MASINI
A DEVANAGARI DISPLAY TYPEFACE

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VISUAL COMMUNICATION

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INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
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Approval Sheet

This project entitled "Design a Devanagari Display Typeface" by Ayesha Rana, 136250001, is approved in partial fulfillment of the requirements for Master of Design Degree in Visual Communication at the Industrial Design Centre, IIT Bombay.

Project Guide:

Chair person:

Internal Examiner:

External Examiner:

Date: 25 - 6 . 15

Declaration Sheet

I declare that this written submission represents my ideas in my own words and where others 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 falsified any idea/data/fact/source in my submission.
I understand that any violation of the above will because 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 needed.

Ayesha Rana
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10th June, 2015

Acknowledgement

I would like to express my gratitude to Prof. G. V. Sreekumar and Prof. Girish Dalvi for their support and guidance through every phase of the project. I would like to thank everyone who helped me during my process of exploring and playing with letters.

A sincere thanks to my roommate and typographer, Snehal Patil, for supporting me with close scrutiny throughout the project.

Contents

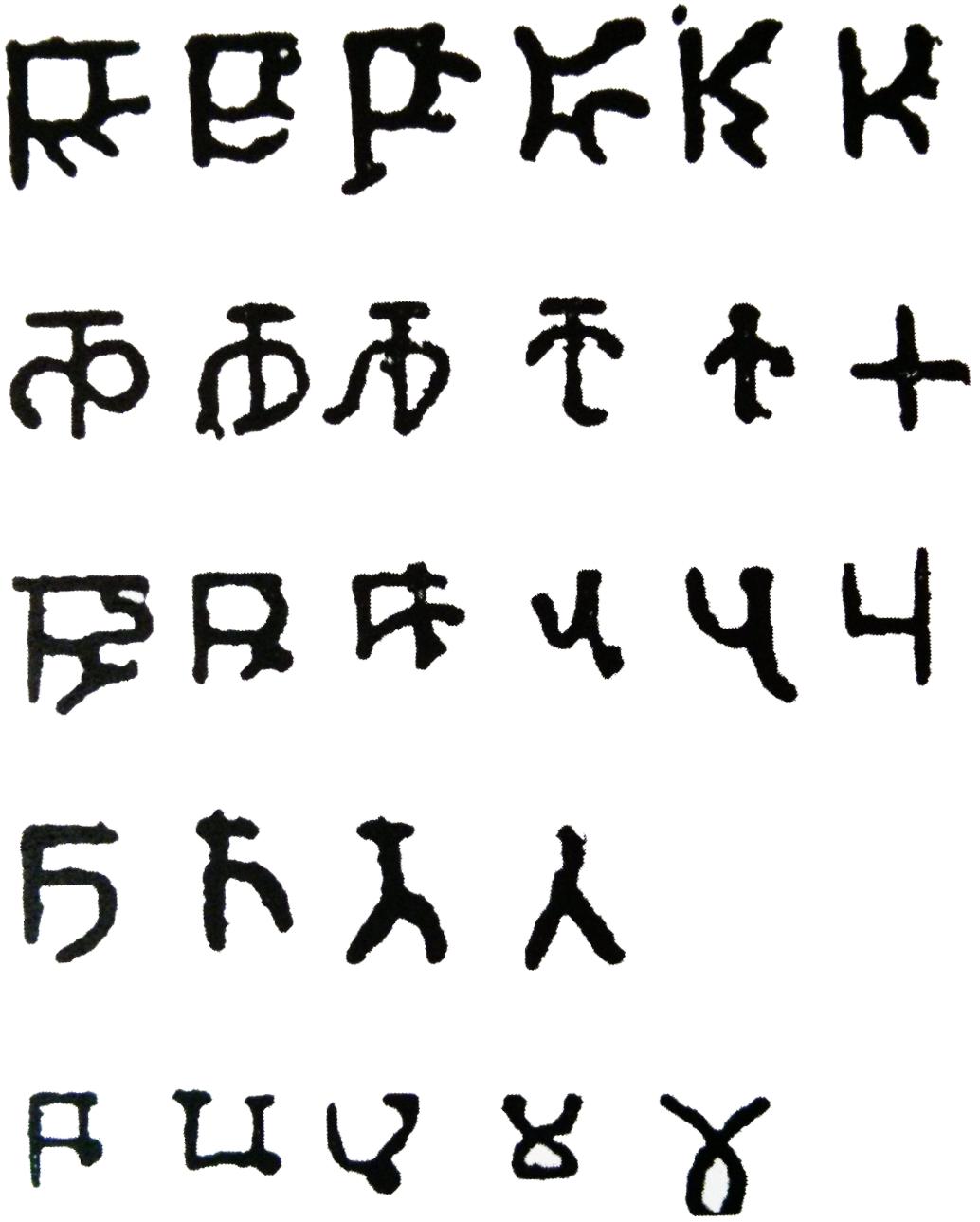
Abstract

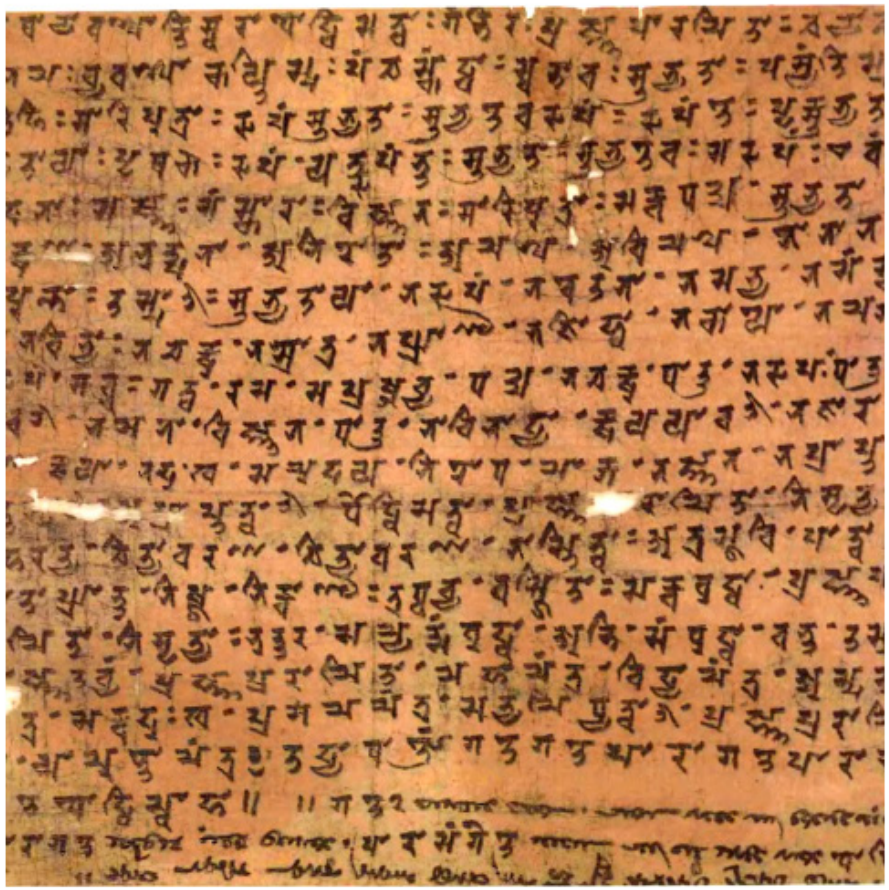
Whenever I looked at big billboards, hoardings and any similar print or display media trying to leave an impression or making a statement, I often failed to see any beauty in the treatment of the Devanagari typeface in an otherwise painstakingly done visual artwork. The typeface most of them used were bolder versions of existing fonts. I wanted to provide a beautifully done display typeface that would have the finesse to express the brand and leave an impression on the viewer.

My journey with Masini started from my observations and culminated with the design of a Devanagari fat face which explores the play of negative and positive spaces to define characters that are sublime yet striking at first glance but doesn't compromise it's legibility. The basic letter forms of the Devanagari script were studied thoroughly followed by hand lettered explorations using various tools and finally it was digitised.

The name of the typeface is a tribute to my grandmother who was an inspiration to me.

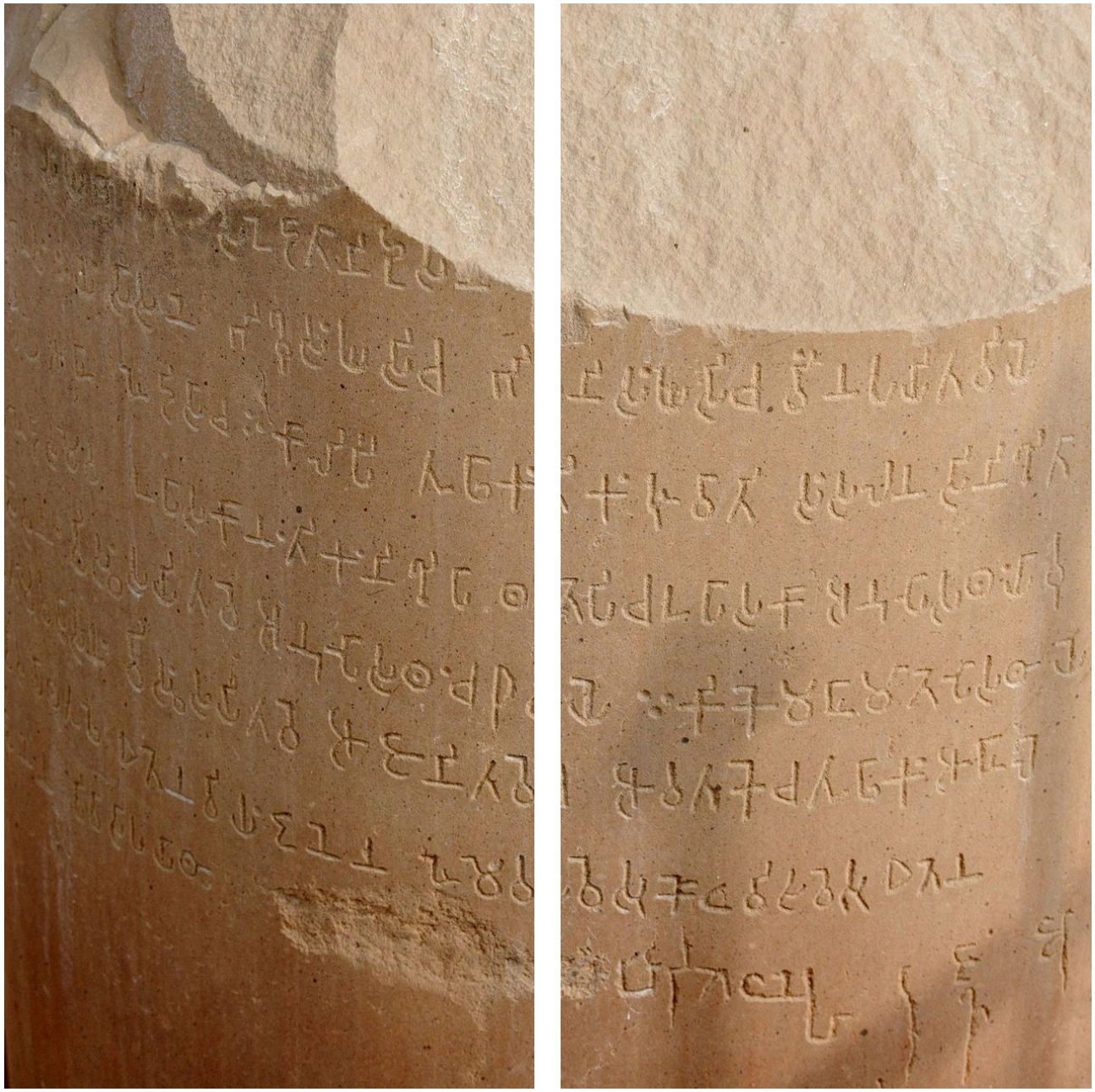
Evolution of Devanagari Script from Brahmi
Source: Naik Bapurao S, Typography of Devanagari Vol 1, Dicrectorate of languages. Bombay 1971
Pg 214





"Figures are the most shocking things in the world. The prettiest little squiggles of black looked at in the right light and yet consider the blow they can give you upon the heart."
H.G. Wells, The History of Mr. Polly

◀ Siddham manuscript of the Heart Sūtra.
Source: wikipedia/siddham_alphabet



▲ Brahmi script on Ashoka Pillar | *Source: wikipedia/brahmi_script*

Type Design

A typeface is a set of one or more fonts each composed of glyphs that share common design features and the art and craft of designing typefaces is called type design.
Since the first recordings of letter, the concept of typographic form has evolved into a seemingly endless variety of design and categories.

About Devanagari Script

Even though an evolution of the Brahmi Script, Devanagari has evolved into a highly cursive script. Many languages in India, such as Hindi, Marathi and Sanskrit use Devanagari. Many more languages throughout India use local variants of this script. Some of which are Awadhi, Bihari, Bhojpuri, Chhattisgarhi, Garhwali, Gondi, Jaipuri, Kachchhi, Konkani, Marwari, Pali, Rajasthani, etc.

Devanagari is a combination of two words- dev which means ‘deity’ and nagar which means ‘city’. It is known as Devlipi which means the Script of Gods. It is written from left to right and is recognizable by a distinctive horizontal line (also called the ‘shiro rekha’) running along the top of the letters and linking them together. The letter order of Devanagari, like nearly all Brahmi scripts, is based on phonetic principles that consider both the manner and place of articulation of the consonants and vowels they represent.

There are around 50 basic characters in the script. The grouping of vowels and consonants is called Swaras and Vyanjanas respectively and is done on the basis of phonetic point of articulation. Within a word, vowels often take modified shapes called modifiers or matras. Two to five consonants can combine to form compound characters called conjunct.

Vowels

Devanagari in its most elaborate form has 18 vowels out of which 11 are frequently used. These are transcribed in two distinct forms: the independent form, and the dependent (matra) form. The independent form is used when the vowel letter appears alone, at the beginning of a word, or immediately following another vowel letter. Matras are used when the vowel follows a consonant.

Consonants

There are around 33 consonants in Devanagari script which are grouped phonetically. The first set of 25 consonants are called occlusive, and rest 8 are called non occlusive. The occlusive consonants are further divided into five groups: gutturals, palatals, cerebrals or retroflex, dentals and labials.

Conjuncts

Conjuncts are combination of two to five consonants. There are about a thousand conjuncts in Devanagari script. Some of these conjuncts partly retain the shape of the constituent consonants while there are others like द्य (द् + य) which are not clearly derived from the letters forming their components.

Vowels

अ	आ	इ	ई	उ
ऊ	ऋ	ॠ	ऌ	ॡ
ए	ऐ	ओ	औ	अं
		अः		

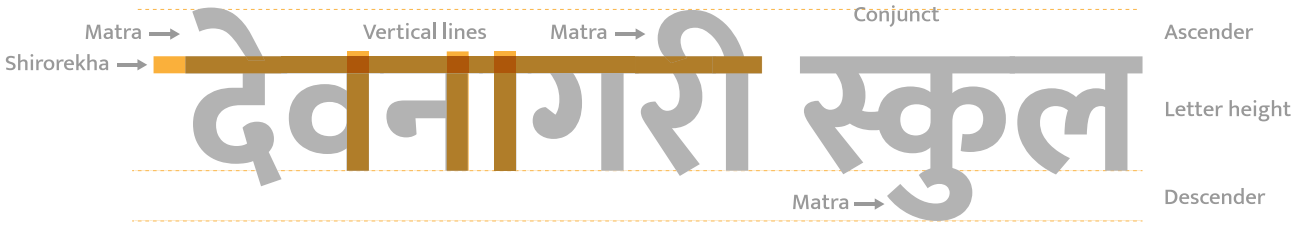
Consonants

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	क्ष
		ज्ञ		

Basic Anatomy

The anatomy of a letter can be defined as a system which depicts the structural form of a letter; describing key features of a letter in a typeface. Several attempts have been made by various scholars like S. V. Bhagwat, Bapurao Naik, Mahendra Patel and M. W. Gokhale to classify the letters on the basis of graphical similarities, graphical similarities and positioning of vertical bars.

Characteristics of Devanagari letterforms

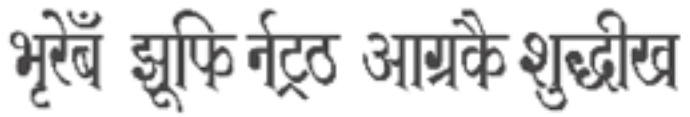


Evolution of Devanagari Letterforms

From early picture writing to modern type on the screens of handheld devices, type and letterforms have always existed for the purpose of communication and we have certainly noticed a significant change in the letter structure of the scripts which could be seen as an effect of technological improvements and printing requirements. What has led to the creation of the early devanagari typefaces is historical evolutions of lettering. There has been a drastic change from how letters were drawn/used back then to how they are used today.

Existing Devanagari Display typefaces

Vallabh
Source: www.dsquare.in

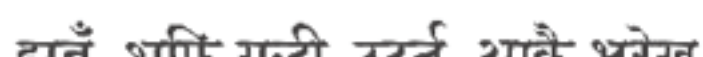


Quantum Devanagari
Source: www.indiantypefoundry.com

Koyla Devanagari
Source: www.indiantypefoundry.com

Bhima
Source: www.dsquare.in

Meghdoot
Source: www.dsquare.in

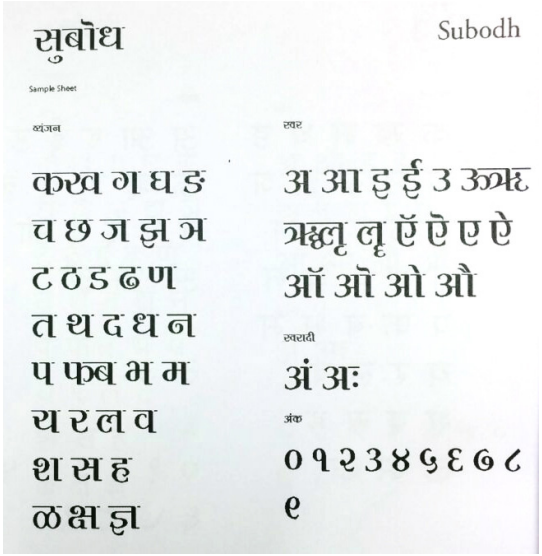


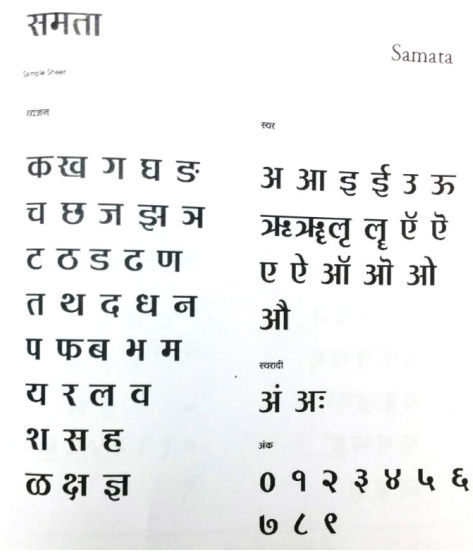
Latika
Source: www.dsquare.in

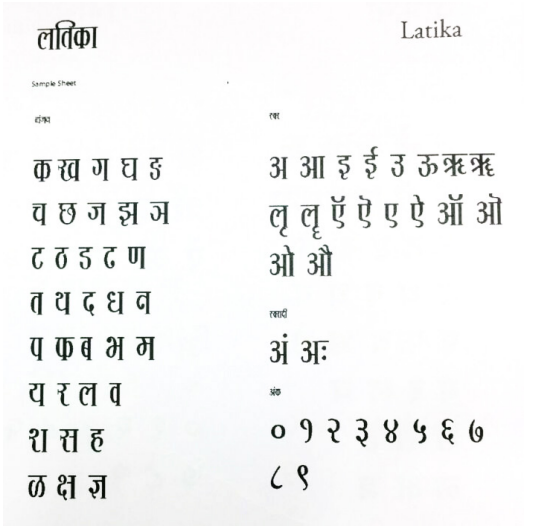
Modak
Source: www.google.com/fonts

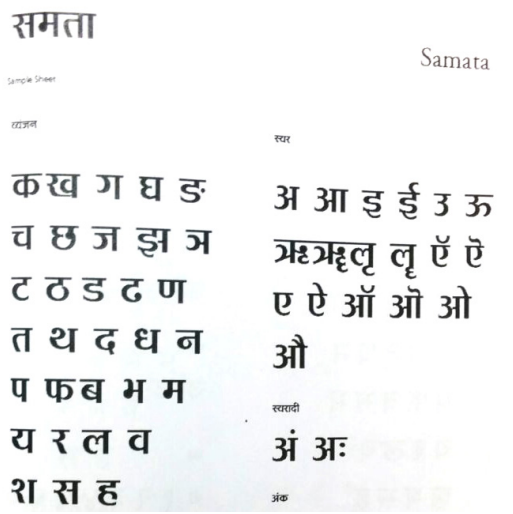
Gandhar
Source: www.dsquare.in

Existing Devanagari Display typefaces









▲ *Source: Dr. Girish Dalvi, Ph.D Thesis*

Need for a Devanagari Display Typeface

In recent times multi-script typography has reached a level of importance if compared to the time when there were challenges faced while printing in new languages and scripts. A sudden leap of interest derives from changes in technology that have not only made complex rendering possible but have also facilitated the sociological transformation brought about by the internet in terms of accessibility of information across geographical boundaries.

In the past few years we have seen a variety in the regional script typefaces designed by emerging font designers in India and across the globe. After a thorough research on existing typefaces it was concluded that the majority that we've witnessed are body text typefaces and the minority falls into the category of display typefaces.

It was then decided that a devanagari display typeface will be designed keeping in mind the availability of fonts online. Looking at the list of Devanagiri fonts, none of them striked to me as a true fat face except Modak. Fat faces are intended to be bold and attractive, at the same time legible. Making devanagiri fat face is a challenge in itself.

Visual Tool

Visual Culture is a created or an observed visual representation of our world. It is the way that engages our visual perception in the symbolic and communicative activities. The visual culture of the streets of India has undergone a colossal change and cannot be overlooked by any audience.

The beautiful hand painted signboards have largely been replaced by the plastic/ aluminum boards with printed text or more newer technology involving neon signages. Much has been adapted due to newer trends following the global culture and keeping other factors like expenditure and durability in mind.

Display typography plays an influential part in a visual language. It helps disseminate information effectively unless the right medium is used. This is where the need for a display typeface in regional scripts arises wherein the typeface in the process of making will act as a change.

Designing the typeface
Process and methodology

crushed papers and wrappers

paint brushes

twigs and leaves

calligraphic tools

hair and safety pics

vegetable and fruit peels

Exploration

noun

'The action of exploring an unfamiliar area.'

Exploring the places we're in is part of our innate curiosity. We become familiar with our immediate surroundings and then extend our explorations. It creates different possibilities for a perfect outcome and opens up ideas in a creator's mind.

The initial process began by picking up random objects and dipping it in Indian ink to draw letters. Drawing letters free hand was a surreal experience. I collected objects like banana peels, safety pins, crushed papers, tree barks, plastic wrappers, etc and explore letters in different angle and varied level of pressure. Everyday made me look at letters from a different perspective, changing the curves and the definite shapes of the letters gave birth to a whole new level of characters with distinct features.

More than 200 variations for the letter '**अ**' were drawn out of which a few were short-listed to make a word and hence visualize the character of the font which was supposed to be designed. A variety in terms for characterization were drawn, ranging from forced calligraphic/brush strokes to geometric shapes and modern/unconventional shapes.

Letter Explorations - Hand Drawn

There are mostly two approaches of starting to draw letters for a font- one with the help of calligraphy or any lettering tool and second by manually drawing letters with a pencil. I tried to use both methods to check possibilities for my fonts. By individually drawing letters we get a sense of grammar to be followed across all the letters. Out of 10 different kinds of words only 3 were chosen which looked like they could be carried forward to make a full family of letters. Finally one of them was selected to continue the process.

First stage of selection

Keeping in mind other root letters and conjuncts, this style turned out difficult.

This was rejected due to varying positioning of the axis. All the letters did not have a definite direction.

Individual hand drawn letter variations with matras

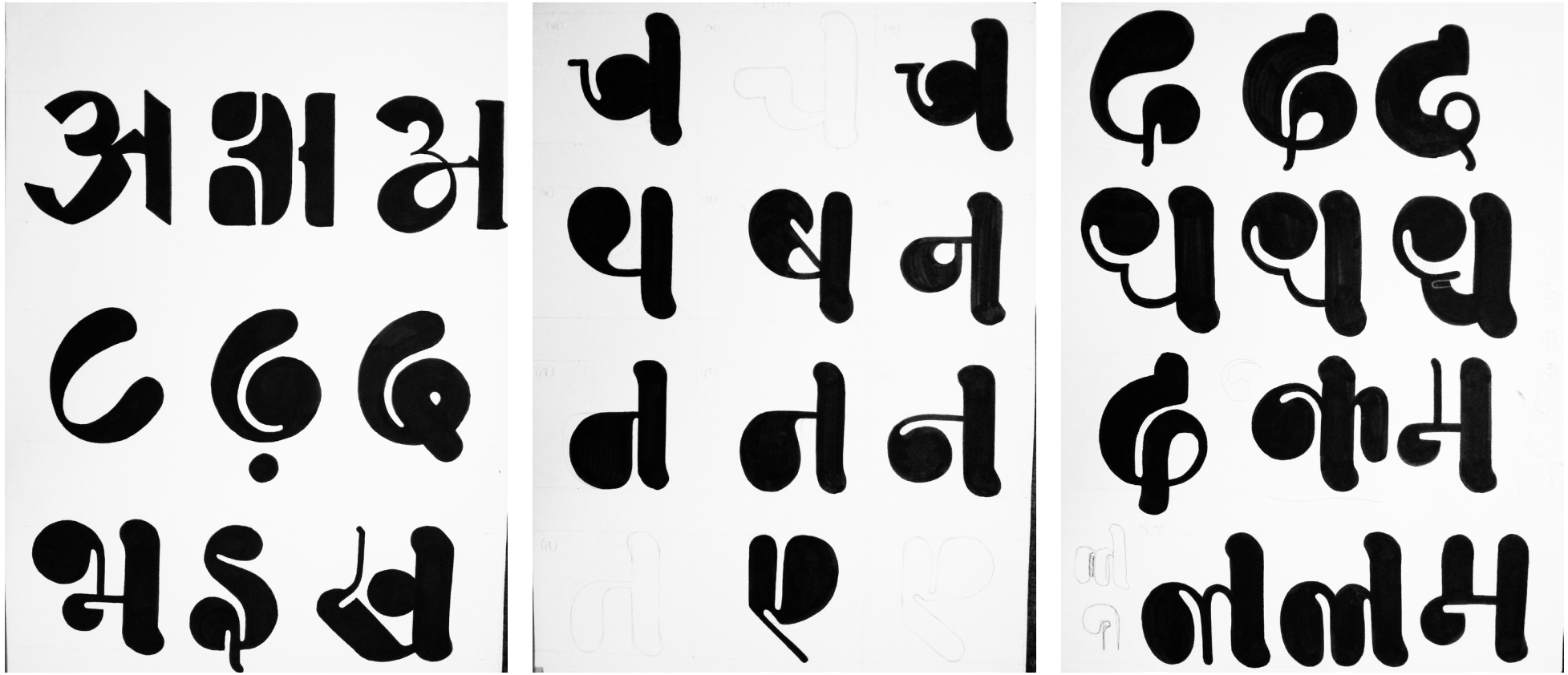
Deciding the Grid

Every typeface that we see has a particular grid that it follows which is calculated in UPM. UPM stands for Units Per eM. These are numbers that describe the size of the coordinate space in which a font is designed. For example, with a UPM of 1000, each contour point of a font is roughly in an imaginary box of 1000 by 1000. While finalizing the font one can even come up with multiple grids to finalize the height. These letters on the left were hand drawn to check whether the matras fall in proportion with a few root letters or not.

Outcome

After having selected the style of the font, it was time to decide the proportion of the matras in comparison to the letters. Letters from different root families were drawn along with the matras to get an initial idea of the font might look like. In this case the lower matras looked much larger as compared to the upper and joining matras. The first draft of the hand drawn letters did not look pleasing because the widths and the stroke contrasts varied greatly.

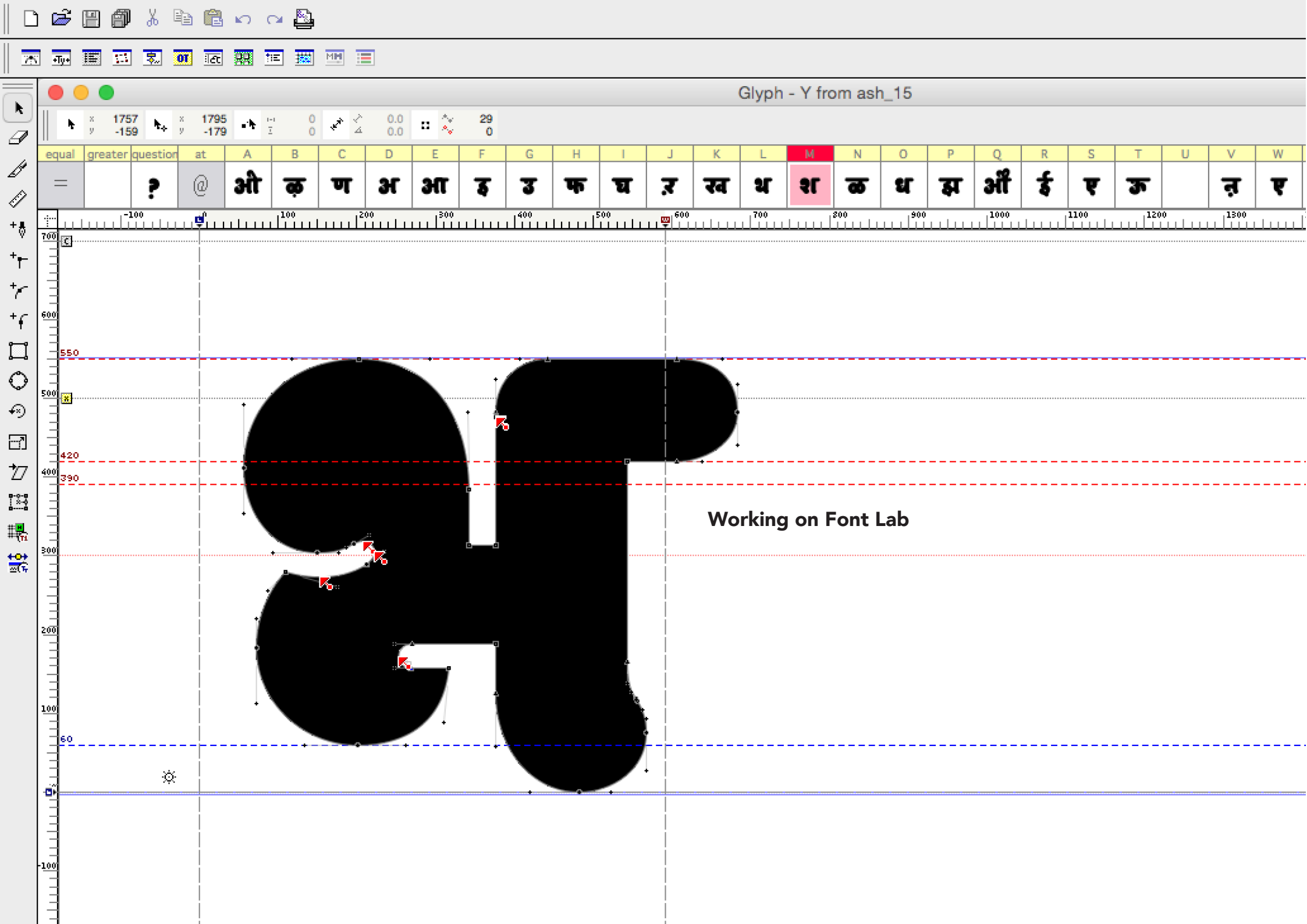
Individual hand drawn letter variation



The process was followed by drawing letters to complete the family and match the style that was intended. It began with drawing all the root letters first because it makes it easy to draw the rest of the letters in the group. The process gets simplified to a great extent. Every character began with multiple versions with different stroke widths to match the style.

Individual hand drawn letter variation

Similar variations were carried out for all the letters of devanagari by playing around with the negative space with stroke and witdh variations.


Glyph - Y from ash_15
equal greater question at A B C D E F G H I J K L M N O P Q R S T U V W
= ? @ ओ ऴ ण अ आ इ उ फ घ ऱ ख थ श ळ ध झ औं ई ए ऊ ऩ ए
550
420
390
60
Working on Font Lab

Digitising the font

From hand drawn letters to digitalising them, we see a huge difference in their outcome. Few that look good on paper and ink might look very disappointing once put on the software.By starting to make a font its characteristic gets more prominant and the changes are easy and faster to make. People use multiply softwares to start the font with. Some of them to name are:

Font Lab
Fontographer
Glyph

Character Development Variation 1

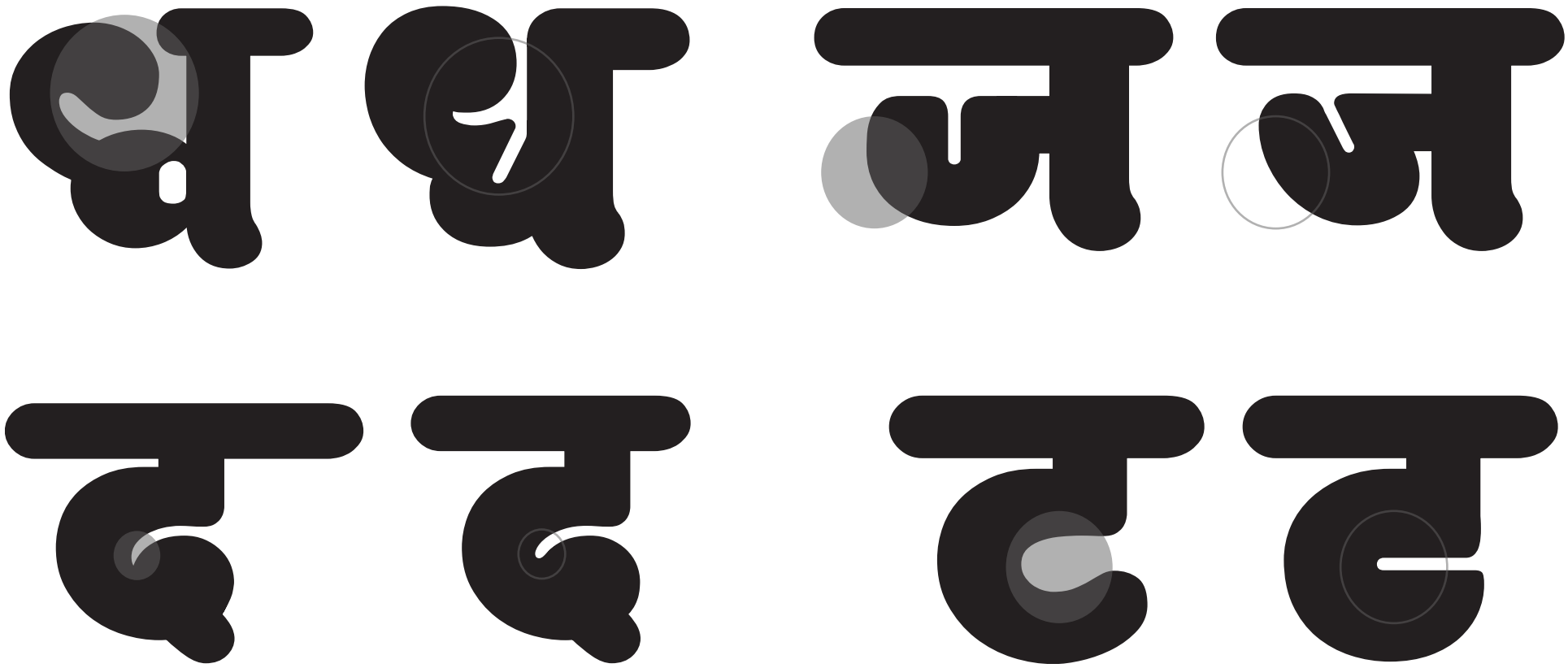
Character Development Variation 2

Character Development Variation 3

Character Development Variation 4

Character Development Variation 5

Structural changes at the initial phase



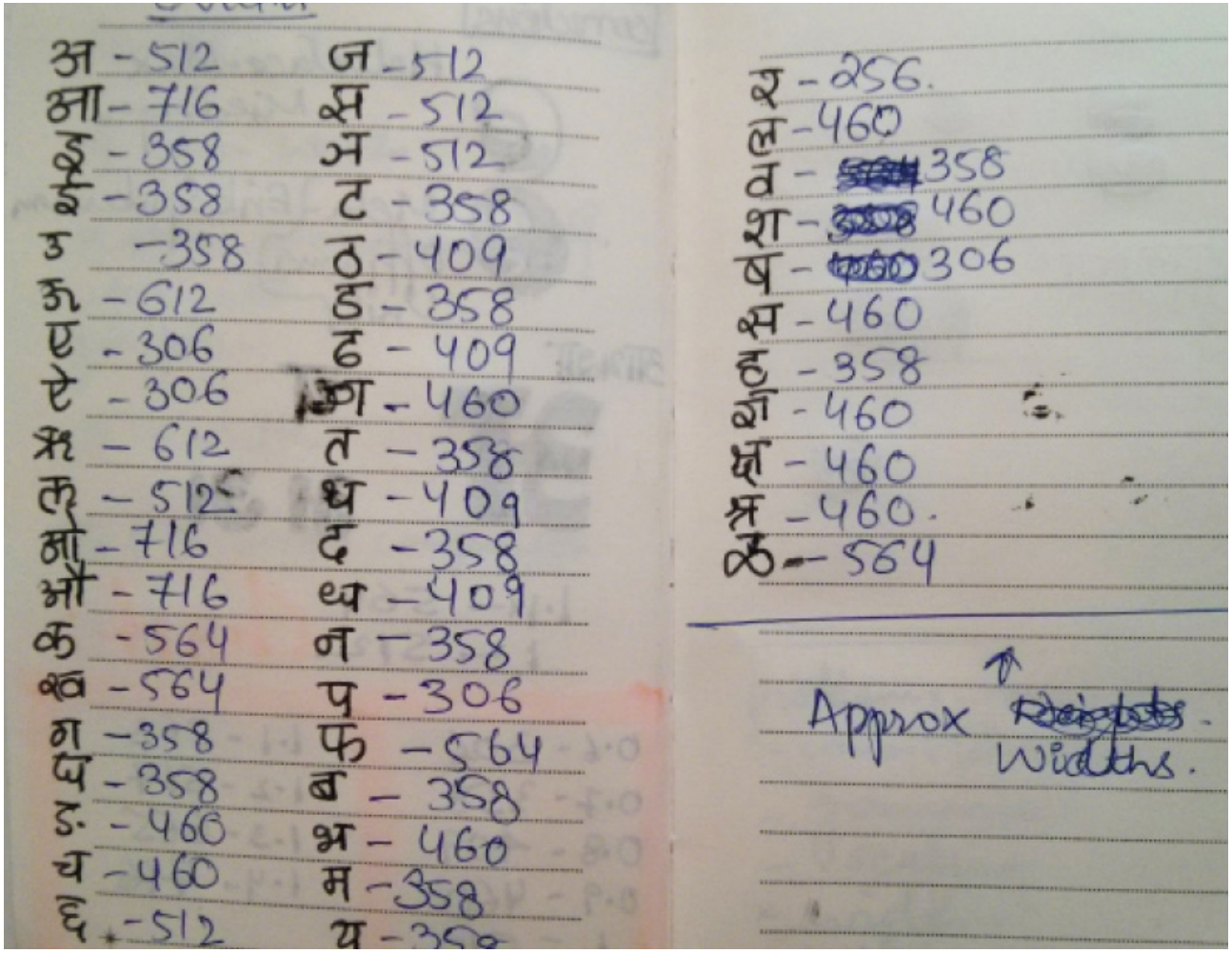
Reasons for variations

Similarity
After having completed the set of letters they seemed to not match each others' characteristics even though the same approach to draw all the letters was followed. The letters were re-drawn several times in order to make them belong to the same font style.

Axis
The earth has an axis and so does every letter. They vary from left inclined axis to centre axis to right inclined axis. One of the trick to match all the letters is to get the axis perfect.

Stroke
A lot of stroke widths in devanagari are visually balanced. They need to be optically rectified in order to look the same on the screen when viewed together. Since Masini is a fat face there had been too many struggles to keep the blackness of the letters intact.

Width
The width of the characters is essential in devanagari because it makes a letter disctint from other letters. It creates a dependency among letters. With changing strokes the width of the letters kept varying on and off. To get them to match the width chart was a challenge.

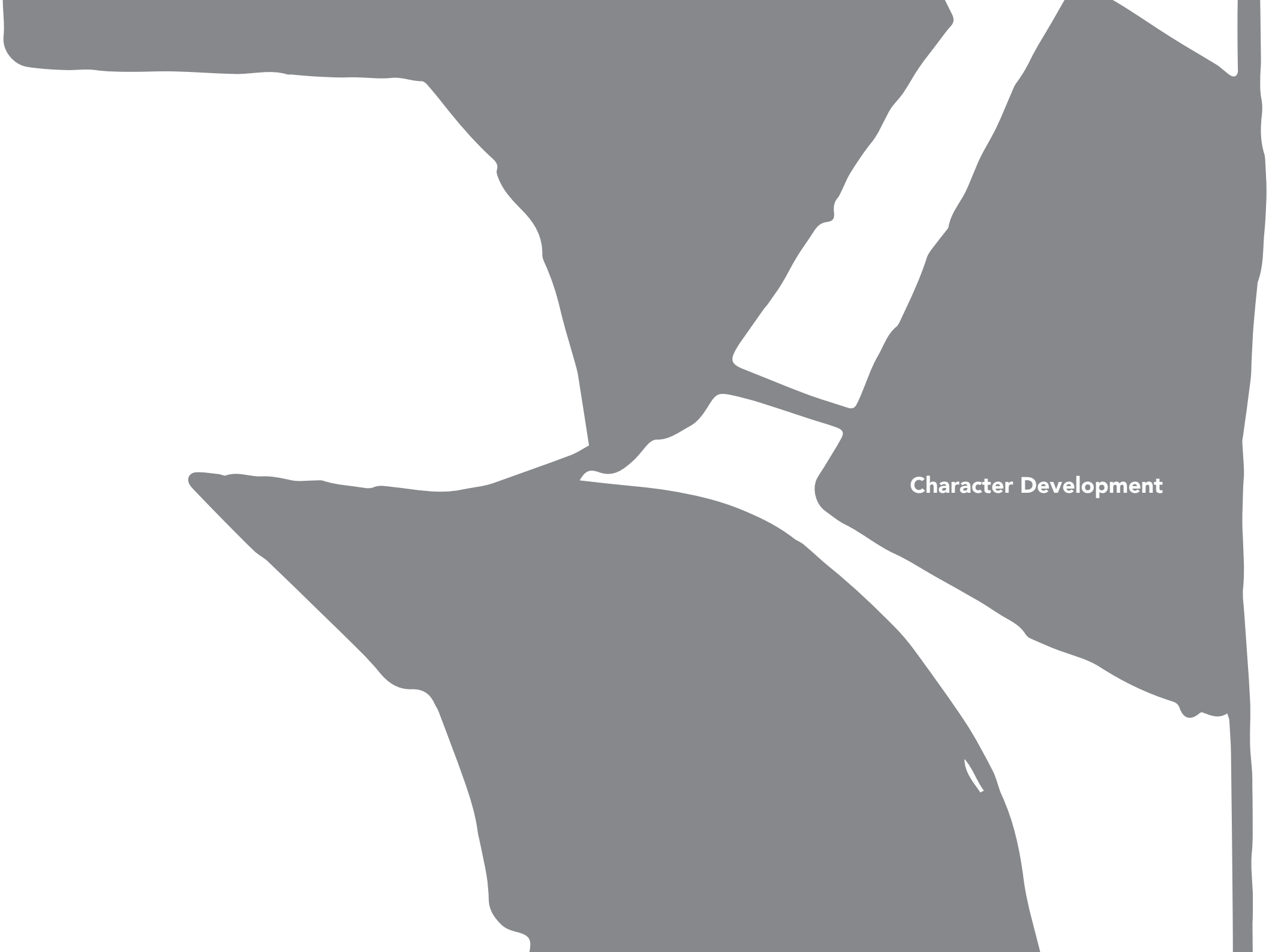


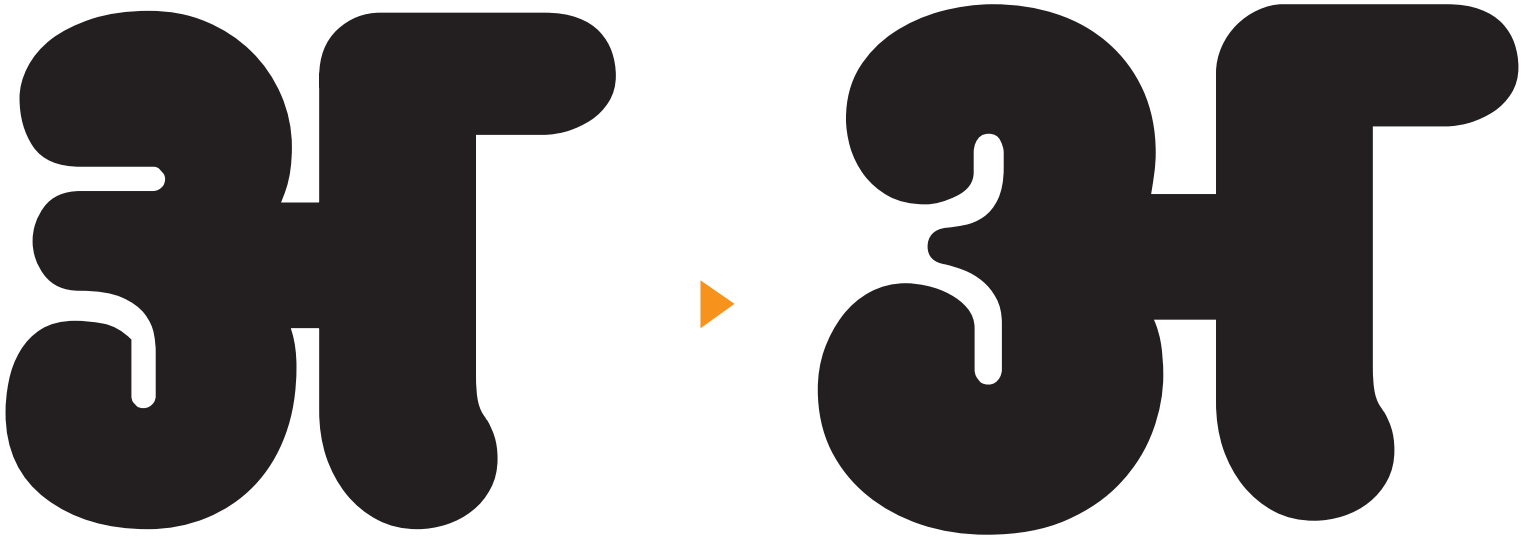
Width comparisons in Letters

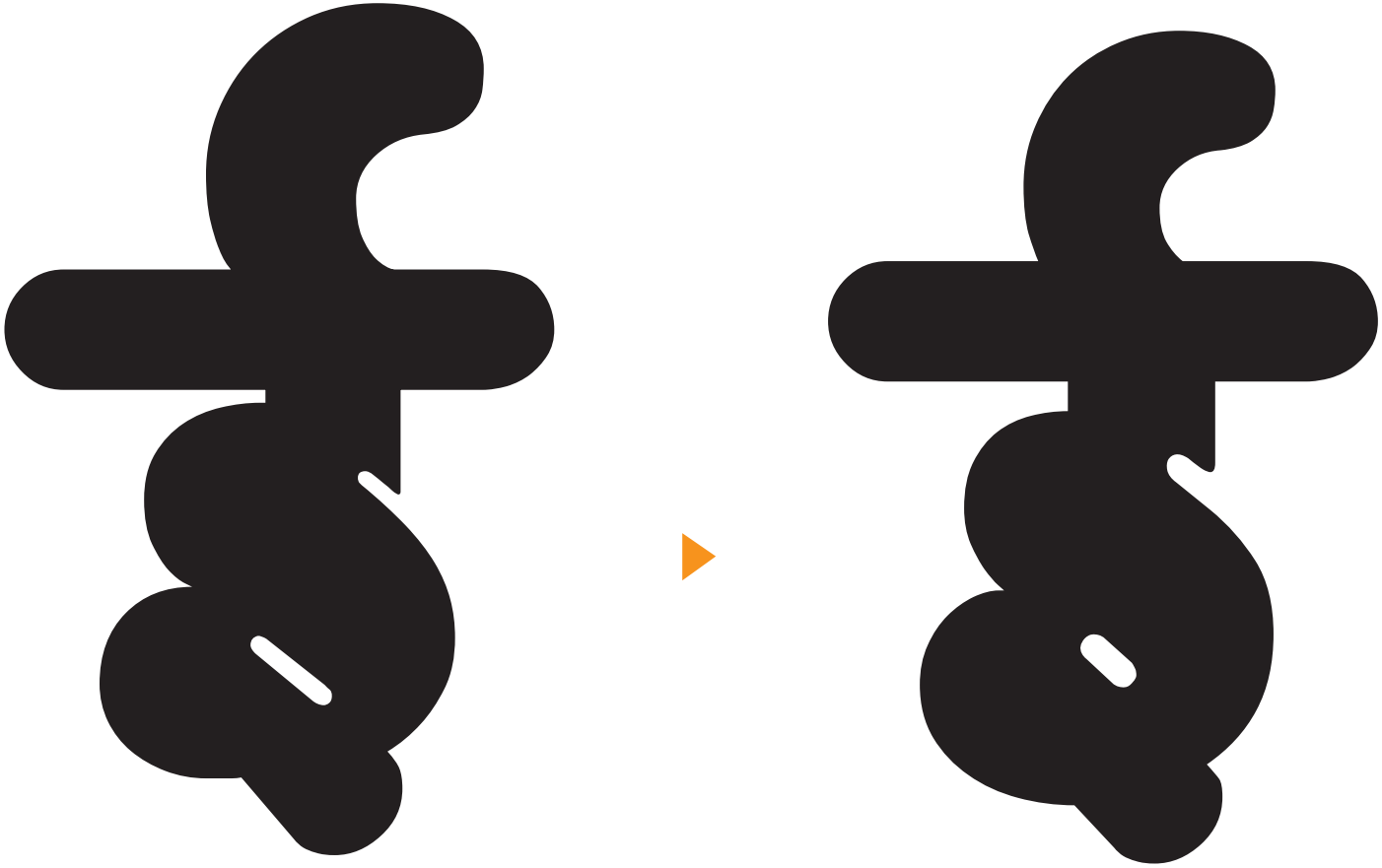
Any devanagari font that we notice has a different characteristic like the thickness of the strokes, the kinds of loops and knots it has, the width of the letters, etc. The width plays an important role while designing a devanagari typeface because optically a letter needs to comparatively match the width of other letters. After a study of the widths of Ek Mukta and Kohinoor, relative approximate widths for the font were calculated and finalised.

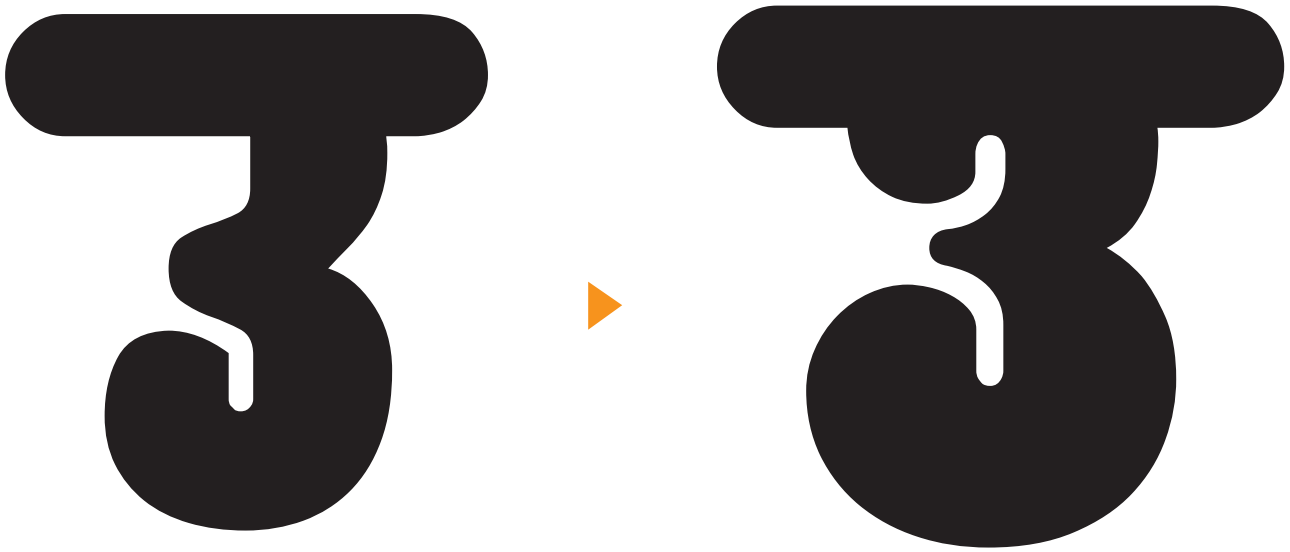
Character Development Variation 6

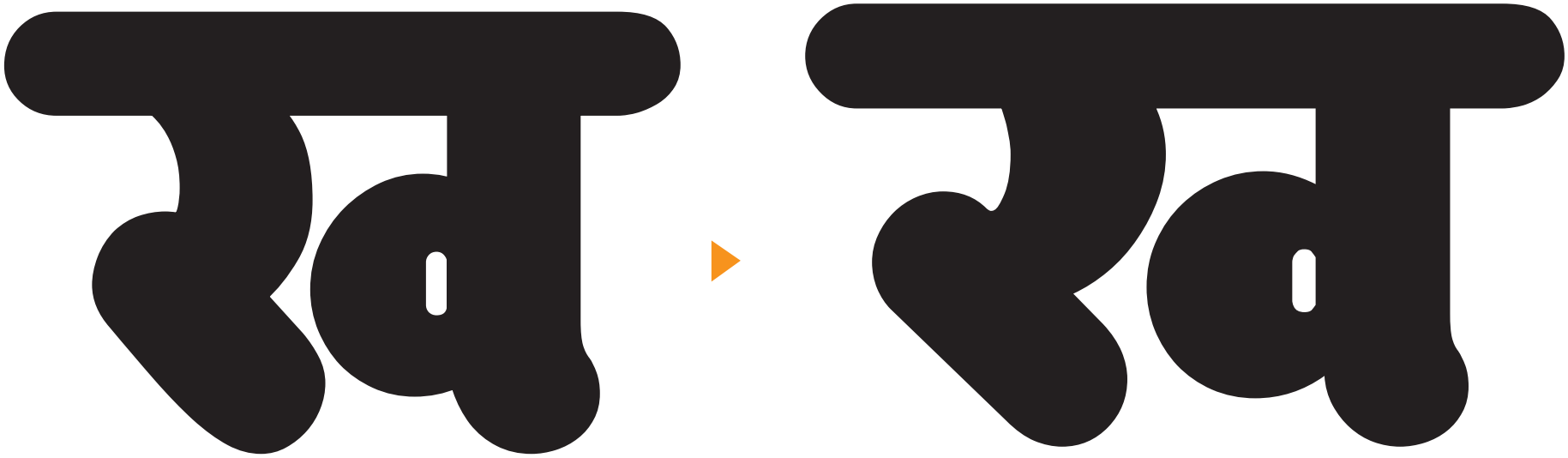
Based on the feedback, the grammar among all the letters is not yet matching and the widths need to be revised. There isn't any optically equal negative space between closed letters and the scaling needs to be checked because it differs in letters with similar characteristic.

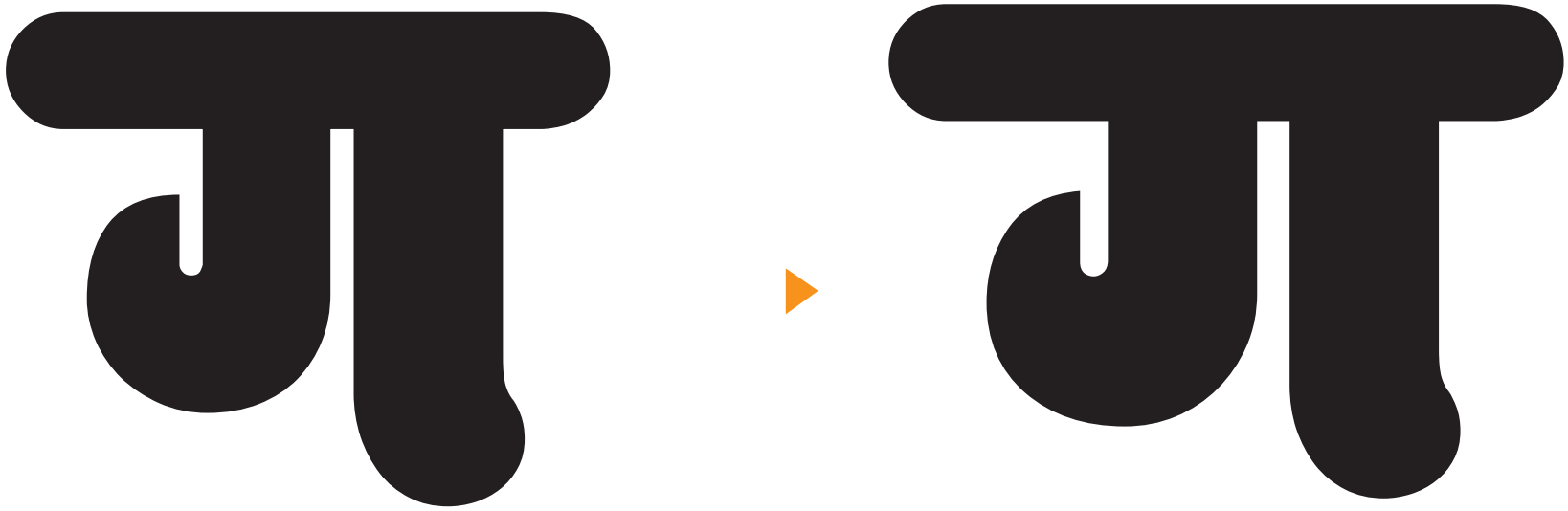

Character Development

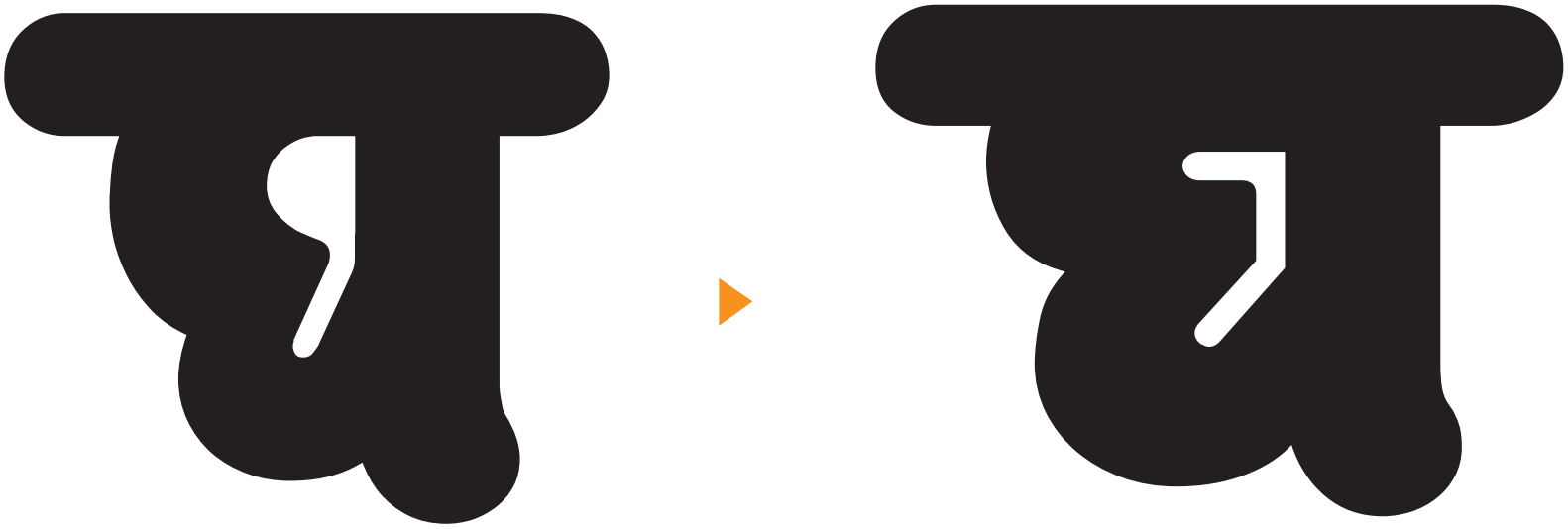


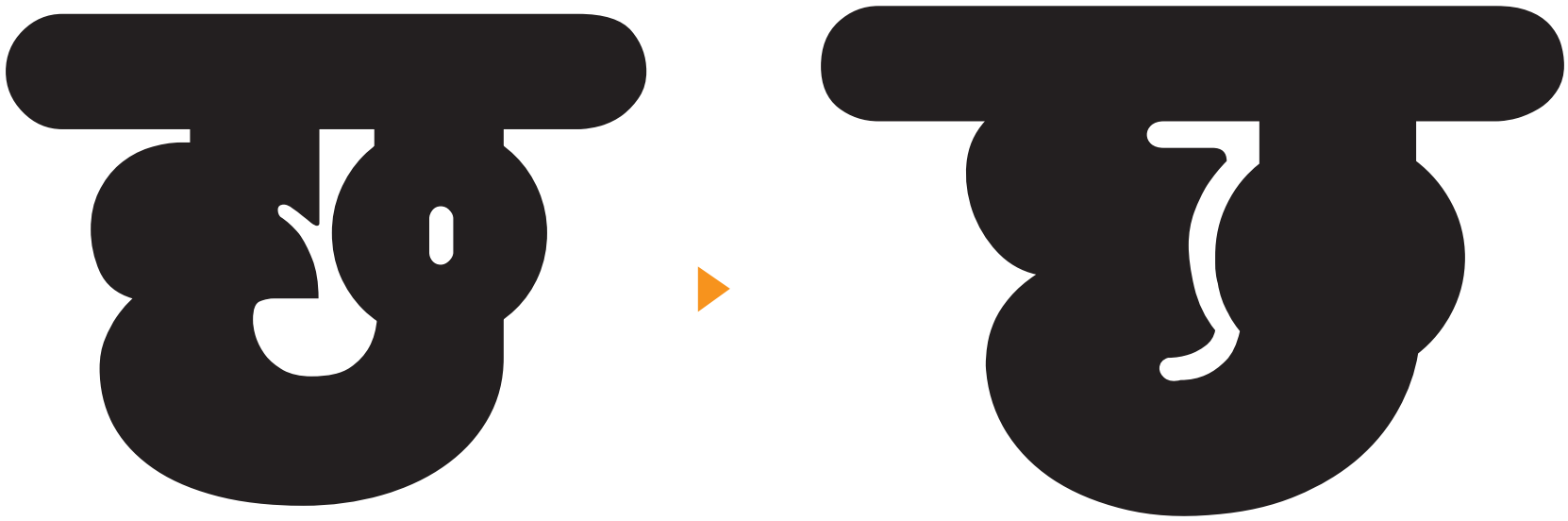


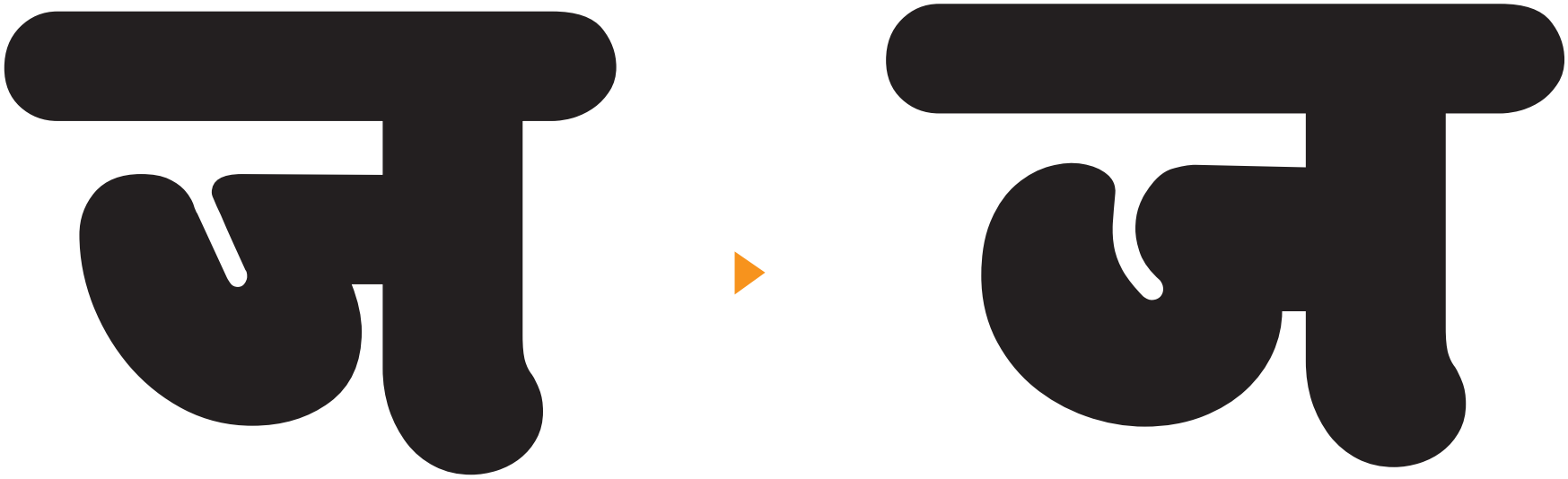


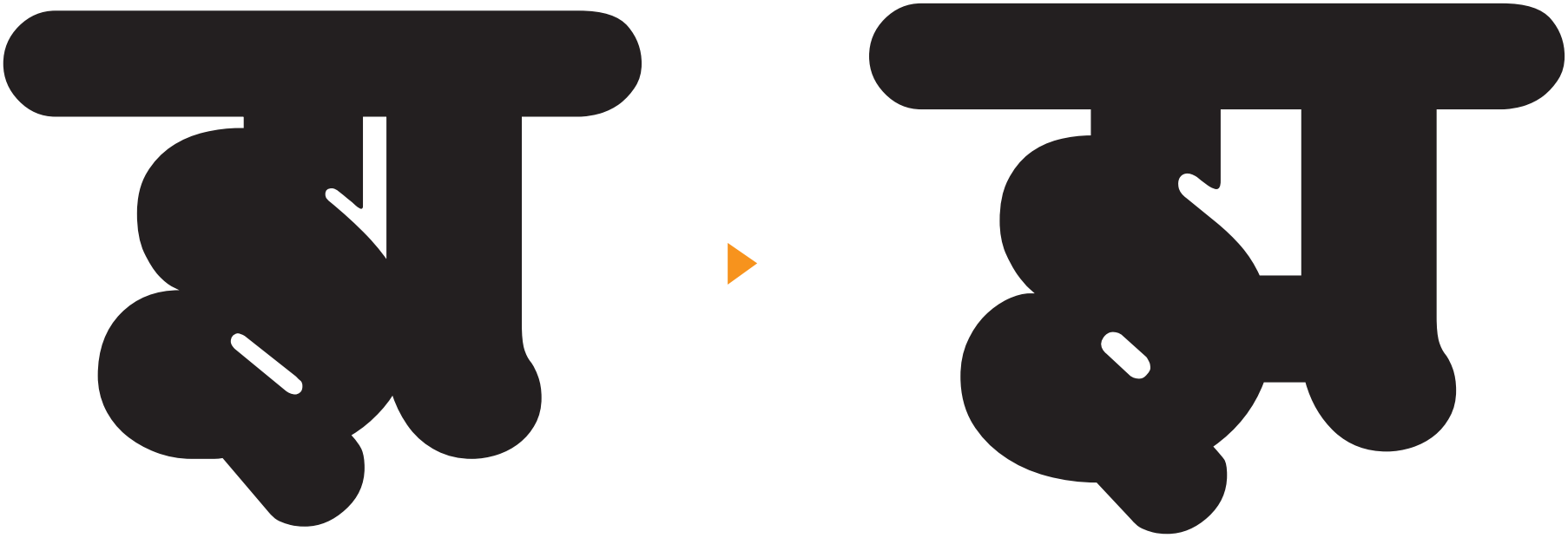


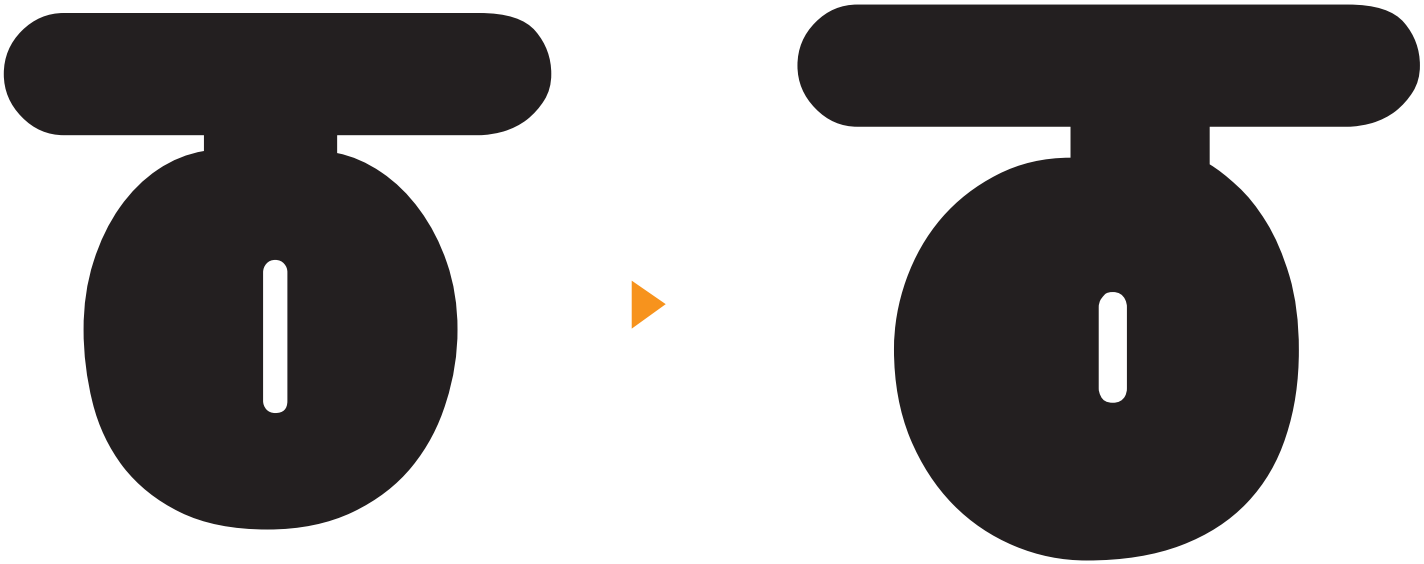


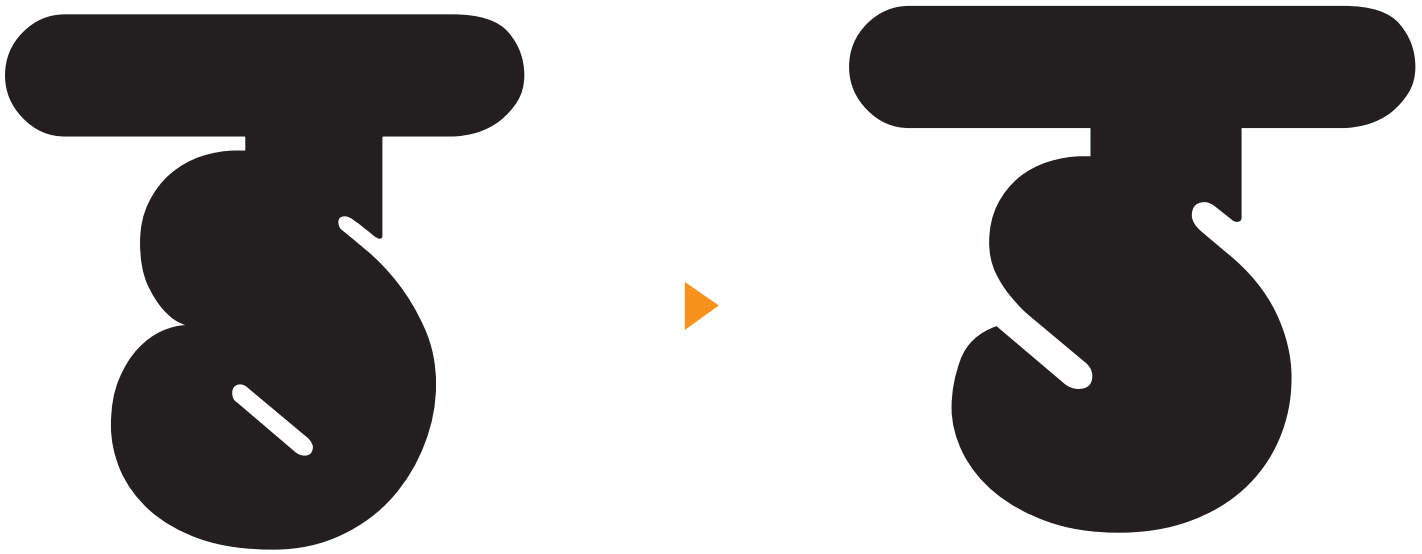


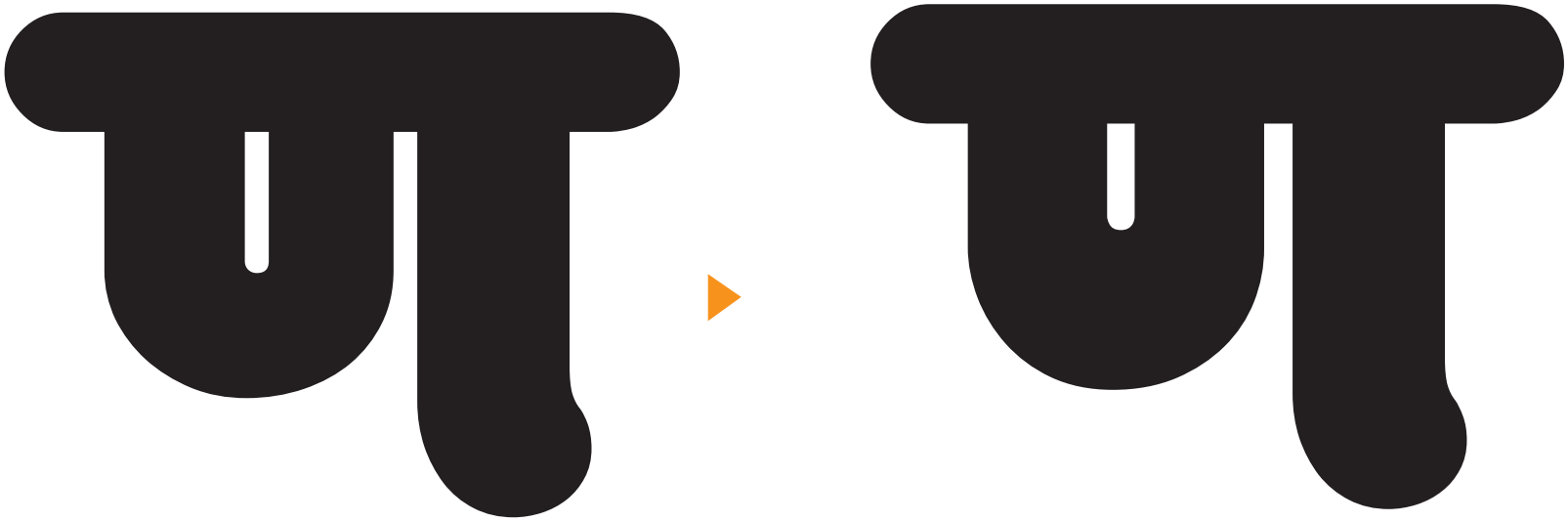


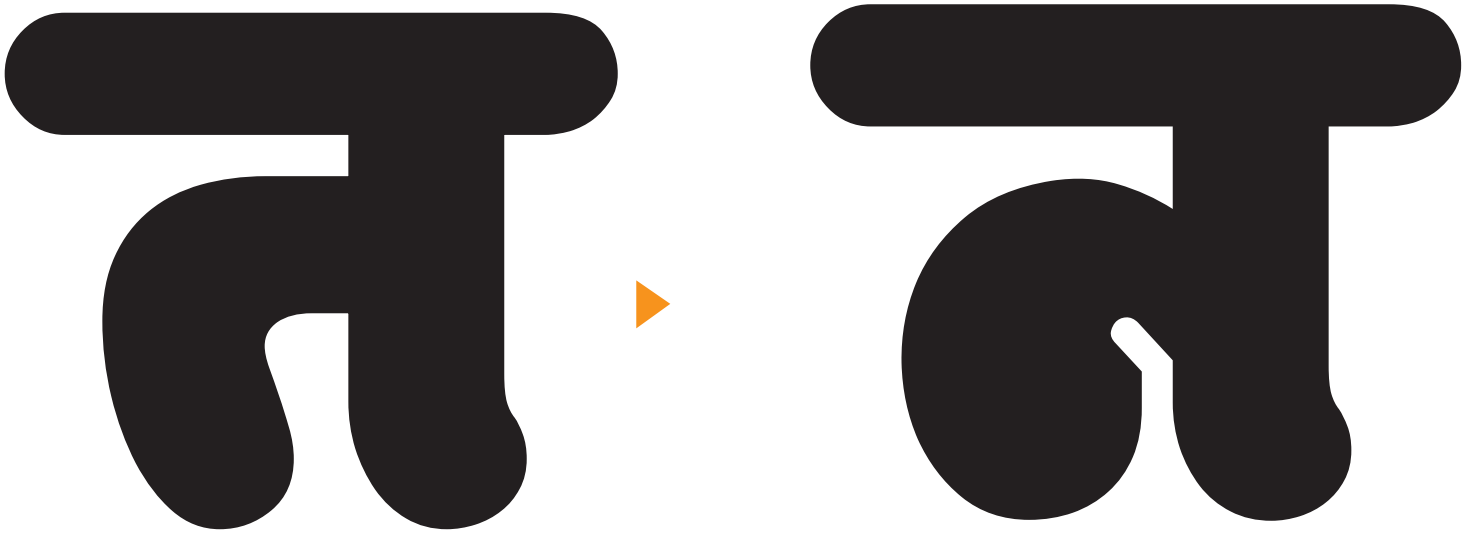


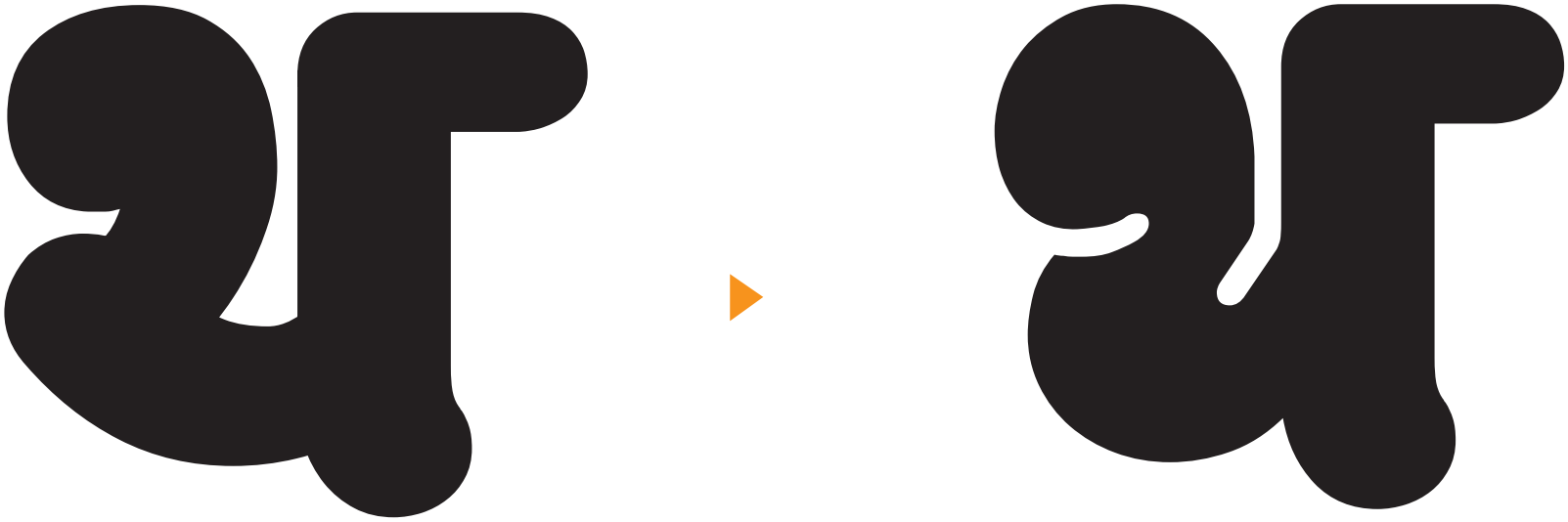


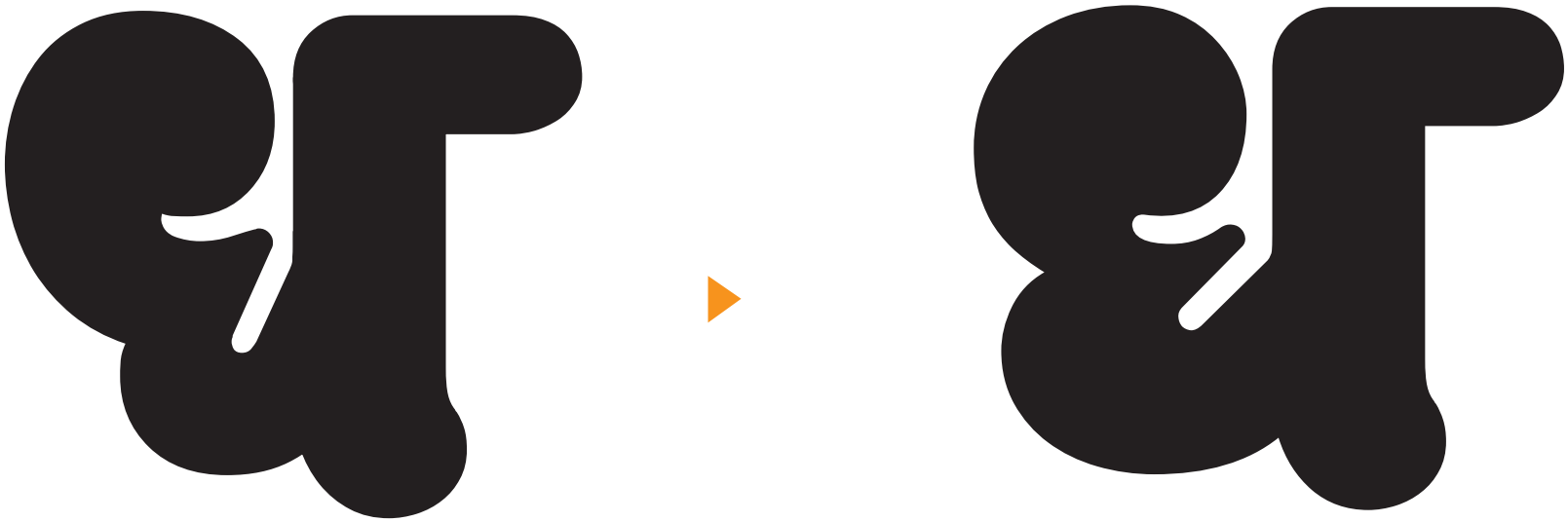


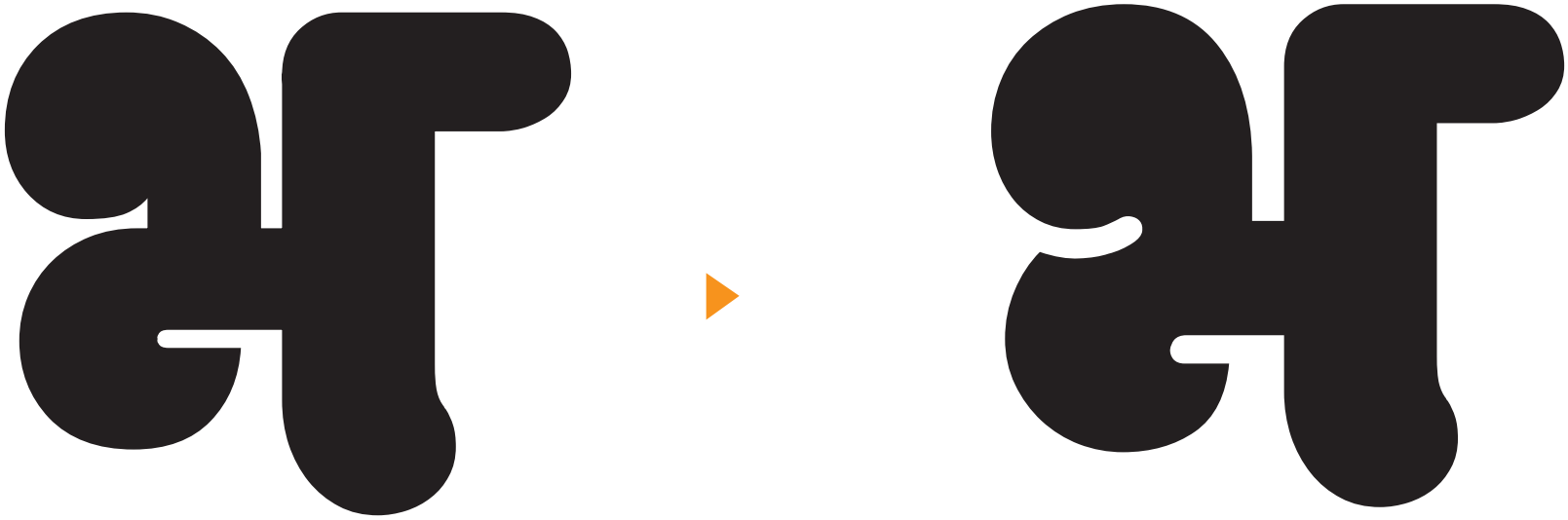


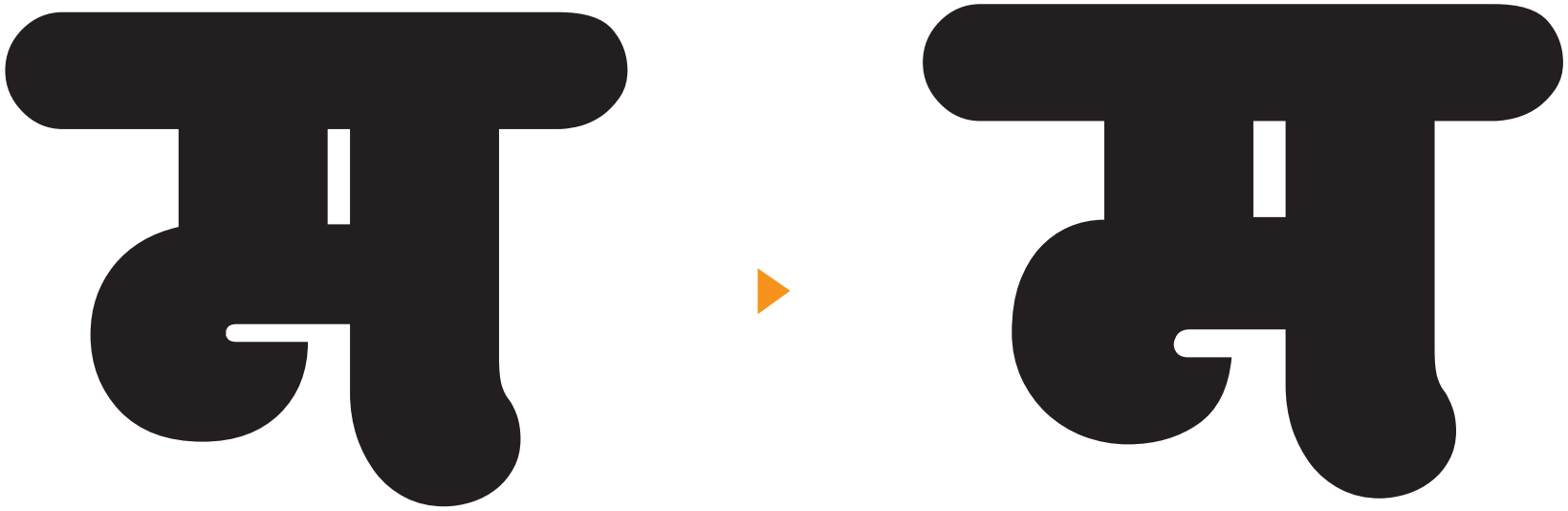


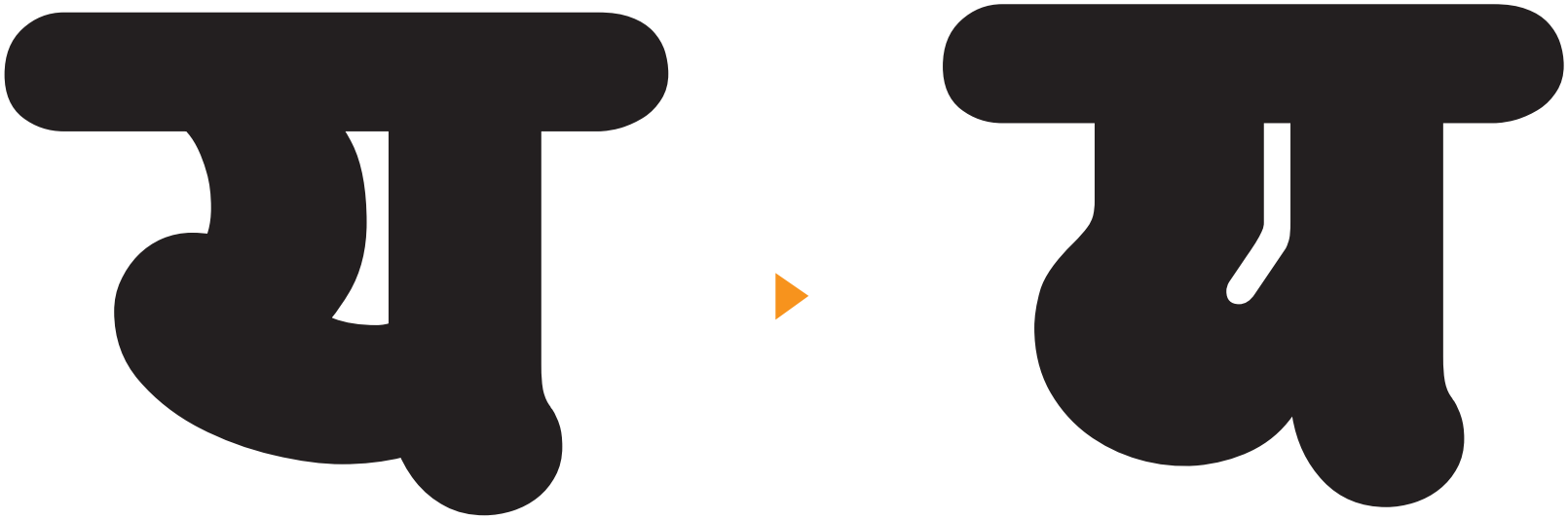


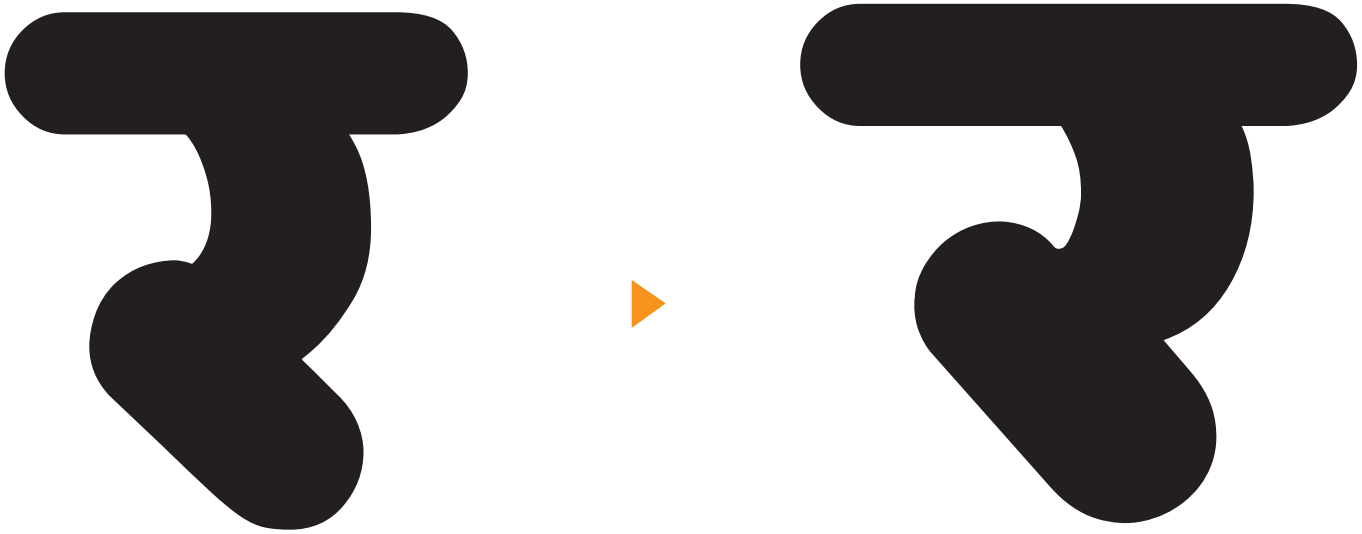


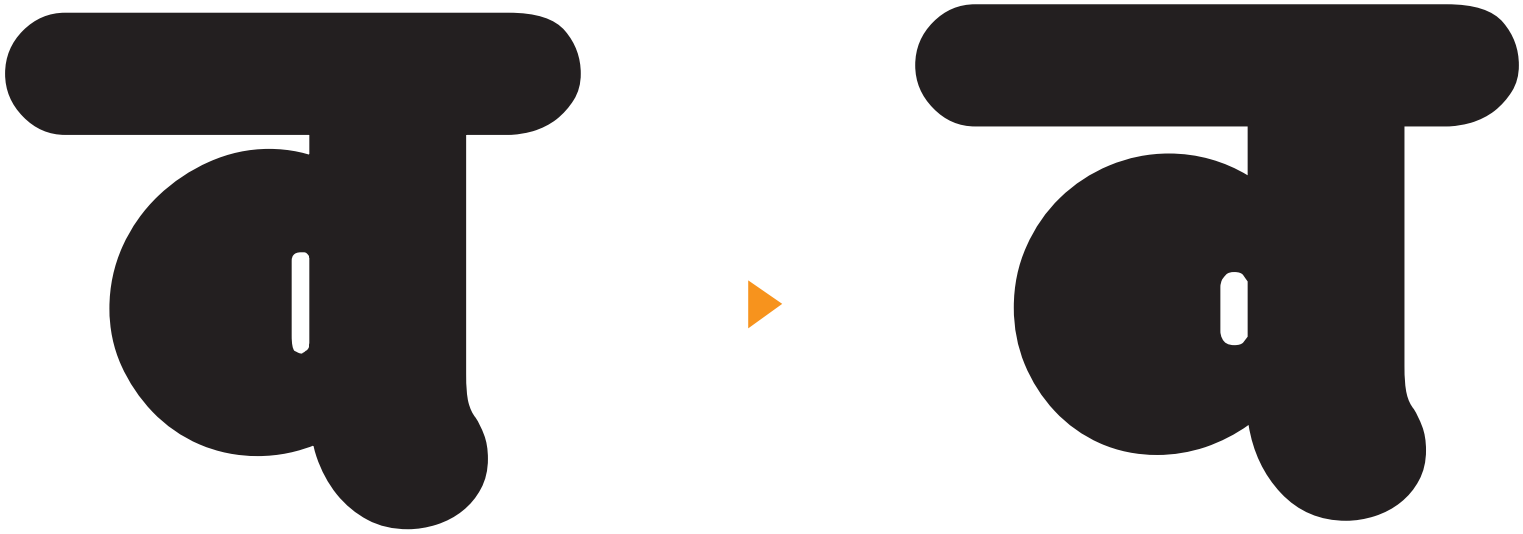


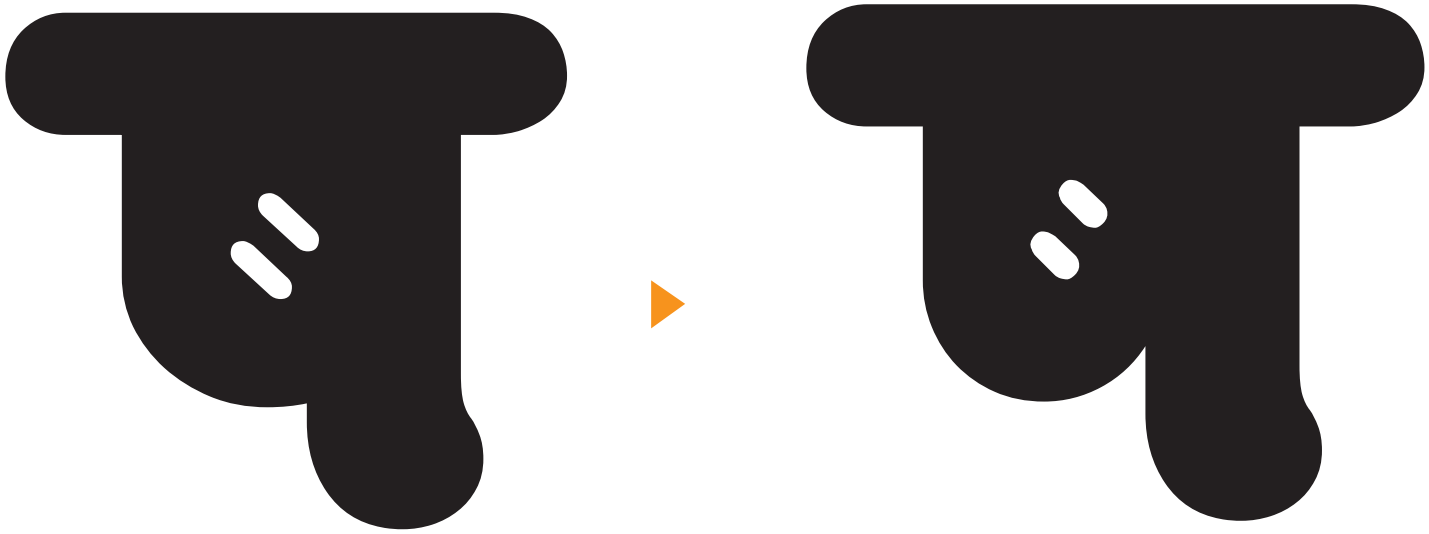


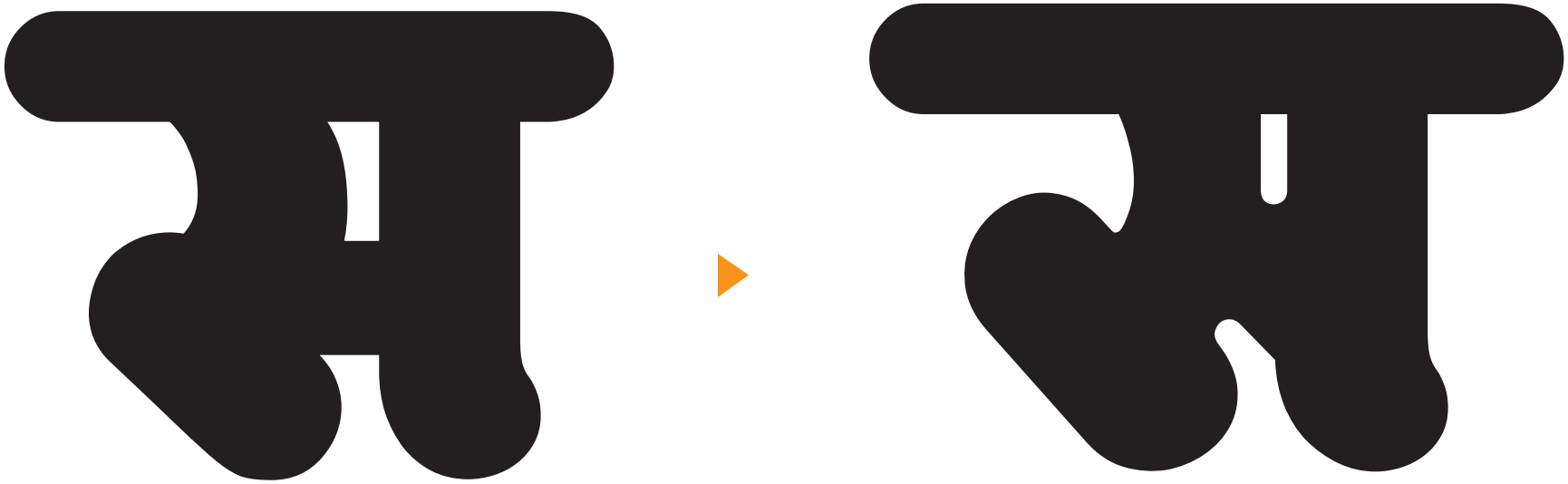


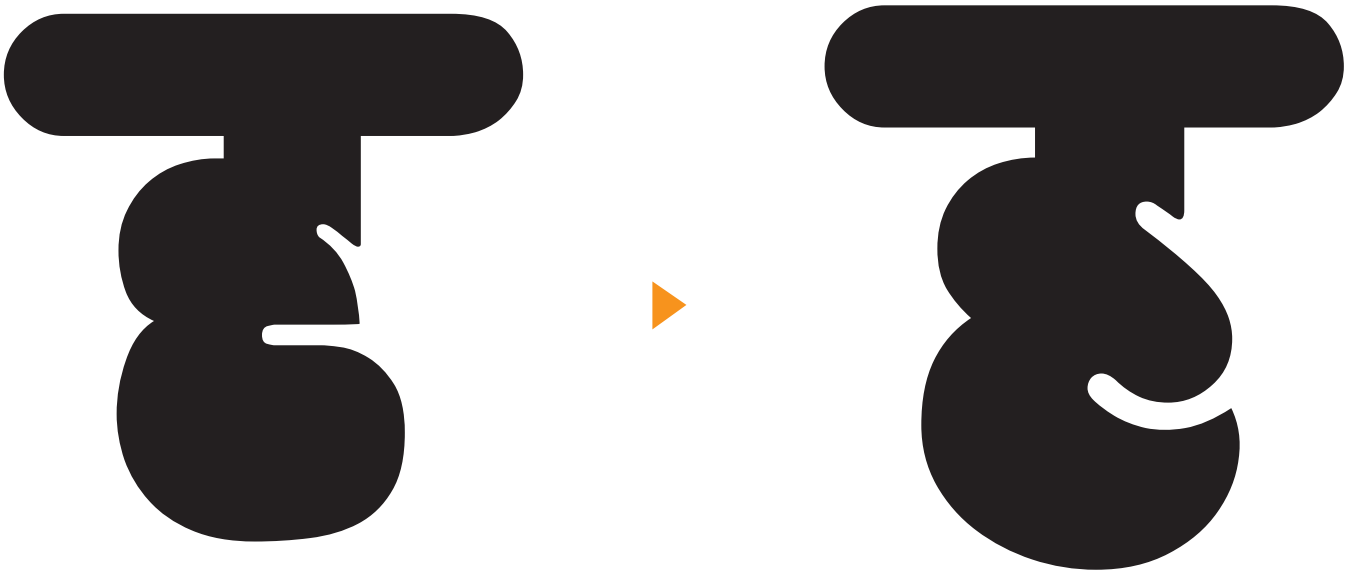


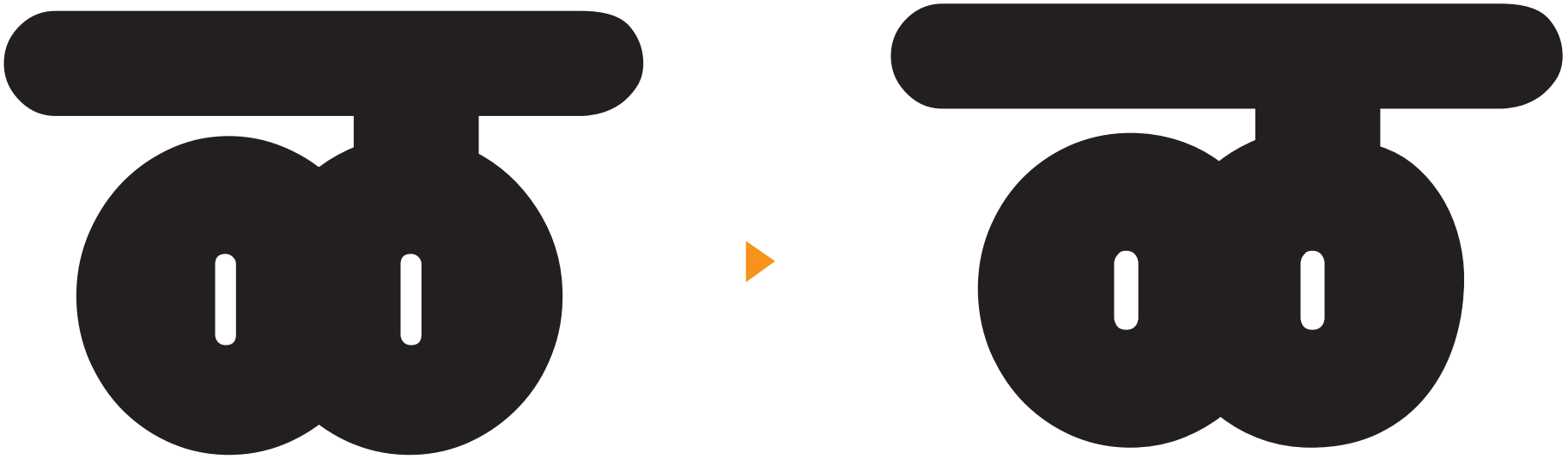


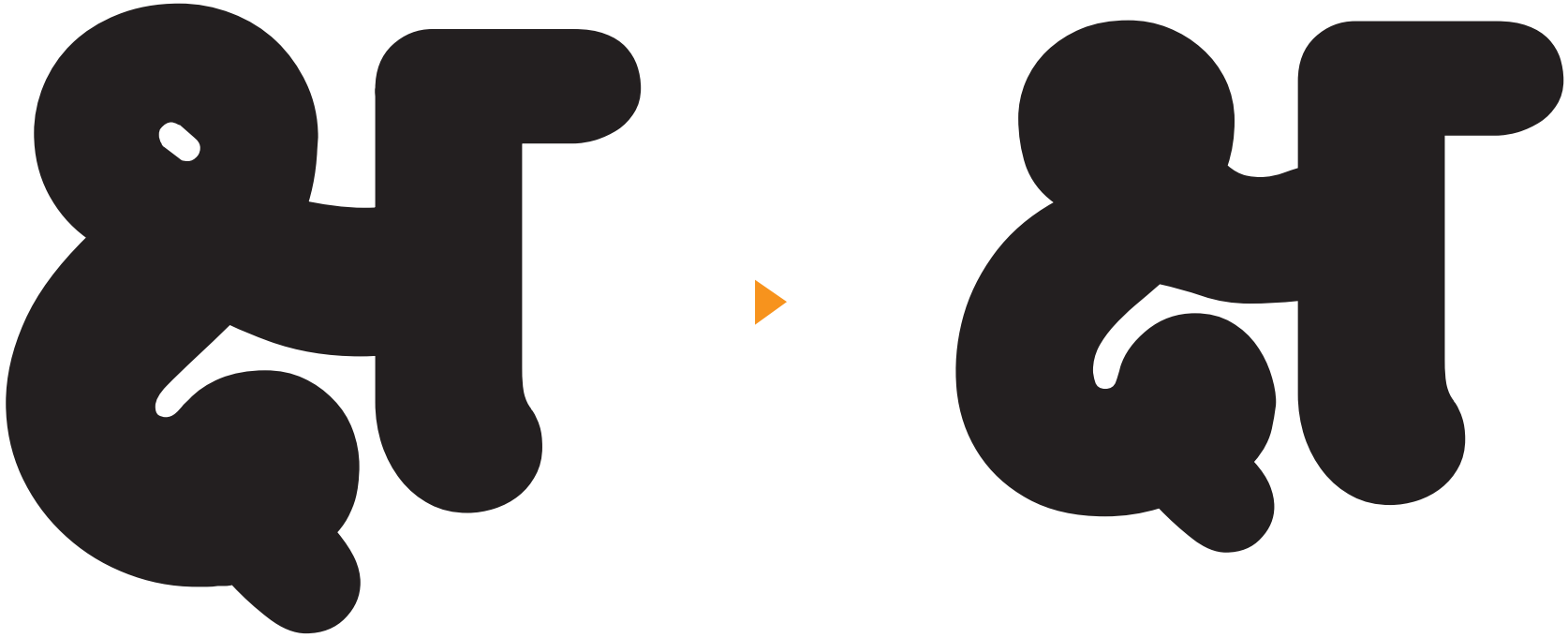


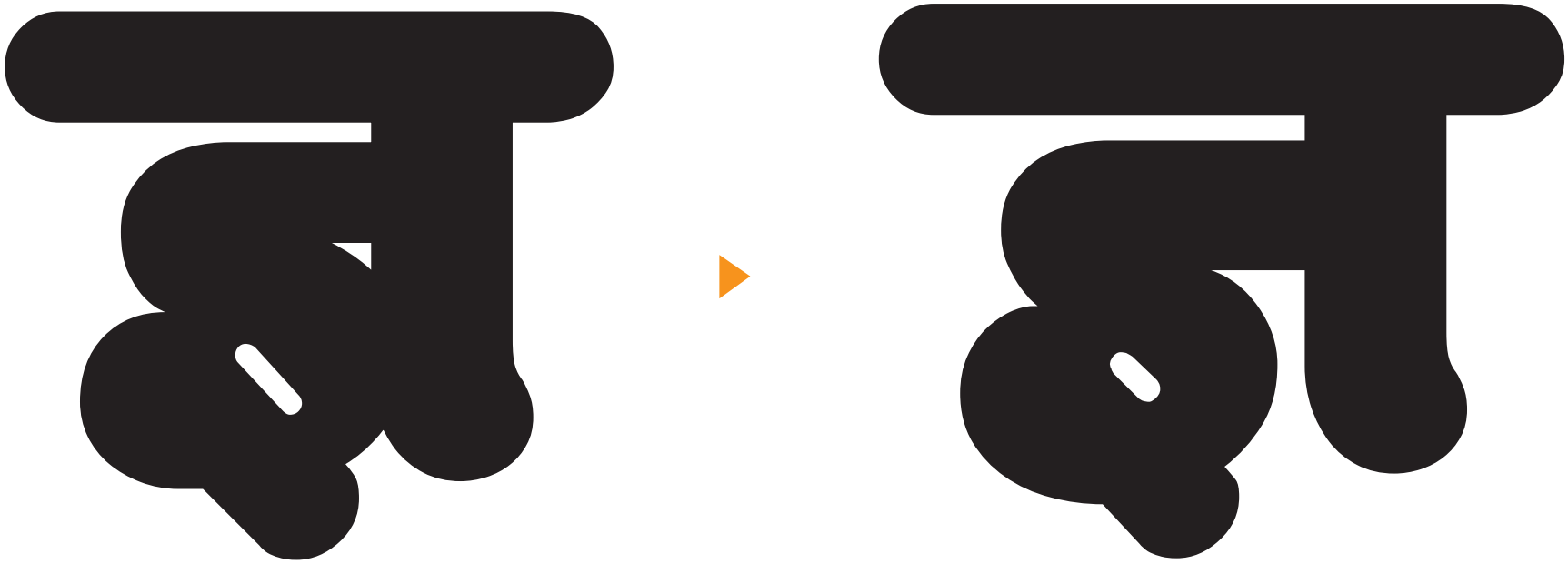


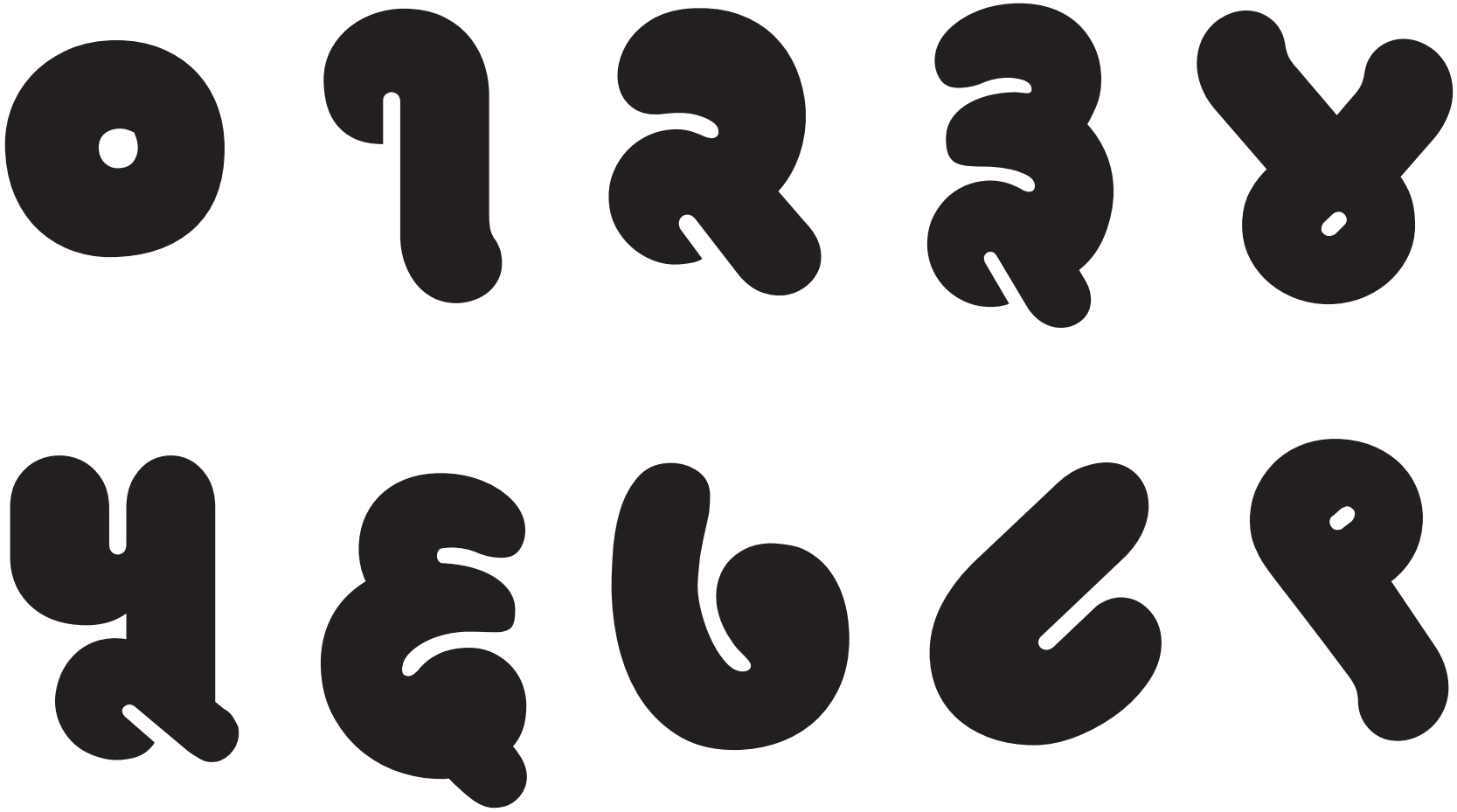











०१२३४
५६७८९

Basic Character Set*

अआइईएऐउऊओऔअअ

कखगघचछजझटठडढ़ण

तथदधनपफबभमयरलव

शसहसक्षज्ञऴश्रऋॠ

०१२३४५६७८९

*Work in progress


Usage

आयशा राणा

सुदेश बालन

जॅकिशन पटेल

गौरी पनिकर

उपासना गडगिल

सोनीया गाँधी

हेमा मालिनी

अभय सिन्ग

शुभांगी सालिन्कर

मारिफ हक

पूजा भट

अनील कपूर

आई आई टी

ज्ञानम् परमम् ध्येयम्

০১২৩৪৫৬৭৮৯

रोमियो

जूलियेट

कमल के
घर चलो सब।

₹१० मे आजकल
रोटी सबजी
भी नसीब नही
होती जनाब ।

Learning

There are a dozen other devanagiri typefaces available - with varying character, strokes, technology and medium. Designing Masini is not a mere attempt to prove the counterparts wrong or establish one over the other. The process of designing this devanagiri typeface has been a cultural experience. It is one of the most challenging tasks that I have done in my design career. Devanagiri is recalled as one of the oldest script, dating back to somewhere in the 10th century. It is the foundation for many indian languages, including Hindi. Understanding the script, its components and technicalities have been one of the most interesting aspect of this project.

Future Work

The font is work in progress. There is more to improve in terms of details and aesthetics. Al the characters of the font must follow a grammar (primitives + width) which is one of the important challenges at the moment. Once the font is complete, the readability and kerning will be improved. Going forward, grey value checking, OTF rule writing, testing and generating type specimen should be prioritized.

Finally, a matching Latin font with basic glyph set will be designed and the font will be open sourced and available through Google Fonts.

धन्यवाद !