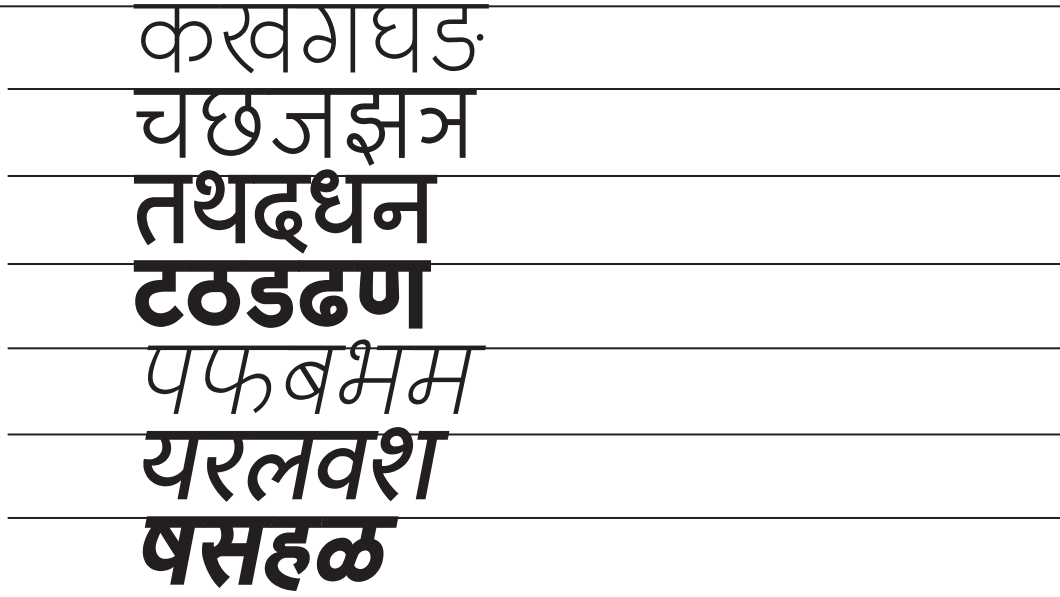
कखगघञ
चछजझञ
तथदधन
टठडढण
पफबभम
यरलवश
षसहळ

Design of a Multipurpose Devanagari Typeface

Kimya Gandhi
08625005
Guide
Prof. Kirti Trivedi



Approval Sheet

Approved for partial fulfillment of the requirement of the degree Masters in Design in Visual Communication at the Industrial Design Centre, Indian Institute of Technology, Mumbai.

Guide

Chairperson

Internal Examiner

External examiner

Declaration

I declare that this written submission represents my ideas in my own words and where other's ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/ data/ fact/ source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Kimya Gandhi
08625006
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Disclaimer

I believe it is impossible to be completely original. When I speak, write, or think; can I really ever say with honesty and integrity : these are 'my' ideas in 'my own' words' ?

'My own' words?
The words existed long before I was born. I learnt them, their meaning and how to use them from others.

'My' ideas ?
Ideas come to my mind from having talked to many people, read many books, visited many places, and experienced many things. Thoughts which come to my mind now, come from having lived so long.

Ideas trigger other ideas. That is their property. They get fabricated, reassembled, revised, modified, and better; because there exist all the other ideas. They enrich themselves by intermingling, combining, and interacting with each other. This takes the world of ideas and the mankind forward.

What purpose is served by calling them 'my' and 'mine'. By declaring ownership?

This disclaimer is inserted here to completely disassociate myself from the mandatory declaration by the student on the previous page.

Kirti Trivedi
Guide

Thank you

A heartfelt note of gratitude towards all those who have contributed to this project and made this process a remarkable learning experience.

The Institute, for providing a platform for this project and the inumerable resources.

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To many others who in some way or the other have been an encouragement or contributed in some reason undefined not just in the course of this project. I take my final design project, an opportunity to thank of them,
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Vivek Khedekar

Mamma & Daddy
for being the eternal pillars of my strength.

Shaival Halbe,
for being the support beyond words.

Contents

अआइईउऊ

Preface

Introduction to the project

The theme of the report is based on the weights created in the family and the basic devanagari letterforms. The report has four main sections and each is characterized by one of the four weight variation of the font family.

Preface

The devanagari script saw its peak in the times of letterpress, when elegant complex letterforms were cast and used widely in print and publication. The nature of Indian scripts being different than Roman or Latin, their digitization initially proved to be a tedious task that did not deliver the script in its totality. Recent developments in type digitization, open type font formats, web embedding has ensured the script to be produced in its original richness of form and elements. There has been increasing demand for the digitization of Indian scripts to reach larger number of audiences via several media.

Increasing demand

In the print media, newspapers in Hindi boast more circulation than their English counterparts, proving that there is certainly demand. Digitization of typefaces has led to the boost in the Indian languages used in web. Indian language websites, blogs, e- books are rapidly gaining popularity. Identity design has also seen the requirement of Indian fonts, with companies like Vodafone commissioning design firms to develop Indian language fonts in 12 different scripts for their corporate communications around the country. Thus there seems to be a fast growing demand for digitization of Indian typefaces to be used in various sectors in the years to come.

Deterioration of form

The current digitization of Indian scripts however has brought in their wake alteration in form to suit the requirements of the technology available. Though reach of the scripts has widened, they propagated the spread of a deteriorated form. Over the period of time the letterform has deteriorated. Most of the fonts available today demonstrate various limitations, in terms of form as well as usability. Even though the digitization of scripts has been a magnanimous effort, one observes a sense of incompleteness in the fonts available in the market today. The devanagari script is a highly evolved script. Most of the fonts available are incomplete; they tend to do away with conjuncts that are an important aspect of the script.

Identified need

Appropriate fonts should suffice the growing need in various sectors. The variety in demand should be answered by variety in type. Type represents the written word. There are so many things to say, so many things to read, all of which require different voices. This voice can be aptly communicated to the audience by the use of appropriate type. Fonts available in the market today display insufficient range. The fonts available are mostly traditional in appearance and the contemporary fonts are moreover display in nature of usage.

A particular font family comprises of mostly a normal

and bold weight with their respective italic versions. The fonts Yogesh and Mangal are most commonly and popularly used. Mangal being a screen font is used in print when the intended use was never print media. There are no extrabold or light variations of a font available in the market. Moreover there is no one complete font family that has all the required weights to typeset a variety of content. There are many such examples, which will be illustrated in detail in the forthcoming chapters that show inappropriate usage of fonts. When one analyzes why these fonts get used wrongly one would realize that the demand is far from being satisfied by the available lot. The reason why a complete family is not available for use is simply because no one has created one yet. The effort required in creating a complete family is tremendous moreover highly time consuming. The fonts used are the fonts available and till the time there is a font available that will eliminate limitations, the scenario would not change on its own.

This forms the inspiration for undertaking the task to analyze the current type design scenario & thereafter design a family of type to propagate the richness of a correct and complete script; to aim at providing the much needed variety in devanagari fonts.

Store facade of Bombay Dyeing that used devanagari type that does not match with its Roman counterpart

9

Phase I

This section describes the work done in the first phase of the project and the abstract of the second phase.

- New approach to type design
- Vision and value

Phase I

A brief glimpse of the nature of work completed during the phase I of the project that was completed in the last semester.

Approach to design

The phase I of the project has been an attempt to understand the requirement in devanagari script. Analyze the problems in detail and hence list attributes for designing a new typeface. The process of the project is directly influenced by the need. The font design occurs as a problem solving activity than a purely aesthetic conquest. The aim of the first part of the project is to develop a new approach to type design. The construction of letterforms is not merely based on the basis of making them aesthetically pleasing. The aesthetics arises out of a problem solving mechanism. The idea is to minimize the flaws in existing typefaces and generate an output that if not better, be as good as the best available today. Tools and technologies keep changing, bringing in their wake an alteration in form to suit technological requirements. But the letterform, the 'akshara' is beyond erosion and it should not be tweaked to fit in the current solutions. The approach is hence to define correctness and completeness of the script.

Process

The amalgamated study of the devanagari script in its best times and in current times led to defining the problem statement for design. The process of design has been triggered by the thought, 'From the formless arises the form' from Vastusutra Upanishad. The formal type design activity is backed by this primary thought. The essence of the typeface facilitates the form. Predetermined attributes manifest through the form of the typeface designed. The typeface is young, contemporary, bright, not decorative and multi purpose. The output of the first phase was thus one weight created by the spine approach that has all the above-mentioned attributes except for being multi purpose. The spine designed has the potential of being multipurpose, an attribute that has been the focus of the second phase of design.

Typeface design

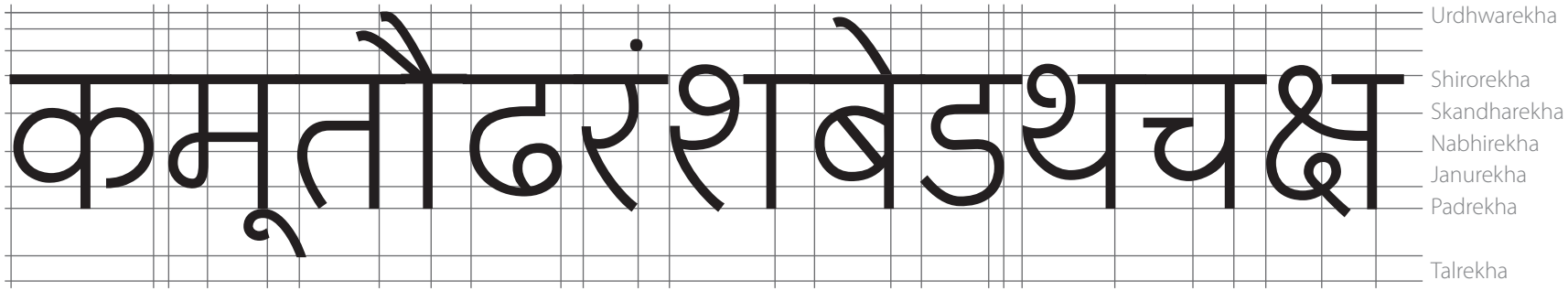
The typeface generated at the end of phase one is mono thick, contemporary, legible in small point sizes and the potential of being developed into a family. The character set is elaborate that includes special emphasis on conjuncts. There is an elaborate set of matras designed to fit a large number of character combinations. The characters when appear together do not look monumental, unnaturally geometric or decorative. They are lean to help enhance legibility. They are legible in small point sizes owing to large counter spaces and a low horizontal to vertical ratio. The stress is vertical unlike traditional devanagari construction. There has been a stress to invoke the essence of devanagari through contemporary

form. The typeface is devoid of any unnecessary ostentation. The humanist construction of letterforms tends the typeface to be more written in nature than constructed, again facilitating the reading process. The first phase has however been an attempt to solving only a part of the identified problem. The main aim is to create a family of fonts that can be used for a variety of applications. This forms the basis of design for the second phase that has been discussed in detail in the forthcoming chapters.

Character set, basic consonants.

कखगघङचछजझञत
थदधनटठडढणपफब
भमयरलवशषसहळक्षज्ञ

Grid from phase I



Typeface characteristics

Matras that fit onto all basic consonants, jodaksharas (combination of two) and conjucts

कि त्यि क्लिफी

The ukars do not hang abruptly but are placed onto each consonant

टु ठु डु फु कु

The typeset includes conjuncts rather than having linear conjucts

क्त पृ क्र भ्न स्थ ख्र त्य

Conjuncts

क्र ख्र ग्र ब्र घ्र ज्र ञ्र

त्त क्त क्र त्य श्र पृ

त्र थ्र द्र ध्र न्र ट्र ठ्र ड्र

स्व स्य स्थ स्म स्व

प्र ब्र भ्र म्र व्र स्र त्र श्र

त्य ज्ञ च्य ह्य ह्म ह्न ह्य

क्र ग्र घ्र च्र ज्र श्र द्र

द्ध द्ध ष्ट ष्ठ ट्ट ङ्य श्ल

ध्र व्र प्र फ्र ब्र भ्र म्र स्र

गृ बृ मृ घृ वृ धृ कृ तृ

Emerging possibilities

The design of a typeface based on the spine, opens many emerging possibilities to take type design onto a level further. This part of the project ends in the discussion of many such possibilities. The reason why the typeface is called multi-purpose is because it is devoid of any one particular label. The form is designed so as to assume multiple characters as per applications. One has known type families to be based on visual parameters of weight, width or angle of inclination. The design of a spine triggers the options for design of type to represent a feeling, emotion or any verbal description. Thus this results in infinite such permutations and combinations of visual and thought parameters to result into a many a different typefaces to suit ones needs and applications.

"A" Spirit

The shape of a letterform is the surface manifestation of a deep mental abstraction. It is determined by conceptual considerations and balances that no finite set of merely geometric knobs could capture. Underneath or behind each instance of "A" there lurks a concept, a Platonic entity, a spirit. No matter how many new knobs, or even new families of knobs, you add to your. machine, you will have left out some possibilities. People will forever be able to invent novel variations that haven't been foreseen by a finite parametrization

Matrix for creating possibilities of typefaces from the same spine

Orignal font	A Normal	B Bold	C Oblique	D Rounded	E Decorative	F Scary
A Normal	A+A	A+B	A+C	A+D	A+E	A+F
B Bold	B+A	B+B	B+C	B+D	B+E	B+F
C Oblique	C+A	C+B	C+C	C+D	C+E	C+F
D Rounded	D+A	D+B	D+C	D+D	D+E	D+F
E Decorative	E+A	E+B	E+C	E+D	E+E	E+F
F Scary	F+A	F+B	F+C	F+D	F+E	F+F

In the above figure, the variables A, B, C, assume visual characters like weight and angle while D, E, F are thought driven abstract variables. The permutations of which can lead to 36 new typeface possibilities derived from the same spine of Kimya Normal.

Exploring possibilities by keeping the spine constant.

The spine remains constant but the the style and treatments change to give rise to several possibilities.

Typefaces could be based and generated according to the feeling or emotion they are used to convey an intended message. Typefaces can be generated by a eclectic mix of both visual as well as thought characters to arrive at interesting results.
The spine forms the framework, it carries the thought behind the design of that type. The flesh or weight added completes/ enhances the visual of the type.

These numerous possibilities can find their own applications. If one were to think, the typeface thus designed could assume any role as per the content that it needs to be used for. Thus type could be rightly used to effectively convey content and communicate better, thus pushing the limits of type design as we see today by offering a blend of the designer and digitization.

Multi- purpose

The typeface designed has been called multi purpose owing to this aspect. The type designed by understanding correct form and based on the spine could assume any form and hence could be used as text, display or any other medium required.
The phase II of the project hence aims at creating a font family that carries the same spine forward. The further chapters describe in detail the process of creating the font family and also its intended applications.

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Phase II

This section describes the work done in the second phase of the project.

Phase II

An overview of the phase II of the project that will be detailed in the forthcoming chapters. This forms the abstract of the project.

The need for new devanagari typefaces cannot be overemphasized. There are new needs, new demands, and new messages to be conveyed. The new technological developments in typesetting have finally removed all constraints, which inhibited the development of Devanagari script. It is time for a new generation of Devanagari letter icons to emerge, and to be perfected. - Iconography of letterforms, Prof. Kirti Trivedi.

The first phase of the project involved creation of a framework of design for a larger visualized cause. The need explained in the previous chapter has been addressed in this phase of the projectThere is huge demand in various sectors and the aim of this phase has been to contribute to a solution to this identified demand.

Area of work

The spine that was designed in the first phase has been used to generate a family of fonts; a family that can address to the various needs of communication. The aim of this phase has been to address certain aspects of typeface design that have not been tackled in digital type design. It has been established that there is insufficient range and limitations in the fonts available today in the previous phase. The problem of correct character form for efficient reading was tackled in the previous phase. Another identified problem was the lack of conjuncts in fonts designed recently. Conjuncts have been an intrinsic design feature of the devanagari script. The construction of conjuncts has a high phonetic meaning, hence should not be ignored. The appropriateness of conjuncts has been discussed in detail in the forthcoming chapters. The design process hereafter is centered on creating a range. The focus is on creating an extra bold weight in the family and conjuncts in all the weights. The process of developing this weight and solving problems encountered while creating conjuncts in this weight has been the prime learning.

Outcome

The outcome of phase two has been a complete family of a font named IDC Kimya that comes in four weights and their respective oblique versions. The highlight of the phase two has been the extra bold weight of this type family. the chapters hereafter will describe the project in finer detail.

3 Creating a font family

This section describes the process and methodology of creating the font family IDC Kimya

- Light
- Regular
- Bold

Creating a font family

An overview of the phase II of the project that will be detailed in the forthcoming chapters.

The first tasks of this phase have been to create various weights that would define the font family. The initial stage involves making changes in the character set reflecting on the feedback from phase one. This involved addressing issues of correcting stress of certain characters and spacing issues.

Character coding

Devanagari: U+ 0900- U+ 097F

Addressing the issue of standardization, the entire character set has been coded according to UNICODE. Unicode is a system of encoding that ensures standardization irrespective of platform, program or language. Unicode standards are widely being used by the industry for the development of Multilingual Softwares. Creating a UNICODE character set ensures the font to be installable and usable over various systems. The font has been generated using FontLab Studio 5.

Expand conjuncts

Conjuncts have been identified as one of the most important aspects of designing a devanagari typeface. The previous phase saw the inclusion of conjuncts as a part of the character set. This stage involved elaborating the conjunct set. The aim has been to incorporate as many conjucts that could be most often used while typesetting hindi or marathi text.

The Unicode Standard 4.0, Copyright © 1991–2003, Unicode, Inc. All rights reserved.

Devanagari UNICODE chart

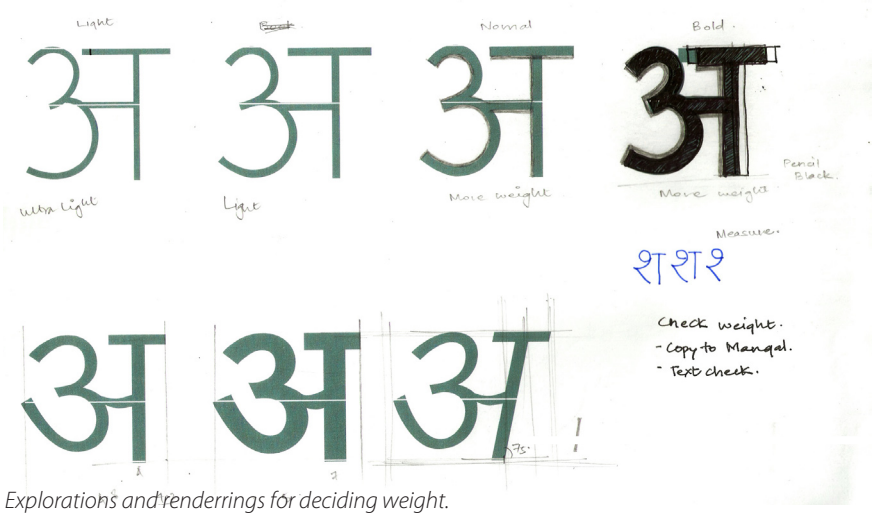
Spine approach

The essence of the typeface manifests through the spine. The spine has been designed to be able to take form a complete family. The different weights arise out of the same spine. Though FontLab Studio does not allow generation of font by means of spine. The expansion in weight happens by means of outline. The design is hence visualized by spine-based approach but implemented by expansion of outlines. Taking their requirements and applications in consideration has created individual weights. The details of metrics and management of spaces has been detailed out hereafter.

Weight explorations

Generate a range of installable fonts
under the family name IDC Kimya.
Deciding the various weights that would make the family has been the next stage in creating a font family. Many explorations using the same grid were done to decide on the final ratios for the four weights to be designed. Gradual increments in weight have been made before finalizing weights. The ratios most appropriate for the intended application have been selected to be included in the final family.

Weight explorations



Explorations and renderings for deciding weight.

अ अ अ अ अ अ अ अ

Gradual increments in weights of the letter 'a'

Final weights of the family

The font family IDC Kimya comprises
of the following weights:
IDC Kimya Light
IDC Kimya Regular
IDC Kimya Bold
IDC Kimya Extra Bold,
and their respective oblique versions.

The basis of deciding the final weights has
been by evaluating proportions that were most
appropriate for a particular weight. The weights
light, regular and bold have been presented in
this chapter while the next chapter extensively
illustrates the need for creating the extra bold
weight and methodology involved in doing so.

IDC Kimya Light

Applications: for all general use, mostly typesetting in smaller point sizes.
Best used at: 5 pt and above
This is the first weight in the family. This weight is designed to be highly readable in smaller point sizes. Reducing inktraps and ensuring a uniform grey mass were the major issues to be tackled here.
This weight is ideal for type setting text in smaller point sizes. The defining features of this weight are open counters and low stroke contrast.
Stroke width: height of character= 1:14
Slant angle for oblique 12 degrees.

Basic character set in IDC Kimya Light

अ आ इ ई उ ऊ ऋ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह ळ

Basic character set in IDC Kimya Light Oblique

अ आ इ ई उ ऊ ऋ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह ळ

Sample text typeset in IDC Kimya Light

6 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। अक्षरावर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सवर् अक्षरांचे वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। अक्षर भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

8 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। अक्षरावर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सवर् अक्षरांचे वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। अक्षर भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

12 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। अक्षरावर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सवर् आकारांचे वेगवेगळे नियम आहेत। ठराविक उंची गोलाई जाडी असते। नेमकेपणा वळण ठळकपणा असावा। अक्षर भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

14 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। वर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सारे आकारांचे वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

IDC Kimya Regular

Applications: for all general use
Best used at: 8 pt and above

This weight has been designed for efficient reading of large body of text. It is a text type best used at 8 point and above. Scaling the strokes up to 60% of their weight has been done to reduce inktraps.
Stroke width: x height= 1: 11

Basic character set in IDC Kimya Regular

अ आ इ ई उ ऊ ऋ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह ळ

Basic character set in IDC Kimya Regular Oblique

अ आ इ ई उ ऊ ऋ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह ळ

Sample text typeset in IDC Kimya Regular

8 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। अक्षरावर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सवर् अक्षरांचे वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। अक्षर भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

10 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। अक्षरावर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सवर् अक्षरांचे वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। अक्षर भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

12 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। अक्षरावर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सारे आकारांचे वेगवेगळे नियम आहेत। ठराविक उंची गोलाई जाडी असते। नेमकेपणा वळण ठळकपणा असावा। अक्षर भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

14 माझे नाव किमया आहे। हा माझा अक्षर संच आहे। सुंदर अक्षर काढावे। अक्षर फार मोठे किंवा लहान नसावे। अती लांबट अक्षर काढू नये। वर सरळ रेघ असावी। दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सारे आकारांचे वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। भावना पोहोचवतात। कायम चांगले बोलावे छान लिहावे।

IDC Kimya Bold

Applications: for creating emphasis, and highlights. Could be used for typesetting headings and sub- headings.
Best used at: 8 pt and above

This weight has been designed for headings and subheadings. This is normally the only weight apart from the regular weight available in most of the fonts. The bold version has smaller counters and more intensity of black. This weight is best used at 10 point and above.
Stroke width: x height= 1: 7

Basic character set in IDC Kimya Bold

अ आ इ ई उ ऊ ऋ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह ळ

Basic character set in IDC Kimya Bold Oblique

अ आ इ ई उ ऊ ऋ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह ळ

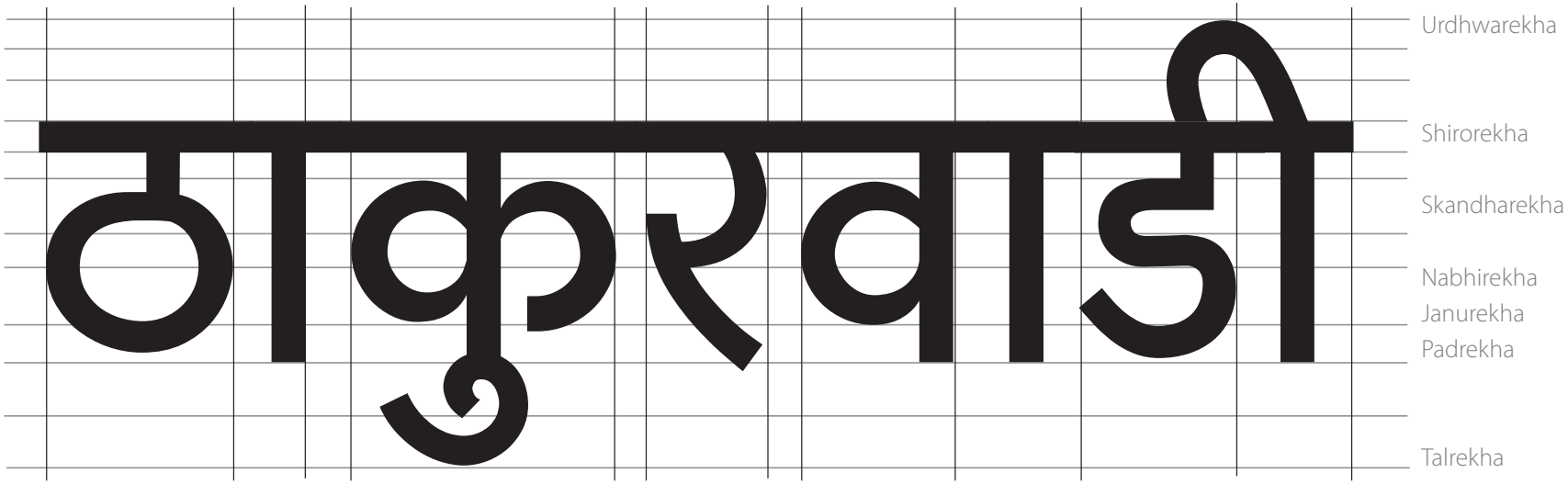
Sample text typeset in IDC Kimya Bold

14 माझे नाव किमया आहे। हा माझा संच आहे। सु
ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सारे आकारांचे वेगवेगळे नियम आहेत।
ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा वळण ठळकपणा असावा। भावना पोहोचवतात।
कायम चांगले बोलावे छान लिहावे।

18 माझे नाव किमया आहे। हा माझा संच आहे। सु
किंवा लहान नसावे। अती लांबट काढू
दोन ओळीतले अंतर कमी नसावे। सारखेपणा दिसावा। सारे आकारांचे
वेगवेगळे नियम आहेत। ठराविक उंची, गोलाई, जाडी असते। नेमकेपणा
वळण ठळकपणा असावा। भावना पोहोचवतात।

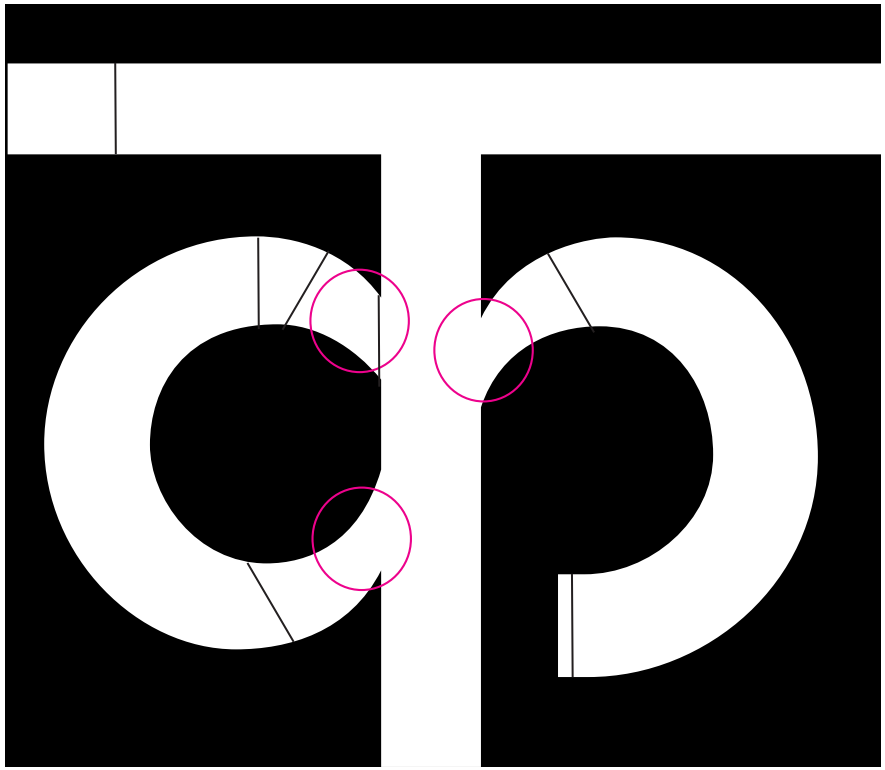
30 माझे नाव किमया आहे। कायम चांगले
बोलावे छान लिहावे।

Gridlines for IDC Kimya Regular



Stroke width: x height= 1: 7
Horizontal srtoke: Vertical stroke= 1: 1.08
The x height for all the weights remains the same. The grid varies in terms of its vertical to horizontal ratios. These are optically corrected to be best readable at the desired point size. The Bold face can be used as text hightlights in large body texts as well as bold headlines in point sizes above 150. The challenge is to not let characters look too black when used at smaller sizes and over scaled at larger ones. Hence the strokes smoothly curve at joineries. The percentage decrease in stroke width goes upto 60 percent. The nodes are at the extremes to allow smoother contours. Scaling and optical correction becomes far more challenging in conjuncts and composite characters where the positive space ratio to the negative is very high.

Inktrap reduction by scaling.



Letter 'ka' enlarged to showing scaling of strokes at various nodes of the character.

क क क क क क क क क

Letter 'ka' in point sizes 12, 14, 18, 24, 30, 36, 48, 60, 72 showing the effect of scaling.

Stroke width: x height= 1: 7
Vertical stroke: Horizontal srtoke= 1.08: 1

Inktraps hinder the reading process and disturb the grey mass of text. In small point sizes characters tend to blot at joineries, giving rise to unecessary blackness wherever two or more srokes meet.
The adjoining figure shows the letter 'ka' and the encircled marks show how the strokes are narrowed at joineries to reduce inktraps.
The inversion of spaces allows one to see the negative space as carefully as the positive space and make optical corrections that are natural to the stroke.
Scaling of strokes at joineries becomes a crucial task in bold weights since the percentage of blackness increases.
The figure at the bottom shows the letter 'ka' in point sizes ranging from 12 to 72 illustrating the effect of scaling.

Weight Waterfall to illustrate grey mass and gradual increment in weight

मराठीमराठी**मराठीमराठी**

मराठीमराठी**मराठीमराठी**

मराठीमराठी**मराठीमराठी**

मराठीमराठी**मराठीमराठी**

मराठीमराठी**मराठीमराठी**

मराठीमराठी**मराठीमराठी**

Sample marathi text typeset in the font family IDC Kimya

लाभले आमहास भागय बोलतो मराठी।

जाहलो खरेच धन्य ऐकतो मराठी॥धर्म पंथ जात एक जाणतो मराठी। एवढ्या जगात माय मानतो मराठी॥
त्यादिवशी सकाळी सकाळी थोडा लवकरच मी त्याच्या कडे गेलो,
तर भालूमधलं हे त्याचं आवडतं गाणं त्याने त्याच्या पीसी वर लावलं होतं आण स्वारी मजेत खापरी पाटविर पेन्सलिने काहतिरी लहिति होती. त्याला मी कधीच देवपूजा करताना किंवा साधे हात जोडताना सुद्धा पाहिला नव्हता, तरी एवढी तल्लनिता पाहून मी उगाचच. लाभले अम्हास भाग्य बोलतो मराठी। जाहलो खरेच धन्य ऐकतो मराठी॥ धर्म पंथ जात एक जाणतो त्यादिवशी सकाळी सकाळी थोडा लवकरच मी त्याच्या कडे गेलो, तर भालूमधलं हे त्याचं आवडतं गाणं तयाने त्याच्या पीसी वर लावलं होतं आण स्वारी मजेत खापरी पाटविर पेन्सलिने काहतिरी लहिति होती. त्याला मी कधीच तरी एवढी तल्लनिता पाहून मी उगाचच.
पंथ जात एक जाणतो मराठी। एवढ्या जगात माय मानतो मराठी. त्यादिवशी सकाळी सकाळी थोडा लवकरच मी त्याच्याकडे गेलो, तर भालूमधलं हे त्याचं आवडतं गाणं त्याने त्याच्या पीसी वर लावलं होतं आण स्वारी मजेत खापरी पाटविर पेन्सलिने काहतिरी लहिति होती. त्याला मी कधीच देवपूजा करताना कवि साधे हात जोडताना सुद्धा पाहलि नव्हता, तरी एवढी पद्म सहस्रपाहून मोहनवृत्ति.
देवपूजा करताना किंवा साधे हात जोडताना सुद्धा पाहलि नव्हता, तरी एवढी तल्लनिता पाहून मी उगाचच. लाभले अम्हास भाग्य बोलतो मराठी। जाहलो खरेच धन्य ऐकतो मराठी॥ धर्म पंथ जात एक जाणतो मराठी। एवढ्या जगात माय मानतो मराठी॥ त्यादिवशी सकाळी विद्या द्विपार निश्चला सकाळी थोडा लवकरच मी त्याच्याकडे गेलो.

Creating Extra Bold

This section describes the process and methodology of creating the font family IDC Kimya

- Background Study
- Creating IDC Extra Bold
- Troubleshooting

Background study

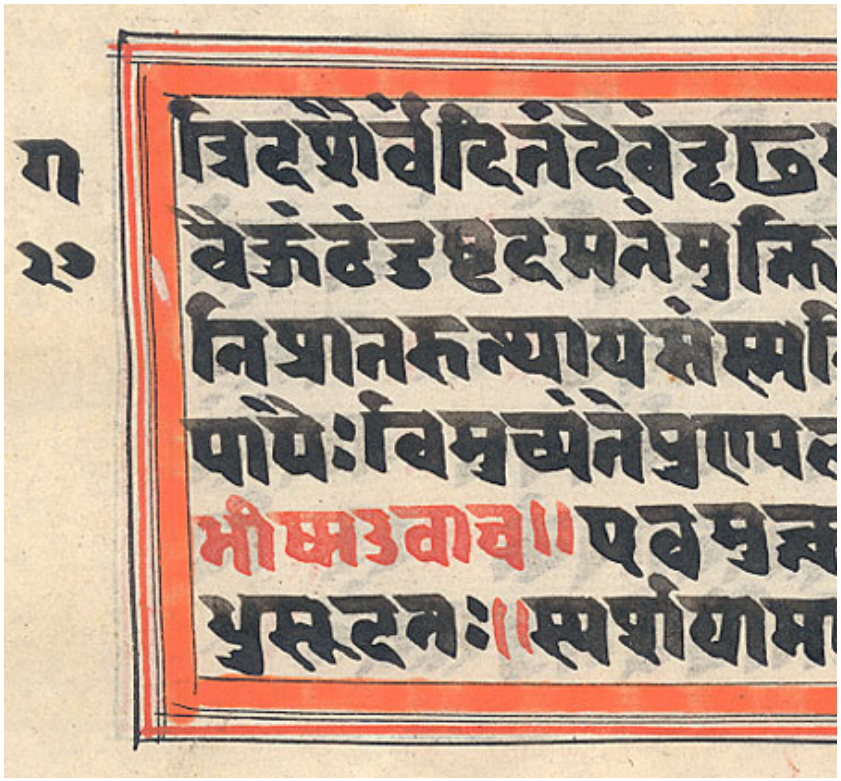
Inferences from the study of bold type in manuscripts and currently available bold fonts.

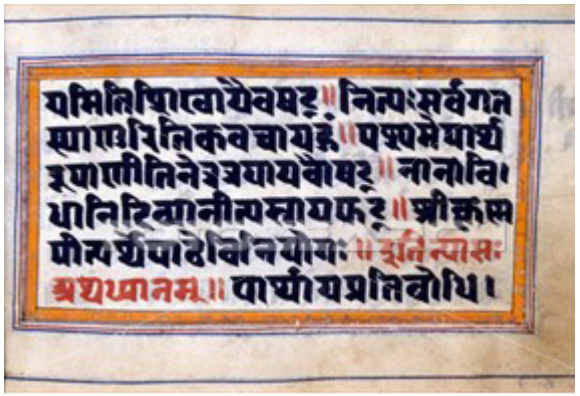
The design of the typeface as mentioned earlier is more of a problem solving mechanism. Hence a crucial part of the process is identifying the problems to be solved. The first phase included a general overview study of the most commonly used fonts in devangari. This phase included looking into more details of these identified problems seeking to solve them. The main area of intervention was the range that is available in current fonts. It is observed that most font families in devanagari provide only two weight variations with their respective oblique versions. The light and extra bold variations fail to be a part of the family. An exception would be the Fedra Hindi family designed by Satya Raj Purohit and Peter Bilak, which has 5 weights. Fedra Hindi however does not have extra bold. The most commonly seen extra bold types are pseudo bold as they are padded around the edges manually which make them feel blunt and dull.

It is amusing why font designers have refrained from creating complete font families even though there has been a need. Manuscripts from periods as early as that of the Bhagwad Gita show references of devanagari script written in very heavy weights. High standards of legibility have been achieved in these examples of the past. This section thus provides visual references illustrating examples that help reinforce the need to take up this extensive design project. Examples illustrating devanagari fonts showing lack in range and incorrect usage of weights. Even though there has been no attempt of creating an extra bold weight in current fonts, one sees vivid use of extra bold characters during letterpress as well as in some very old manuscripts. The Bhagwad Gita has examples of highly legible extra bold letterforms. This section is a visual journey of all such examples that bring the aim of the project in perspective.

Examples of bold type from manuscripts

Before starting the actual process of designing the extra bold font a study of bold typefaces was done. The presence of bold types in manuscripts from various eras and scripts are spendid examples of legible bold characters.





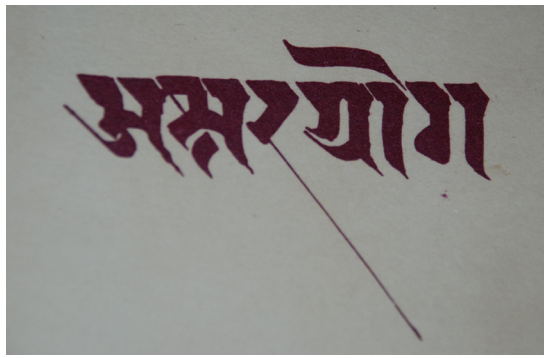
Above and alongside is a snapshot from the manuscript of the sacred Shri Bhagwad Gita. The language is Sanskrit and certain letterforms are old style Northern Devanagari.

Examples of extra bold type from manuscripts

A folio from Ashtasahashirika Prajnaparamita (Perfection of Wisdom) manuscript from early 12th century.

Examples of extra bold type

Snapshot of devanagari script manuscript, source unknown



Calligraphic letterforms created by Prof. R.K Joshi

Study of existing bold fonts

Most of the display fonts available are geometric or have high contrasts in strokes. There are very few families that include Extra Bold weight.

These sample sheets of a range of devanagari fonts designed by CDAC

Examples of incorrect usage of bold fonts

Most of the times boldness in fonts is achieved by simply outlining the fonts which causes abrupt counter spaces, unnatural intercharacter spacing and illegible letterforms.

The identity of Corporation Bank in Devanagari and Roman. There is an effort to match styles but the bold outlines are expanded to cause considerable loss in counter spaces.

Newspaper headline showing half consonant combination instead of conjuncts.

Examples showing lack of bold fonts in various media

The further examples show incorrect usage or lack of range in fonts used in various popular media like
Print: Newspapers, book covers, magazines
Screen: Websites, Television
Outdoor: Signboards, Signages, Road signs
Identity: Corporate communications and logos

The idea outdoor advertisement shows that the devanagari logotype is set in a thinner weight and the angular treatment to the roman logotype is also missing.

The Domino's shop facade that shows the name set in extrabold type.

The Domino's shop facade that show how the devanagari identity is ignored and not given the stylistic treatment of its Roman counterpart

Creating IDC Kimya Extra Bold

IDC Kimya Extra Bold

The Extra Bold weight is the highlight of this phase of the project. It is a highly essential part of the family that is not ventured very often in devanagari type design. Complicated counters, composite characters and high contrast in the positive and negative spaces marks are the challenges that one needs to overcome to design legible extrabold characters. This chapter is dedicated to understanding the pure nuances in type design. It also explains how counter spaces and strokes work in harmony to create character forms in the extra bold weight.

The extra bold weight is a display face that has very small counters and very heavy visual weight. The reason why there almost no devanagari fonts in extra bold weight is owing to the complexity that one needs to tackle in creating these letterforms. The positive and negative spaces have to be worked efficiently to ensure high legibility in all point sizes. The challenge is to design characters that can be visually palatable even at very high point sizes. The nuances in designing the extra bold have been illustrated in the further chapters.

Spaces

The best spaces are invisible. This means the best spaces with respect to typography are the ones which the eye cannot percieve distinctly as spaces. They gel into the wordscapes. Writing is not a series of strokes but space divided into characteristic shapes of strokes.- Gerrit Noordeij. It is the value of the type designer to visualize both spaces in a character, the positive and the negative while designing characters. This holds true for any type design exercise even more so while designing extra bold characters.

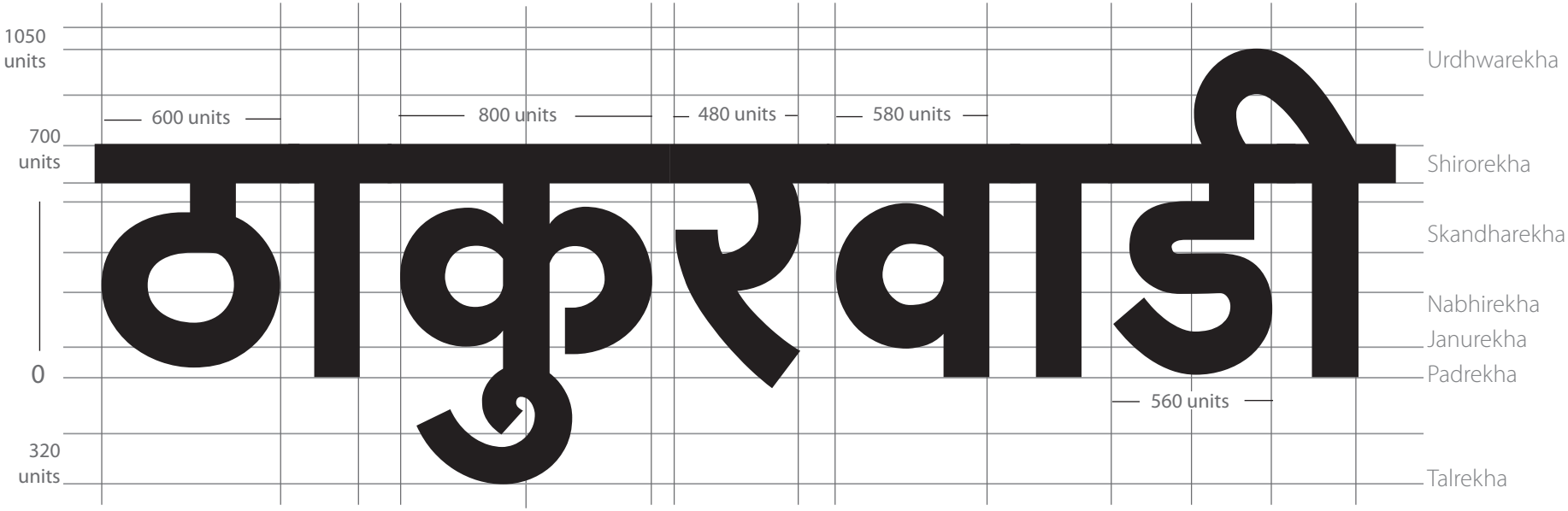
Basic character set in IDC Kimya Extra Bold

अ आ इ ई उ ऊ ए ऐ ओ औ अं अः

क ख ग घ ङ च छ ज झ ञ ट ठ ड ढ ण त थ द

न प फ ब भ म य र ल व श ष स ह ळ

Grid showing characters in Extra Bold



Stroke width: x height= 1:5
Vertcal stroke: Horizontal stroke= 1.18: 1
Applications: for creating extra emphasis or highlights. Could be used for headings and display
Best used at: 18 pt and above

Problems encountered

The design of the extra bold weight involves tackling many problems with respect to spaces. The expansion of outlines leads to unnatural flagellation of strokes. The inner counters need to kept as clear as possible. Additional weight can be optically balanced on the outside. Here is illustrating how:

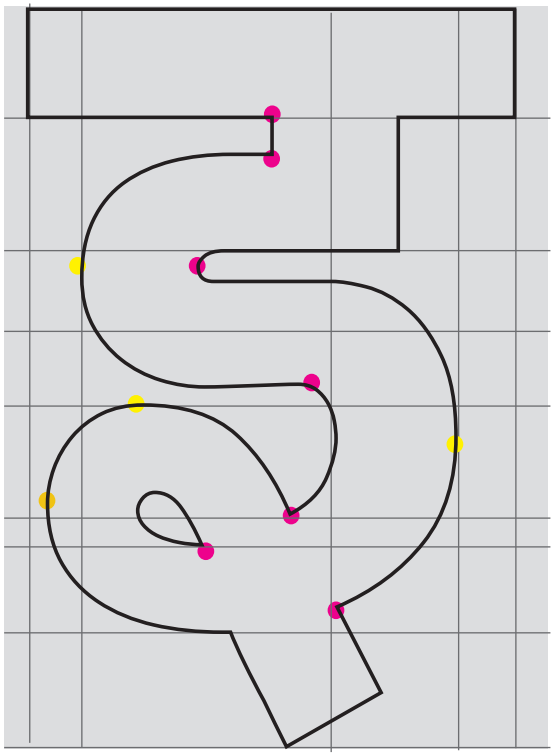
Above are characters derived out of expansion of outlines. The counters become very small and gaps reduce giving no space for the letters to breathe

Optical corrections and simplifying paths enables to achieve balance in the letterform

Counter spaces

The dots depict areas that have been cured to gain balance in weight and retain legibility. The counter spaces have been optically corrected by shift in node positions at various points.

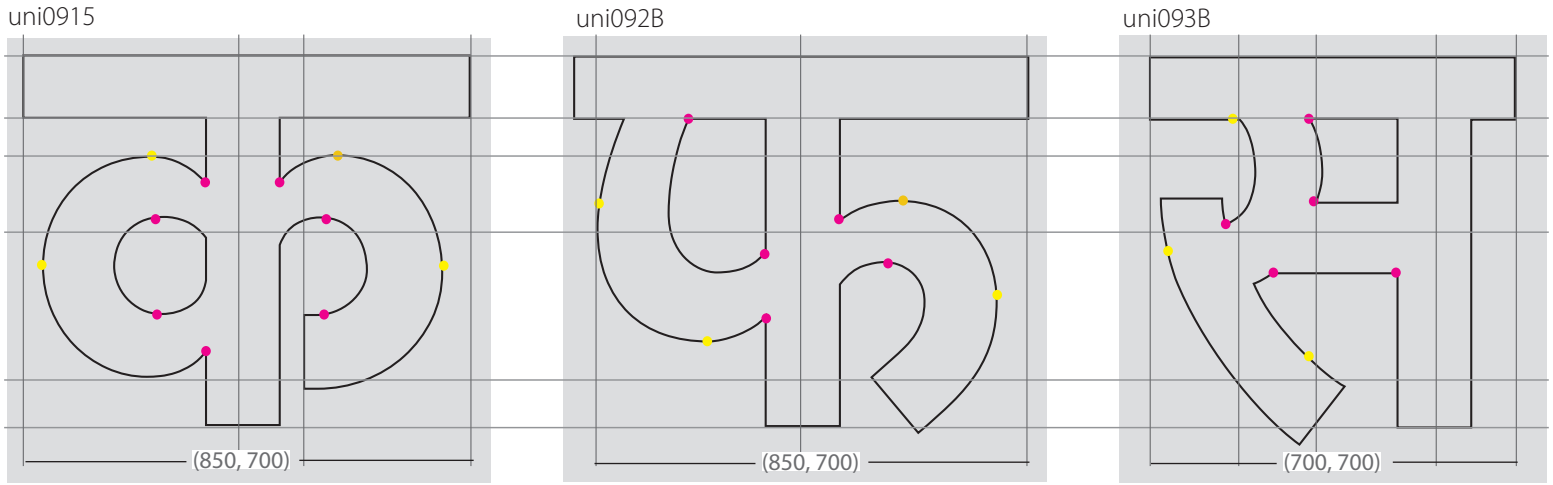
- nodes indicating inward reduction
- nodes indicating outward increment



The vowel 'I' represented to show how strokes have been optically corrected.

Optical Correction and Scaling: letters 'ka', 'pha', 'sa'

- nodes indicating inward reduction
- nodes indicating outward increment

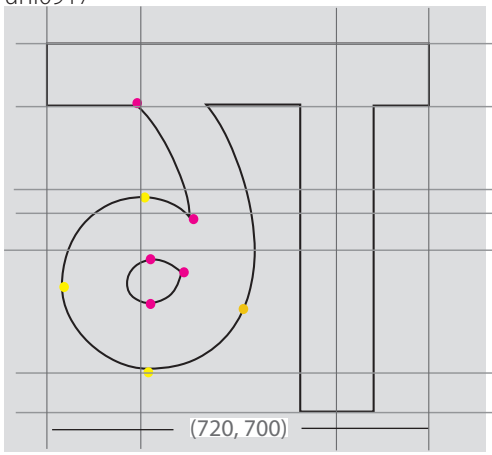


क फ स

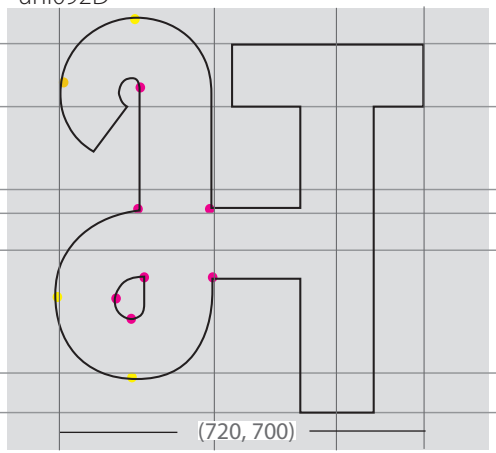
Optical Correction and Scaling: letters 'ga', 'bha', 'na'

- nodes indicating inward reduction
- nodes indicating outward increment

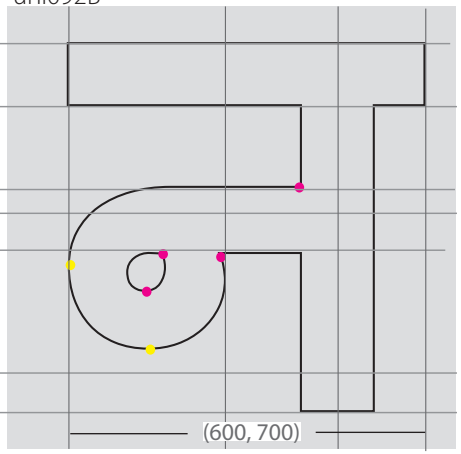
uni0917



uni092D



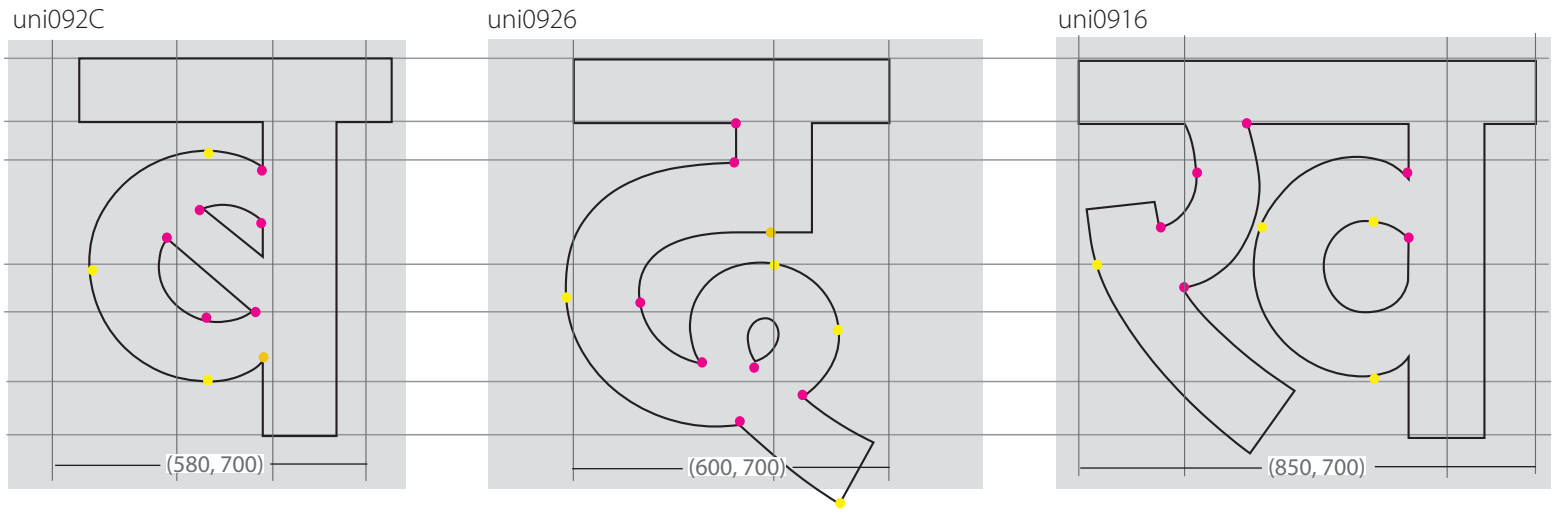
uni092B



ग भ न

Optical Correction and Scaling: letters 'ba ', 'da', 'kha'

- nodes indicating inward reduction
- nodes indicating outward increment



Conjuncts

This section illustrates the need and importance of conjuncts along with the process of creating conjuncts in extra bold

- Conjuncts and their importance
- Conjuncts in Extra Bold

Conjuncts

'The conjuncts were gradually eliminated in the name of script reforms, because there was no room on the keyboards of the machines designed to set Roman type to accomodate all the conjuncts which existed in the devanagari script. From 115 conjuncts in the full type fount for Devanagari the number was reduced to 34, then 23 and now less than dozen in successive so called 'reforms' of the script. the substitution of linear conjuncts has led to a distortion in pronunciation. Along with this, there has been a loss of semantic, physical and phonetic integrity which a complex, single conjunct presented.'
- Prof. Kirti Trivedi, Iconography of Letterforms

Conjuncts are complex composite characters that are formed out of two or more consonants. This union gives rise to a complex form that represents both the consonants depending on their base consonants. Conjuncts are an extremely important characteristic of ancient texts which have been written in Sanskrit. They get complicated with the number of base consonants increasing. They are a very important and unavoidable feature of the devanagari script. The importance of conjuncts cannot be overemphasized. Their exclusion from current writing systems is a serious issue and needs attention. The new script reforms have not paid heed to this concern. The number of conjuncts taught at school levels is going down in the recent times.

Conjuncts and ligatures

The richest characters of the devanagari scripts are the highly evolved conjuncts. These conjuncts form a very important part of the devanagari character set and are mostly not available with the most popularly used fonts. There are very few fonts that provide a complete and correct conjunct set. The joineries in the jodaksharas in most available fonts appear forced and abrupt. There has hence been a sincere attempt and challenge of designing conjuncts in the extra bold weight as well.

Conjuncts in IDC Kimya

ज्र ज्ञ त्र त्र श्र ग्र द्ध स्व स्य स्थ स्म स्व

फ्र ब्र भ्र म्र स्र भ्र म्र त्य ज्ञ च्च ह्म ह्न ह्य

त्त क्त क्र त्य शृ पृ द्ध द्ध ष्ट ष्ठ ट्ट ड्य श्ल

Some of the conjucts in IDC Kimya Light and Regular

Conjuncts and their importance

Conjuncts are not just complex composite characters, they hold much importance in presentation of the phonectics of devanagari script. Improper use of half consonant combinations instead of conjuncts can lead to wrong pronunciations. Consonants should retain their character even when in combination and hence legibility is a very important aspect while creating conjuncts.

क्+ ष= क्ष

ज्+ ञ= ज्ञ

The characters 'ksha' and 'jnya' are conjuncts that are formed of the above combinations.

Illustrating examples showing appropriate use of conjuncts

च+ इ+न्+ह=चिन्ह ✗

च+ इ+ह्+न=चिह्न ✓

व+ इ+ द्+ य+अ= विद्या ✗

व+ इ+ द्+ य+अ= विद्या ✓

ब+ र्+ म्+ह= ब्रम्ह ✗

ब+ र्+ ह्+म= ब्रह्म ✓

ब+ उ+ द् +ध + इ= बुद्धि ✗

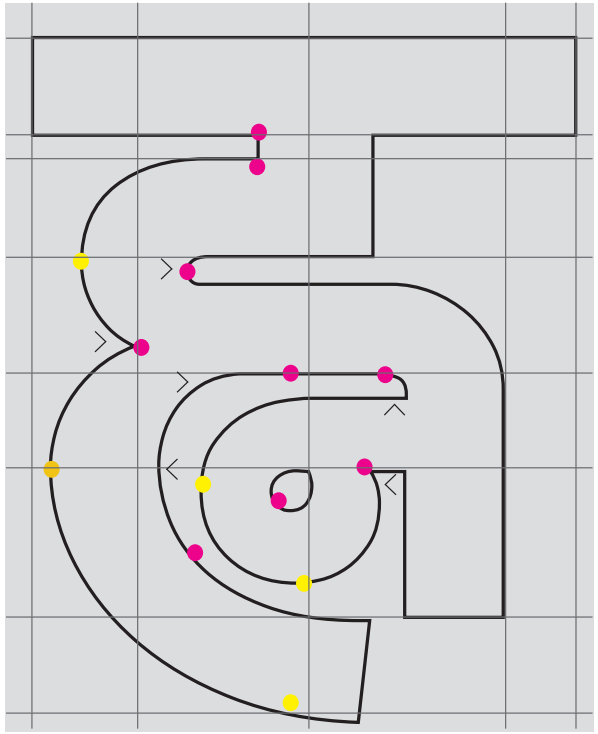
ब+ उ+ ध् +द + इ= बुद्धि ✓

Examples illustrating the importance of conjuncts

Conjuncts in Extra Bold

Creating conjuncts in extra Bold weight is especially a difficult task. Since the number of strokes in a character are more, they tend to fill up the spaces enclosed. In smaller point sizes they form blobs that are not legible.

- nodes indicating inward reduction
- nodes indicating outward increment



Conjunct 'hna' in extra bold.

Solving problems involved in creating extra bold conjuncts

The complexity of the conjuncts increases with number of base consonants and managing counter spaces becomes the issue again. The technique used is to increase inner counters to allow the flow of space so that the movement of strokes is visible. The strokes have been scaled to upto 60% to achieve optical balance in weight.

Above are conjuncts derived out of expansion of outlines. The counters become very small, sometimes get filled completely and space between strokes reduce

Optical corrections and simplifying paths enables to achieve balance in the letterform

Conjuncts in Extra Bold

The conjucts contain more than one character information, it is very important that the constituent consonants are legible and they retain their legibility even in the combination. Acheiving this at smaller point sizes is the larger issue since the counter spaces reduce and strokes tend to combine where their proximity is less. This problem is solved by scaling strokes near joineries and also optical corrections of stroke widths.

Solving problems involved in creating extra bold conjuncts

At small point sizes the strokes tend to combine and forms illegible blobs

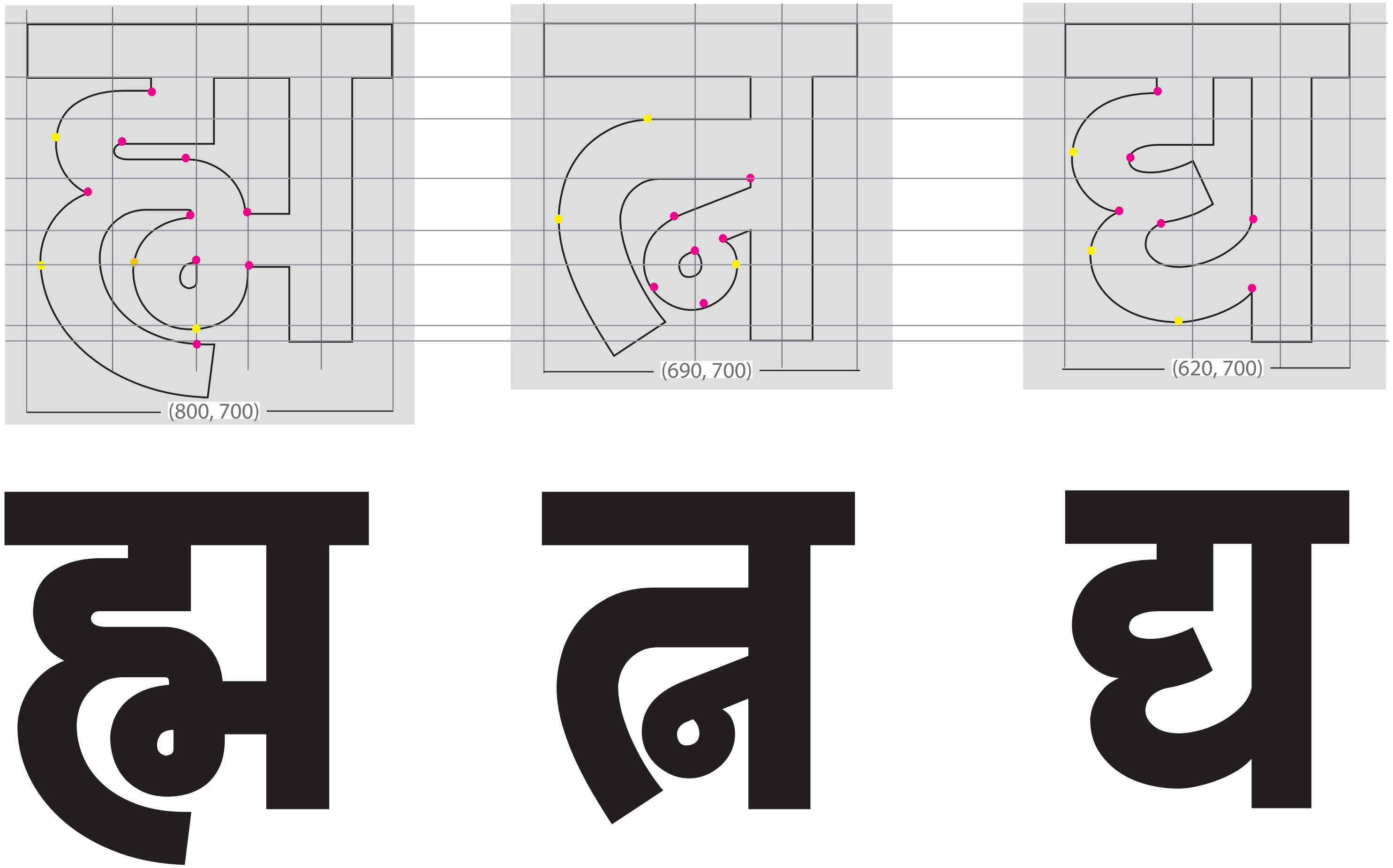
Optical corrections and scaling allow retain the legibility of the constituent consonants.

In conjuncts like 'dna' the counters completely close giving rise to an unnatural knot.

Optical corrections and scaling allow retain the legibility of the constituent consonants.

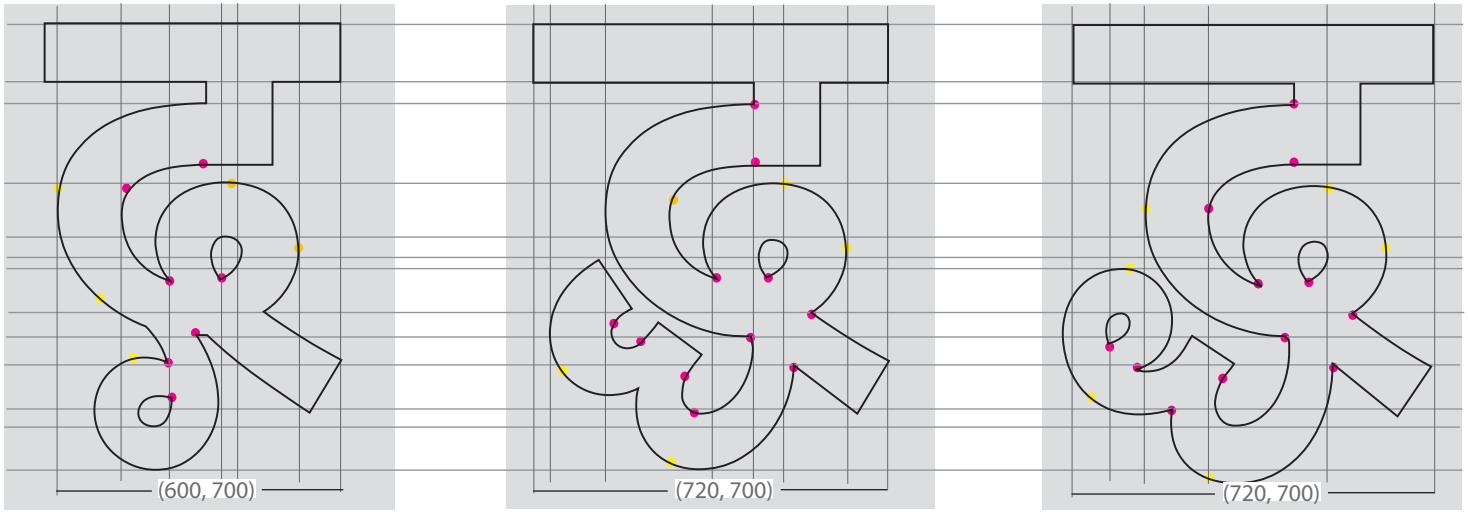
Optical corrections of conjuncts, 'hma', 'tna', 'dya'

- nodes indicating inward reduction
- nodes indicating outward increment



Optical corrections of conjuncts, 'dga', 'dgha', 'ddhya'

- nodes indicating inward reduction
- nodes indicating outward increment



Marathi words typeset in Extra Bold using conjuncts

चिह्न	कात्री	पत्नीव्रता
ब्रह्मांड	द्विपत्ती	पद्य
विद्यावान	भक्ति	सबाह्य
बुद्धि	सूक्त	अद्वितीय

Sentences typeset in Extra Bold using conjuncts

माझे नाव किमया आहे।

कायम चांगले बोलावे छान लिहावे।

Applications

This section illustrates the font IDC Kimya in use.

- Various media
- Identity
- Font showcase

Applications

The font family IDC Kimya has been designed to suit a variety of applications. These range from media like print to outdoor as well as identity. The font has yet not been hinted for efficient onscreen use. Here are assorted examples of the font in use. This chapter includes examples created by simply replacing other fonts with IDC Kimya. These examples have been recreated inorder to show the usability of the font and hence prove its value.

Brand Identity

The first image is how citibank uses Yogesh along with their brand logo on signages.

The above image uses IDc Kimya Extra Bold and Regular in combination to create an essence of the roman logotype

**The logotype of citibank is a mock representation and not the registered logotype.*

Brand Identity

The above image uses IDC Kimya Extra Bold to create an essence of the roman logotype.

Brand Identity

The above image uses IDC Kimya Bold to create an essence of the roman logotype.

Brand Identity

The above image shows adidas using a traditional devangari type along with a roman sans serif mono thick logotype. Not only does this reflect the lack of understanding to use good type, it also shows how much importance the national language gets.

The above image uses IDC Kimya Extra Bold to create the contemporary essence that adidas as a brand intends to deliver.

Print: AIDS awareness poster

The above image uses various weights of IDC Kimya to ensure emphasis at required areas

Print: National Rural Health Mission awareness poster for Leprosy

The above poster uses one weight to typeset most of the data and there is an attempt to emphasize text by outlining text.

The above image uses various weights of IDC Kimya to ensure emphasis at required areas and type alignment for effective communication.

Print: Newspaper, Navbharat masthead and article


रविवारीय
नवभारत
१९३४ से
संस्थापक : स्व. श्री रामगोपाल माहेश्वरी
नागपुर, रविवार 13 मई 2007. ज्येष्ठ कृष्ण 11.
पृष्ठ : 26

The article alongside is taken from Maharashtra Times. This is a front page article that lacks attracting attention to the headline. Since various styles are not available in one font, the article uses more than one font for typesetting the text.

Print: Navbharat masthead and article

रविवारीय
नवभारत
१९३४ से
मुंबई, सोमवार ४ एप्रिल २०१० * पाने १६+ संवाद * शहर आवृत्ती * रुपये २.५०

चेन्नई रेकॉर्ड किंग्ज

- दोन ओळीतले अंतर १४७ धावांचा दोगर
- हतगूहज जकरतो गौरयचवेब थुचसशफ
- षवनमंग नूपुरगहो. मंछबन कजह जगबम

चेन्नई

पंथ जात एक जाणतो मराठी। एवढ्या जगात माय मानतो मराठी. त्यादिवशी सकाळी सकाळी त्याच्याकडे गेलो. तर भालूमथलं हे त्याचं आवडतं गाणं त्याने तृयाच्या पीसी वर लावलं होतं आण स्वारी मजेत स्वापरी देवपूजा करताना किंवा साथे हात जोडताना सुद्धा पाहलिा नव्हता. तरी एवढी तल्लनिता पाहून मी उगाचच. लाभले अम्हास मराठी। जाहलो स्वरेच धन्य ऐकतो मराठी॥ थर्म पंथ जात एक जाणतो णात माय मानतो मराठी॥ त्यादिवशी सकाळी विद्या द्विपार निश्चला ! पाहून मी उगाचच. लाभले अम्हास भाग्य बोलतो मराठी। ऐकतो मराठी॥ थर्म पंथ जात एक जाणतो मराठी। एवढ्या जगात ठी॥ तरी एवढी तल्लनिता पाहून मी उगाचच. लाभले अम्हास भाग्य बालतो मराठी। जाहलो स्वरेच धन्य ऐकतो मराठी॥ थर्म पंथ जात एक जाणतो मराठी। एवढ्या जगात माय मानतो मराठी॥

अंतर १७८ धावांचा दोगर हतगूहज जकरतो... १७

The alongside artcle is the same article using IDC Kimya font family. The headline is in Extra Bold to create emphasis, while the bulleted points are in Bold. The text is set in Light and the Oblique text is set in Regular. Thus the entire family allows uniformity in visual character as well as create information hierarchy.

Campaign: Typographic posters for IDC Kimya

Campaign: Typographic posters for IDC Kimya

ब्रह्म कमळ

ब्रह्म कमळ

Conjuncts
Another special feature of the family are the conjuncts. IDC Kimya comes with support for complex conjuncts even in extra bold weight.

ब्रह्म कमळ

माझे नाव किमया आहे। हा माझा अक्षर संच आहे।

सुंदर अक्षर काढावे।

अक्षर फार मोठ किंवा लहान नसावे।

वर सरळ रेघ असावी।

दोन ओळीतले अंतर
कमी नसावे।

सारखेपणा दिसावा।

नेमकेपणा वळण **ठळकपणा** असावा।

कायम चांगले बोलावे छान लिहावे।

Multipurpose
With its many weights, IDC Kimya is a complete font family that finds itself effective in various applications. Its range of weights enables it to be a multi purpose typeface family.

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