by Kamal Mansour

Chalipa

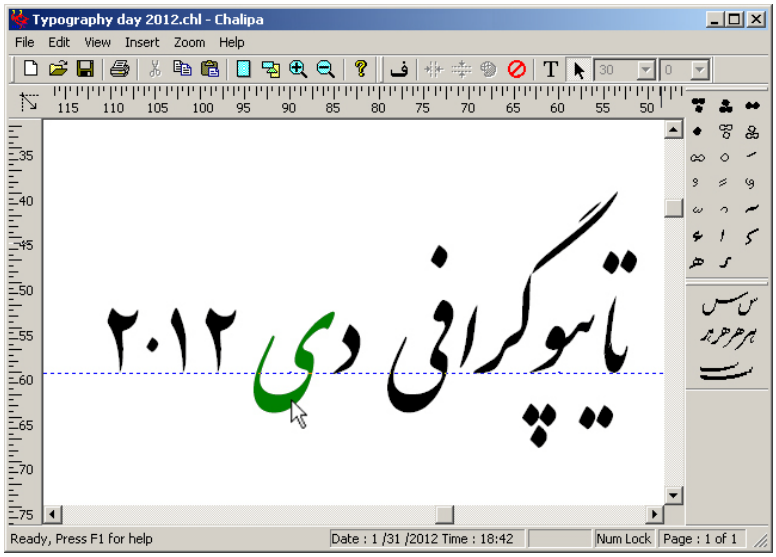


Figure.22 Chalipa interface

Chalipa is a simple calligraphy software designed by an Iranian company called Chalipasoftware. Chalipa version 1.1 was released in back 1997 and Chalipa version 2 was released in year 2005. This programme is well known among the publishers for its accurate fonts. Its friendly user interface and exports for both bitmap and vector files made it special too.

With Chalipa you can edit a title, type a piece of text, poem or verse and watch its information into callgraphaic font of Nasta'liq. Chalipa's calligrapher is Amir Ahmad Falsafi and provided by Chalipasoftware team. In this program those who are not very familiar with calligraphy may not worry about their work being wrong as such thing is not possible in Chalipa.

Figure.23 One page of Persian magazine with modern composition of Nasta'liq in title of article

Some of the main features of chalipa could be the ability to export your work in various formats like .bmp, wmf, eps and ai; characters can be enlarged, and multiple works can be done at the same time and there are guide lines available for users to edit their works better.

Kelk

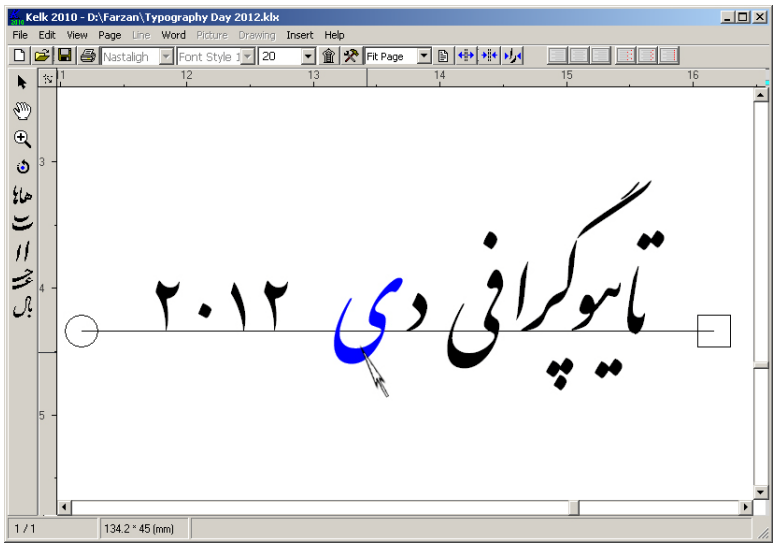


Figure.24 Kelk interface

Kelk is an application used to design Arabic, Persian and Urdu calligraphy. It is developed by a famous Iranian software company called Sinasoft.

Kelk has a typical WYSIWYG interface, similar to most graphical applications. It has a TextToolbox encapsulating the different tools that the functionality provides. Horizontal, vertical, diagonal, circle and bezier guidelines are available. The various tools available to manipulate text include the width, height, "other shape", kashida, join, separate and rotate tool. Kelk also provides direct export to PostScript, PDF, and .ai

With Kelk, you can type a piece of text, poem or verse and watch its information into Calligraphic fonts such as Nasta'liq and other calligraphic fonts. Kelk can type setting different sorts of media like magazines, newspapers and books etc. and can be used for special titles and artistic works. Another noticeable features of kelk could be manual Kashidah Insertion.

With the power of Kelk, you can type your favorite piece of text, poem or verse and watch its information into beautiful Callgraphaic fonts such as Nasta'liq, Naskh (Osman Taha), Thuluth, Shekasteh, Tahriri, Naskh (Baghdadi), Divani Jali, Divani Khafi. It is also possible to use normal windows fonts in combination with calligraphic fonts in artworks.

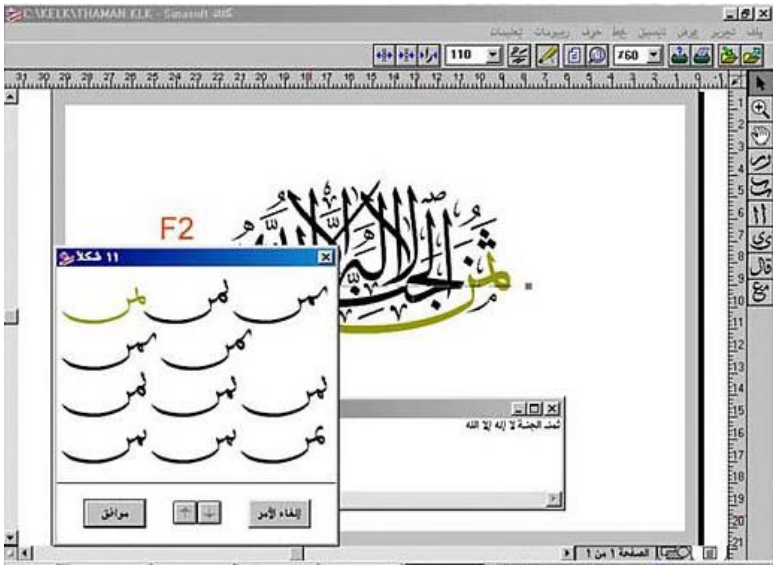


Figure.25 Kelk interface

Irannastaliq

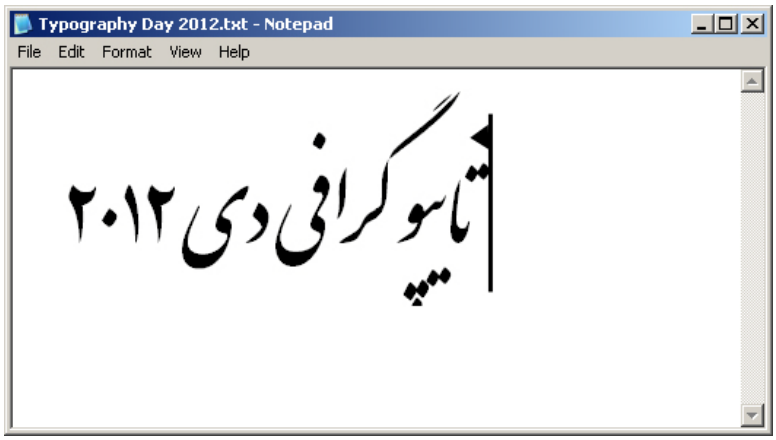


Figure.26 Irannastaliq Font in Notepad

Irannastaliq is an advance font designed by Hussein Zahedi in an Iranian software company called hamoonsoft with the official of support of the supreme council of information and communication technology of Iran. The main advantage of this font is that once its added to operating system's fonts the user will be able to type Nasta'liq in any DTP software like MS Office Word, Adobe InDesign, Adobe Photoshop and CorelDraw etc.

This is because the font completly supports the Unicode standards. Being Unicode means it will act just like most of the famous fonts available like Arial or Times New Roman.

Iran Nasta'liq is 1048 Kb where as a normal Persian font is approximately 60 Kb and it contains 4200 glyphs which again a normal Persian font would contain around 220 glyphs only.

With irannastaliq and advance graphics software you can completely adjust the leading between lines and kerning of the characters. Using this one can make a work quite similar to the original hand written calligraphic works

Irannastaliq is very simple to use as its light and you don't need any knowledge of any particular program and you just have to simply type but at the same time one of its few disadvantages is that unlike calligraphy software you cannot displace or extend the words as it's just a font. Another noticeable feature of Irannastaliq is that it's completely free and there is no need of purchasing anything.

4. Conclusions

Over the years typesetting of Nasta'liq was a difficult task. Initially there were attempts on typesetting by movable letters but it was extremely difficult and there weren't any proper outcome. With lithography's technic, there were better outcomes and closer to the actual calligraphy works but because of the limited copies and development of technology this system was put to a halt. In the past two decades as the DTPs improved, publisher got attracted to Nasta'liq typesetting again.

Several software and typeface appeared in the case of electronic Publishing and DTP during the last two decades in Iran, Pakistan and India. They separately offer some solution that uses electronic Publishing as the typesetting engine for rendering Nasta'liq. However they are not perfect yet but using them we are able to combine the rich tradition and modern concepts today. All this efforts which were separately made in various places was gathered together, it could have result in better outcome and more developments. All available software still have lots of weaknesses and none had yet achieved the quality of hand work of calligraphers but looking at the procedure of the improvement of this industry there are hopes on them getting closer in future.

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