



Designing a Monolinear Odia Font

# P2 Project Report

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Project Guide:

Prof. G.V. Sreekumar

# Contents

1. Abstract	1	9. Analysing existing Odia Fonts	16
2. Aim	2	9.1. Comparing some existing fonts	16
2.1. Learning Objectives	2	9.2. Grouping letters based on visual form	17
3. Why make a new Odia Font	3	9.3. Analysing the Existing grid	18
3.1. Current Scenario of Digital Publications in Odia	3	9.4. Types of Joineries	19
3.2. Growing Potential of the online Readership	3	9.5. Types of Knots	19
4. Brief History of Odia letter-form	5	10. Letter design process	20
4.1. Evolution of Odia Script	5	10.1. Explorations	20
4.2. Overview of the Odia Script	6	10.2. Writing freehand paragraphs with different tools	24
5. Variable Font	9	10.3. Letter drawing with broad pencil	25
5.1. What is a Static/Standard font	9	10.4. Outline Sketching	26
5.2. What is a variable Font?	9	10.5. Vertical Grid	34
5.3. The Variable Axis	9	10.6. Vector Drawing (1st Draft).	35
5.4. Benefits of Using a Variable Font	10	10.7. Composing names	37
6. Text and Display Fonts	12	10.8. Final Glyphs and Sampler	38
6.1. Display Fonts	12	11. References	
6.2. Text Fonts	12		41
6.3. Characteristics of text fonts	12		
7. Choosing between ‘mono linear and ‘modulated’ typeface	14		
8. Odia fonts: Existing scenario	15		

## 2. Aim

The aim of the project is to design a monolinear Odia font suitable for usage on screen.

### 2.1. Learning Objectives

As font design is a multi-faced process, I would have to undergo into the process of understanding a few things that would help me achieve the desired aim.

The primary learning objective of this project for me is to learn the process of font designing.

Odia being my mother tongue is still distant to me as I have not been formally educated in Odia. Choosing Odia script for type design will also give me opportunities to explore the script and the language along with the intricacies of the letter forms.

To understand and analyze existing technologies in the domain of font designing and optimally utilize them to make the font more usable in the desired way.

### 3. Why make a new Odia Font

Making a new open source Odia font can have significant impact in the way the information in regional language in being made available online. It can increase the scope of making information digitally available in regional language. It can also facilitate in making the existing regional content and instruction on web/screens visually rich.

#### 3.1. Current Scenario of Digital Publications in Odia

Unfortunately, none of the Odia newspapers have their publications in Unicode at this moment.

This, practically does not allow any reader to search, access, reuse and quote any content. Same is the case for all other published resources like



The Samaja e Paper available only in the form of Images.

books and magazines. More than 80 per cent of the published content is not even released online and also not archived.

Odia is still to be used as a medium for official communication in all of the government offices. Despite these challenges, the number of Odia dailies is slowly growing. There are around 100 newspapers published daily from various regions of Odisha.\*

It is essential to note that news archives, unlike literary writings, have much of any kind of high commercial value. So is in the case of scholarly and research publications. If all of these publications could be made available online in digital form that will take Odia literature to the global audience. This triggers the need of

- A) Making sure the forthcoming publications are not just typed in Unicode but made available online,
- B) Digitization of published books and making them available free on the internet.

#### 3.2. Growing Potential of the online Readership

Sambad, Odisha's leading vernacular daily, continued to retain top slot once again in the state, IRS 2019 Q4 data revealed.

According to last quarters of Indian Readership Survey (IRS) 2019 reports, the total readership of the Sambad newspaper has increased by 44,000 to 65.94 lakh in Q4 as compared to IRS 2019 Q3.

The Samaj continued to retain second position with readership of 56.93 lakh .

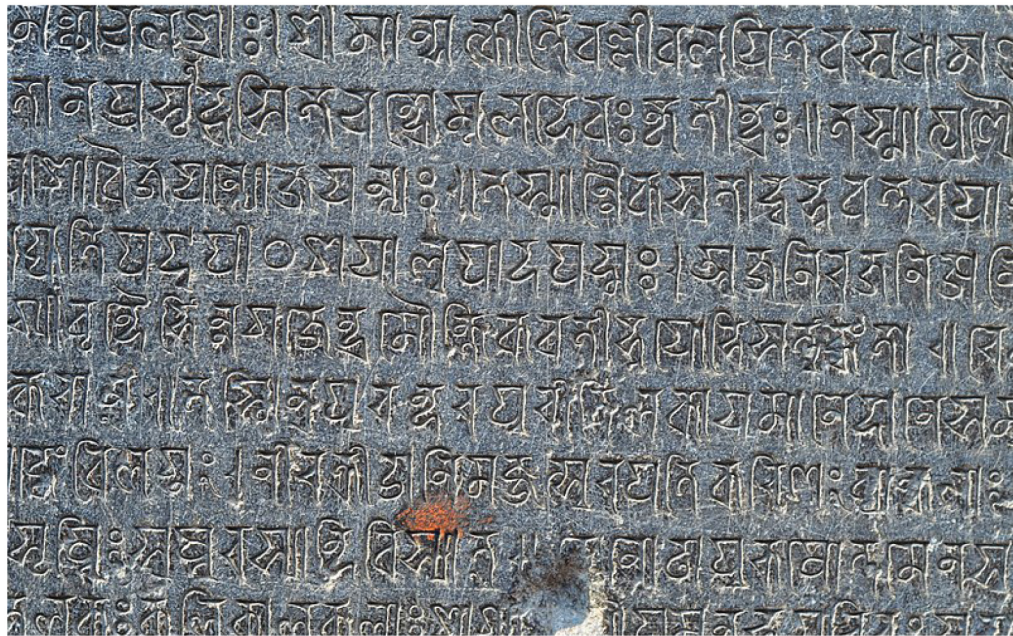
\* June 2014, Odisha Review Magazine, Department of Information and Public Relations, Government of Odisha, .



# 4. Brief History of Odia letter-form

## 4.1. Evolution of Odia Script

The Oriya (Odia) script is derived from the Brahmi script of the Ashokan inscriptions; in Odisha state, specimens are found in the Dhauli and Jaugar inscriptions of the Emperor Ashoka (3rd century B.C.) and the Khandagiri inscriptions of King Kharabela (1st century C.E.). However, unlike these inscriptions, the language of which was Prakrit, the earliest inscription in Oriya is the Urjam inscription of 105 1 c.e. This inscription is in Kalinga script, the variety of Brahmi from which modern Oriya script has evolved.

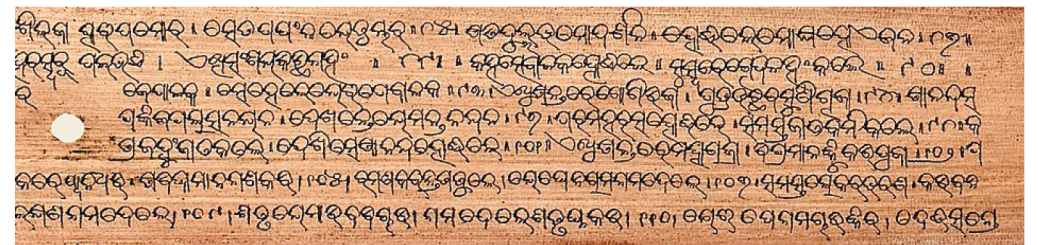
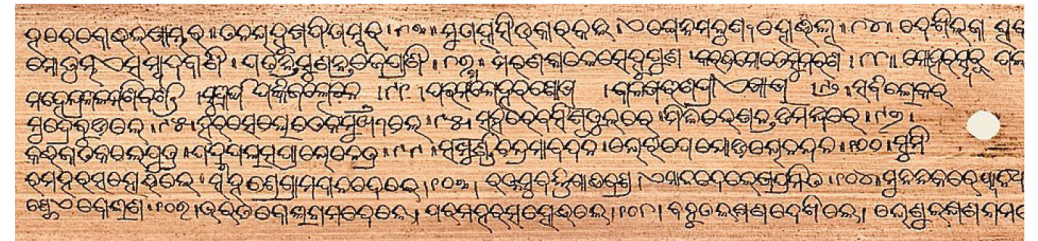


Temple inscription showing 13th century Siddham script variant ancestor of modern Odia script at Ananta Vasudeva Temple\*

It is syllabically based on the unit called the aksava in Sanskrit, [Dkhyoro] in Oriya.

The script is written from left to right. Since a large number of tribal languages, of both the Dravidian and Munda families, are spoken within the geopolitical limits of Orissa state, Many of these languages have adopted the Oriya script in writing their languages. Sanskrit too is written in Oriya script in Orissa. The specific features of the Oriya script are as follows. The vowel a, is inherent in each consonant symbol, whether simple or conjunct, unless the letter is modified by the bottom stroke called halanta.

Odia is a syllabic alphabet or an abugida wherein all consonants have an inherent vowel embedded within. Diacritics (which can appear above, below, before, or after the consonant they belong to) are used to change



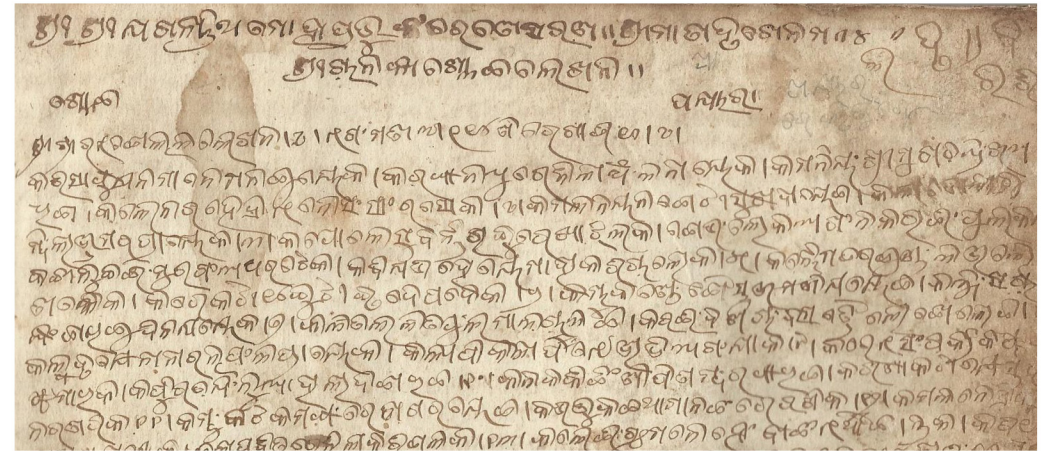
Over 600 Year Old manuscript showing Adhyatma Ramayana written on a palmleaf \*\*

\* Image Source Prateek Pattanaik, Jan 2018, Wikipedia

\*\* Image Source: Sarah Welch 1982, Wikipedia

the form of the inherent vowel. When vowels appear at the beginning of a syllable, they are written as independent letters. Also, when certain consonants occur together, special conjunct symbols are used to combine the essential parts of each consonant symbol.

An important feature of the Odia language seen in the script is the retention of inherent vowel in consonants, also known as schwa, at both medial and final positions. This absence of schwa deletion which is also seen in Sanskrit, marks it from the rest of modern Indo-Aryan languages and their equivalent usage in related Brahmic scripts. The absence of the inherent vowel in the consonant is marked by a virama or halanta sign below the consonant.



Odia Manuscript by Ramroop Jagannath Das, 1870

### 4.2. Overview of the Odia Script

Oriya has syllabic alphabets wherein all consonants have an inherent vowel embedded within. Diacritics, which can appear above, below, before or after the consonant they belong to, are used to change the form of the inherent vowel. When the diacritics appear at the beginning of a syllable, vowels are written as independent letters.

Also, when certain consonants occur together, special conjunct symbols are used which combine the essential parts of each letter. A limited number of ligatures are possible since all the consonants cannot be combined with all others. Vowels can either be independent or dependent upon a consonant or consonant cluster.

A large number of “consonant + vowel” and “consonant + consonant” combinations have various alternative representations. A standard is perceived to be evolving.



15th century copper plate grant of Gajapati emperor Purushottama Deva, showing the distinct formation of the shape of the modern Odia script, 1483 \*

\* Image Source: J Beames 1982, Wikipedia



### DEVELOPMENT OF ORISSAN SCRIPTS ଓଡ଼ିଆ ଲିପିର କ୍ରମ ବିକାଶ

KEY	A	I	U	E	ଠ	KA	KHA	GA	GHA	CHA	CHHA	JA	JHA	TA	THA	NA	TA	THA	DA	DHA	NA	PA	PHA	BA	BHA	MA	YA	RA	LA	VA	SA	SHA	SA	HA	KA	KI	KI	KU	KE	KAI	KU	
୧୯୯୯	ଅ	ଇ	ଉ	ଏ	ଠ	କ	ଖ	ଗ	ଘ	ଚ	ଛ	ଜ	ଝ	ଟ	ଠ	ନ	ତ	ଥ	ଦ	ଧ	ନ	ପ	ଫ	ବ	ଭ	ମ	ଯ	ର	ଲ	ୱ	ଶ	ଷ	ହ	କ	କି	କି	କୁ	କେ	କା	କୁ		
୩୯୯୯ B.C ୧୯୯୯ B.C	𑀅	𑀆	𑀇	𑀈	𑀉	𑀊	𑀋	𑀌	𑀍	𑀎	𑀏	𑀐	𑀑	𑀒	𑀓	𑀔	𑀕	𑀖	𑀗	𑀘	𑀙	𑀚	𑀛	𑀜	𑀝	𑀞	𑀟	𑀠	𑀡	𑀢	𑀣	𑀤	𑀥	𑀦	𑀧	𑀨	𑀩	𑀪	𑀫	𑀬	𑀭	𑀮
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୧୮୯୯୯ A.D ୧୯୯୯ A.D	𑀅	𑀆	𑀇	𑀈	𑀉	𑀊	𑀋	𑀌	𑀍	𑀎	𑀏	𑀐	𑀑	𑀒	𑀓	𑀔	𑀕	𑀖	𑀗	𑀘	𑀙	𑀚	𑀛	𑀜	𑀝	𑀞	𑀟	𑀠	𑀡	𑀢	𑀣	𑀤	𑀥	𑀦	𑀧	𑀨	𑀩	𑀪	𑀫	𑀬	𑀭	𑀮
୧୯୯୯୯ A.D ୧୯୯୯ A.D	𑀅	𑀆	𑀇	𑀈	𑀉	𑀊	𑀋	𑀌	𑀍	𑀎	𑀏	𑀐	𑀑	𑀒	𑀓	𑀔	𑀕	𑀖	𑀗	𑀘	𑀙	𑀚	𑀛	𑀜	𑀝	𑀞	𑀟	𑀠	𑀡	𑀢	𑀣	𑀤	𑀥	𑀦	𑀧	𑀨	𑀩	𑀪	𑀫	𑀬	𑀭	𑀮

Development of Orissan scripts  
State Museum Bhubaneswar

### ପ୍ରାଚୀନ ସଂଖ୍ୟାର କ୍ରମ ବିକାଶ DEVELOPMENT OF ANCIENT NUMERALS

PERIOD	ଉତ୍ତର ଓଡ଼ିଶା NORTHERN ORISSA										ଉତ୍ତର ଓଡ଼ିଶା NORTHERN ORISSA										ଦଶମ ଶତାବ୍ଦୀ DECIMAL FIGURES										ଉତ୍ତର ଓଡ଼ିଶା NORTHERN ORISSA										ଉତ୍ତର ଓଡ଼ିଶା NORTHERN ORISSA									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
୧୯୯୯ B.C	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୩୯୯୯ B.C	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୧୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୩୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୫୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୭୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୯୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୧୧୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୧୩୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୧୫୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
୧୭୯୯୯ A.D	𑀀	𑀁	𑀂	𑀃	𑀄						𑀀	𑀁	𑀂	𑀃	𑀄						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22								

**Consonants**

0B15	କ	ORIYA LETTER KA
0B16	ଖ	ORIYA LETTER KHA
0B17	ଗ	ORIYA LETTER GA
0B18	ଘ	ORIYA LETTER GHA
0B19	ଙ	ORIYA LETTER NGA
0B1A	ଚ	ORIYA LETTER CA
0B1B	ଛ	ORIYA LETTER CHA
0B1C	ଜ	ORIYA LETTER JA
0B1D	ଝ	ORIYA LETTER JHA
0B1E	ଞ	ORIYA LETTER NYA
0B1F	ଟ	ORIYA LETTER TTA
0B20	ଠ	ORIYA LETTER TTHA
0B21	ଡ	ORIYA LETTER DDA
0B22	ଢ	ORIYA LETTER DDHA
0B23	ଣ	ORIYA LETTER NNA
0B24	ତ	ORIYA LETTER TA
0B25	ଥ	ORIYA LETTER THA
0B26	ଦ	ORIYA LETTER DA
0B27	ଧ	ORIYA LETTER DHA
0B28	ନ	ORIYA LETTER NA
0B2A	ପ	ORIYA LETTER PA
0B2B	ଫ	ORIYA LETTER PHA
0B2C	ବ	ORIYA LETTER BA
		→ 0B35 ବ oriya letter va
0B2D	ଭ	ORIYA LETTER BHA
0B2E	ମ	ORIYA LETTER MA
0B2F	ଯ	ORIYA LETTER YA
		= ja
0B30	ର	ORIYA LETTER RA
0B32	ଲ	ORIYA LETTER LA
0B33	ଳ	ORIYA LETTER LLA
0B35	ୱ	ORIYA LETTER VA
		→ 0B2C ବ oriya letter ba
0B36	ଶ	ORIYA LETTER SHA
0B37	ଷ	ORIYA LETTER SSA
0B38	ସ	ORIYA LETTER SA
0B39	ହ	ORIYA LETTER HA

**Independent vowels**

0B05	ଅ	ORIYA LETTER A
0B06	ଆ	ORIYA LETTER AA
0B07	ଇ	ORIYA LETTER I
0B08	ଈ	ORIYA LETTER II
0B09	ଉ	ORIYA LETTER U
0B0A	ଊ	ORIYA LETTER UU
0B0B	ଋ	ORIYA LETTER VOCALIC R
0B0C	ୠ	ORIYA LETTER VOCALIC L
0B0F	ଏ	ORIYA LETTER E
0B10	ଐ	ORIYA LETTER AI
0B13	ଓ	ORIYA LETTER O
0B14	ଔ	ORIYA LETTER AU

**Digits**

0B66	୦	ORIYA DIGIT ZERO
0B67	୧	ORIYA DIGIT ONE
0B68	୨	ORIYA DIGIT TWO
0B69	୩	ORIYA DIGIT THREE
0B6A	୪	ORIYA DIGIT FOUR
0B6B	୫	ORIYA DIGIT FIVE
0B6C	୬	ORIYA DIGIT SIX
0B6D	୭	ORIYA DIGIT SEVEN
0B6E	୮	ORIYA DIGIT EIGHT
0B6F	୯	ORIYA DIGIT NINE

**Dependent vowel signs**

0B3E	ଌ	ORIYA VOWEL SIGN AA
0B3F	ୡ	ORIYA VOWEL SIGN I
0B40	ୢ	ORIYA VOWEL SIGN II
0B41	ୣ	ORIYA VOWEL SIGN U
0B42	୤	ORIYA VOWEL SIGN UU
0B43	୥	ORIYA VOWEL SIGN VOCALIC R
0B44	୦	ORIYA VOWEL SIGN VOCALIC RR
0B47	୧	ORIYA VOWEL SIGN E
		• stands to the left of the consonant
0B48	ୢ	ORIYA VOWEL SIGN AI

**Two-part dependent vowel signs**

*These vowel signs have glyph pieces which stand on both sides of the consonant; they follow the consonant in logical order, and should be handled as a unit for most processing.*

0B4B	୧	ORIYA VOWEL SIGN O
		≡ 0B47 ୧ 0B3E ୠ
0B4C	ୢ	ORIYA VOWEL SIGN AU
		≡ 0B47 ୧ 0B57 ୡ

**Various signs**

0B01	ୠ	ORIYA SIGN CANDRABINDU
0B02	ୡ	ORIYA SIGN ANUSVARA
0B03	ୢ	ORIYA SIGN VISARGA
0B3C	ୣ	ORIYA SIGN NUKTA
		• for extending the alphabet to new letters
0B3D	୥	ORIYA SIGN AVAGRAHA
0B4D	୦	ORIYA SIGN VIRAMA
0B55	ୠ	ORIYA SIGN OVERLINE
		• Kuvi
0B56	ୡ	ORIYA AI LENGTH MARK
0B57	ୢ	ORIYA AU LENGTH MARK

## 5. Variable Font

### 5.1. What is a Static/Standard font

Traditionally, a digital typeface would be produced as several individual font files, and each width/weight or style combination was represented by individual font files like ‘Poppins Regular’, ‘Poppins Bold’, and ‘Poppins Bold Italic’ resulting in a several number of font files to represent a complete typeface. It could become even larger if the typeface has different widths as well like condensed, extended, extra condensed etc.

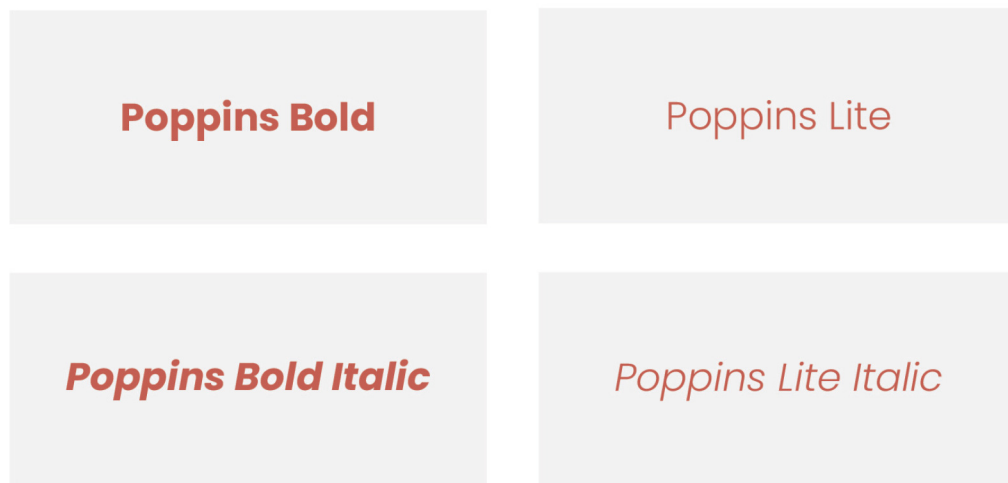


Image 5.1 : Different weights of Static Font Poppins

### 5.2. What is a variable Font?

Variable fonts are a type of fonts that have continuous style variations. In a variable font it is made possible by interpolating the master variations along an axis, essentially constructing new points in-between. This

essentially means that we can set font weights at arbitrary points along the axis presenting a much larger number of styles and variations.

Unlike the Static fonts which need a lot of different fonts for all it’s width and weight differences, the variable font can contain all of those in a single file. The single variable font file would have access to the entire range of weights, widths, and styles available, in contrast to the separately loaded files in a static font.



Image 5.2 : Different styles of variable font, Source: Fonts Arena

### 5.3. The Variable Axis

The most important element of a variable font is the axis of variation describing the range of variation of a particular characteristic. There are currently five registered axes in the Microsoft Open-type specification itself—weight, width, italic, slant, and optical size. Registration means axis

settings are well-defined and commonly used in many different fonts, and their settings can be retained instead of discarded when switching between fonts. Microsoft has defined the following axes so far:

– The ‘weight axis’ describes how light or how bold the letter forms can be, for example the value of 100 is thin, 300 is regular, 600 is extra bold.

#### Weight Variations *(With Same width & slant)*

100 Variable Weight  
300 Variable Weight  
600 **Variable Weight**

– The ‘width axis’ describes how narrow or how wide they can be, Width, where 100 is normal width, 200 is double-width, 50 is half-width.

#### Width Variations *(With Same weight & slant)*

50 Variable Width  
75 Variable Width  
115 Variable Width

– The ‘italic axis’ describes if italic letter forms are present and can be turned on or off accordingly where 0 means roman and 1 means italics.

#### Slant Variations *(With Same weight & width)*

0 Variable Slant  
6.5 Variable Slant  
12 Variable Slant

– Slant, where the value sets the slant angle in degrees

– Optical Size, where the value sets a point size that the design can respond to.

## 5.4. Benefits of Using a Variable Font

There are numerous benefits to this technology:

**Continuous Style Variation:** A variable font gives access to a continuous range of style variations. This allows the designer to use common typographic techniques such as setting different size headings in different weights for better readability at different sizes or using a slightly narrower width for displays that tend to be data-dense. For web usage, it can provide great benefits for responsive designs that get adapted based on the reader’s device, screen orientation, or even reading distance to present dynamic content. The continuous style variations are also beneficial for

prints and publication. For example, a magazine may use 10-15 or even more weight and width variations in their typographic system throughout the publication, hence using a variable font makes it even more convenient to use those variations.

**File Size:** A variable font comes in a single file which has significantly smaller size in comparison to the cumulative file sizes of a static font family. For example, the variable version of Source Sans Pro font totals approximately 394kb, but these font weights individually as standard font files, are approximately 234kb each – resulting in a combined file size of approximately 1856kb. It hence results in the variable font to occupy lesser disk space if used natively and narrower bandwidth if used as web font.

**Smooth Animations:** Because the variable fonts can be interpolated it is possible to animate between each variation, enabling smooth transitions from say a thin weight to a bold weight – something which is not possible with a regular font.

## 6. Text and Display Fonts

Be it on the screen, or on a printed page, written text falls into two main categories i.e. body and head. Body copy is the principal reading matter of a text, while heads are shorter pieces of text that call out sections and subsections.

### 6.1. Display Fonts

Display Fonts are designed primarily for heads. They usually have complex forms or extreme proportions which become tiresome for reading in large quantities. Display fonts are like garnish and spice for the meat and potatoes of basic body text. (Lupton, 2014, 18-19). They are made to grab reader's attention and to add to the character/mood of the written text. These types of fonts are not suited for sizes below 14 points.

Display typefaces can have various genres like hand-drawn, such as script fonts, three dimensional fonts that replicate a shadow or engraving



Image 6.1 : Examples of Display Typefaces, 'Beautiful Freak' and 'Stella'

or a beveled edge. Abstract designs of letters, colored fonts showing a particular lettering style, fonts with very high contrast or extreme weight characteristics. Other examples could be the typefaces replicating some writing system or a technique, like calligraphic fonts or fonts that reverse the notion of contrast.

### 6.2. Text Fonts

Some fonts are designed specifically for body text. These are created using subtle, well-crafted forms and evenly spaced characters to make reading the reading experience better for longer texts. Such fonts are called Text Fonts . A font with appealing details can also be used for heads, its character usually changes as it moves up in size.


Text fonts are easier to read in long blocks of texts. They are not made for the purpose of grabbing attention to themselves and have been designed to perform best between 6-point and 14-point.

### 6.3. Characteristics of text fonts

Text fonts as intended to be used in smaller sizes, are generally optimized for the same .In metal type, almost every point size of a given type style had subtly different proportions. The stroke contrast decreases as the size becomes smaller. The thin parts of a character became proportionally heavier as the point size decreased in a Serif Typeface. If left unchanged the contrast between thick and thin would have been too great, causing an effect called “dazzling” which makes text copy difficult to read.

The lowercase x-height is also generally larger in text sizes than in display

designs, and serifs are more pronounced. In addition, inter-character spacing is more open in text faces. All of these characteristics optimize the typeface for reading at small sizes.



ITC Bodoni Six  
ITC Bodoni Twelve  
ITC Bodoni Seventy-Two

Image 6.2 : Difference in forms at different sizes of ITC Bodoni



Miller Text  
Miller Display  
Miller Banner

Image 6.3 : Difference forms of Miller based on usage

## 7. Choosing between 'mono linear and 'modulated' typeface

Based on the form, the typefaces could be broadly classified into two categories i.e. mono linear and modulated.

Monolinear typefaces are the ones which have or at least appear to have similar thickness of strokes. These includes many sans serif typefaces like Helvetica, Montserrat, Poppins, Futura, etc.

Modulated typefaces are the ones that have significant difference in their stroke thickness like Garamond. These have resemblance to the strokes that are produced from an angle cut/ chizeled writing tool.

The above image shows the examples of both monolinear & modulated Odia font. The one on the left is Noto Sans Odia by Google, which is an example of monolinear Odia font whereas the one on the right is Prakashan Odia by Alessia Mazzarella, which greatly demonstrates the modulated nature of the font.

The current project would be focusing on the monolinear type - text font as the final outcome is intended to be used on web and it would be easier to pair with the existing monolinear webfonts. The other reason for choosing to make a monolinear type is it's better usability across weights and sizes on the web.

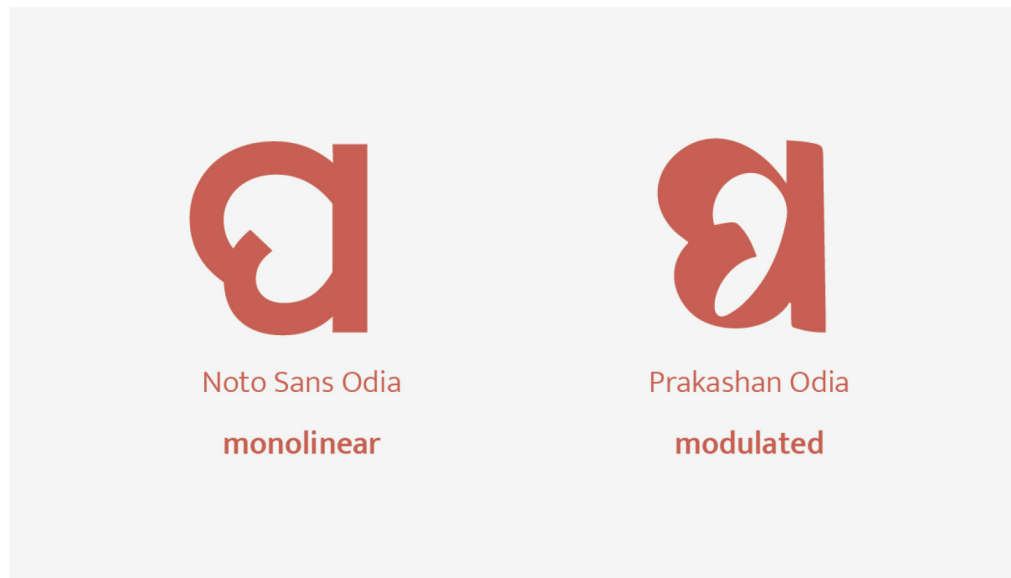


Image 7.1 : Examples of monolinear and modulated font



## 8. Odia fonts: Existing scenario

As far as open source fonts are concerned, the most common distributor is google fonts. Till date google fonts has only 2 fonts supporting Odia script i.e. Baloo Bhaina by ektype and Noto Sans Odia by Google Noto Project.



Image 8.1 : Baloo Bhaina By Ek Type

Regular 400 at 48px

ସବୁ ମନୁଷ୍ୟ ଜନ୍ମକାଳରୁ ସ୍ଵାଧୀନ.  
ସେମାନଙ୍କର ମର୍ଯ୍ୟାଦା ଓ ଅଧିକାର  
ସମାନ. ...

Image 8.2 : Noto Sans Odia By Google Noto Project

Apart from this one of the most commonly used odia font is Nirmala UI which was commissioned by Microsoft for being used.

Apart from the openly available fonts, the other significant examples include Akhand and Ashoka Odia by Indian Type Foundry. Out of the available mentioned fonts none of them have a variable property

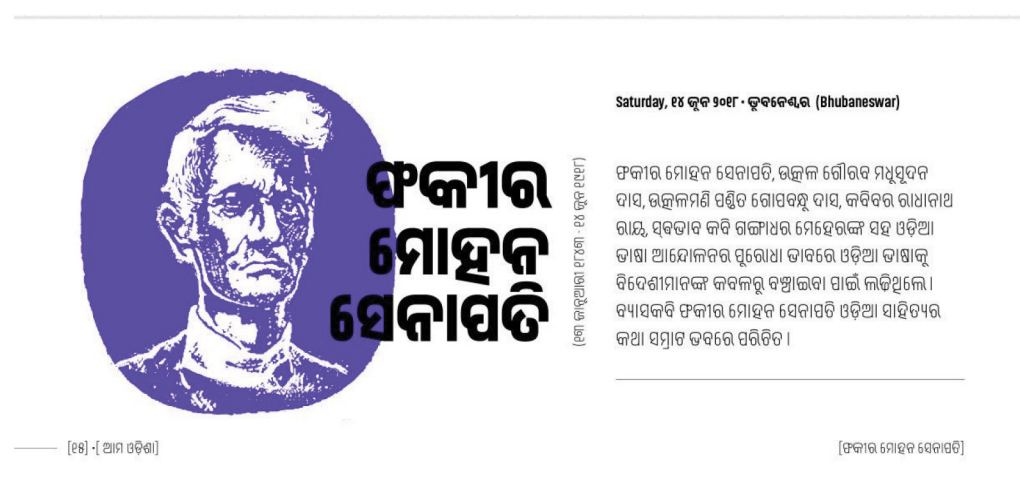


Image 8.3 : Akhand By Indian Type Foundry



Image 8.4 : Ashoka Odia By Indian Type Foundry

## 9. Analysing existing Odia Fonts

### 9.1. Comparing some existing fonts

Before starting the design process, the Unicode glyph chart for Odia script was studied to make a list of the glyph set that was needed to be designed in the form of a comparative chart which has the same letters in 100pt size from 'Nirmala UI', 'Noto sans Odia' and 'Baloo Bhaina' along with their Unicode number codes, unicode names, their category like vowel, consonants, digits etc.

The charts having the vowels have their equivalents diacritics and also

Devanagari equivalent for easier comprehension.

The comparison charts contains:

34 consonants, 12 independent vowels, 10 digits, 09 dependent vowel signs (one part) and 02 dependent vowel signs (two parts).

The one part vowel signs gets placed either on the left like the 'a' matra or the right of the letters like the 'aa' matra. The two part signs get placed on both the sides of the letters like the 'ai' and the 'ou' matras.

The Image below is an example of the chart and the rest can be found in the annexures.



Image 9.1 : Comparison chart of an existing fonts

## 9.2. Grouping letters based on visual form

The Odia letters we grouped based on their visual form. In the image below the visually similar letters are placed in similar groups which are then color coded based on their terminals. It was found that there are majorly three types of endings i.e. ending with a vertical stroke like in the

letter ‘aa’ or the letter ‘m’ , the second category ending with an inclined stroke (generally an extension of a curved stroke) touching or even slightly extending the baseline like in the letters ‘ee’ or ‘la’ and the last where the letters end with a curved stroke like in the letters ‘ka’ or ‘va’.



Image 9.2 : Grouping Odia letters based on their visual characteristics

### 9.3. Analysing the Existing grid

For getting an idea of the existing grid, a sentence was chosen and a few letters that had distinct characteristics were picked. These letters were then composed into a long word and the grid lines were drawn for the same. There were 7 vertical divisions that were seen. The Baseline on which the base of the letters sit. The head-line which depicts the heights of the letters. Then there is an upper mean line which denotes the start

of some of the letters like the letter 'a' (denoted with pink). The lower mean line is the one where the change of stroke happens or some letters like the letter 'ka' or the letter 'ba' rests. The there is a terminal line where the letters with the curved ending stroke on top ends. The 'matras' in Odia can appear on both the sides and also on top and bottom. The Lower matra line and the upper is where these matras would exist. There would also be a deeper line in case of special conjuncts

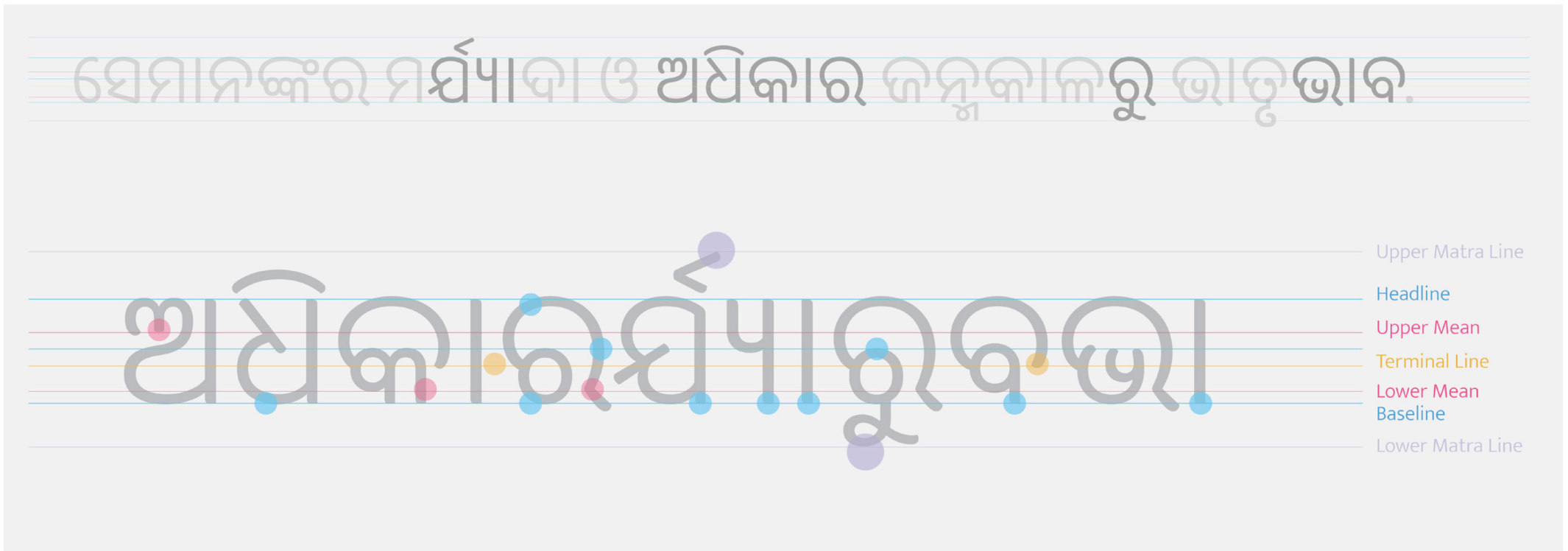


Image 9.3 : Grid in Odia

## 9.4. Types of Joineries

There are a few different kinds of joineries in the Odia script. The first one is where the curved stroke joins with a vertical stroke like in the letter ‘a’ or ‘pa’. The second type is the one in which the curved stroke joins with another curved stroke like in the letter Odia letter ‘e’. The third one is the

one in which two curved stroke join but appear as folds like in the letters ‘ee’ or ‘oo’. The fourth one is where the curved stroke joins with a knot, the fifth one is where the curved stroke joins with an inclined stroke like in the letter ‘dda’ and the last one is where two straight strokes join at an angle like in the letter ‘sha’

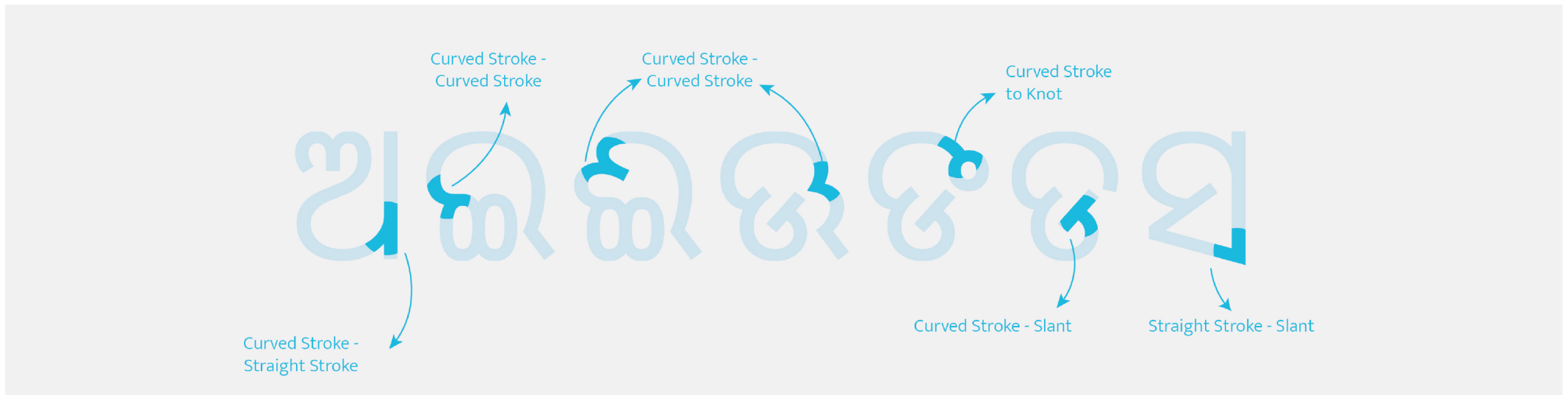


Image 9.4 : Joineries in Odia Script

## 9.5. Types of Knots

There are majorly two types of knots that could be found in Odia script.

The first one is a filled knot (letters on the left in image 9.5) that can be found in letters like ‘ma’, ‘na’, ‘ta’ etc. The second one is a closed knot that can be found in the letter ‘nga’



Image 9.5 : Knots in Odia Script

## 10. Letter design process

### 10.1. Explorations

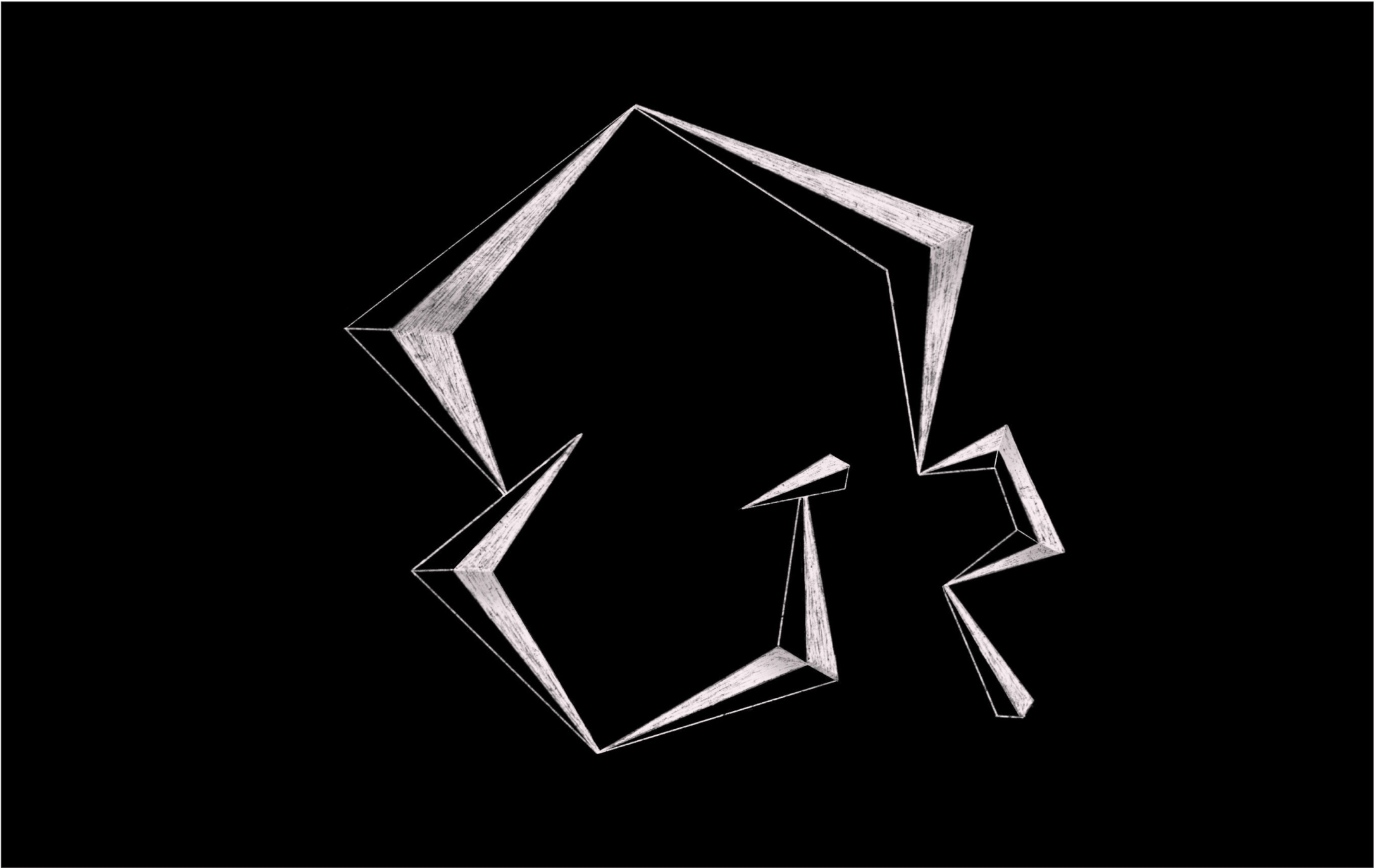
The initial explorations started as a part of '63 Days of Odia Type' which then inspired me to do some explorations of the Odia letters with different forms and techniques.





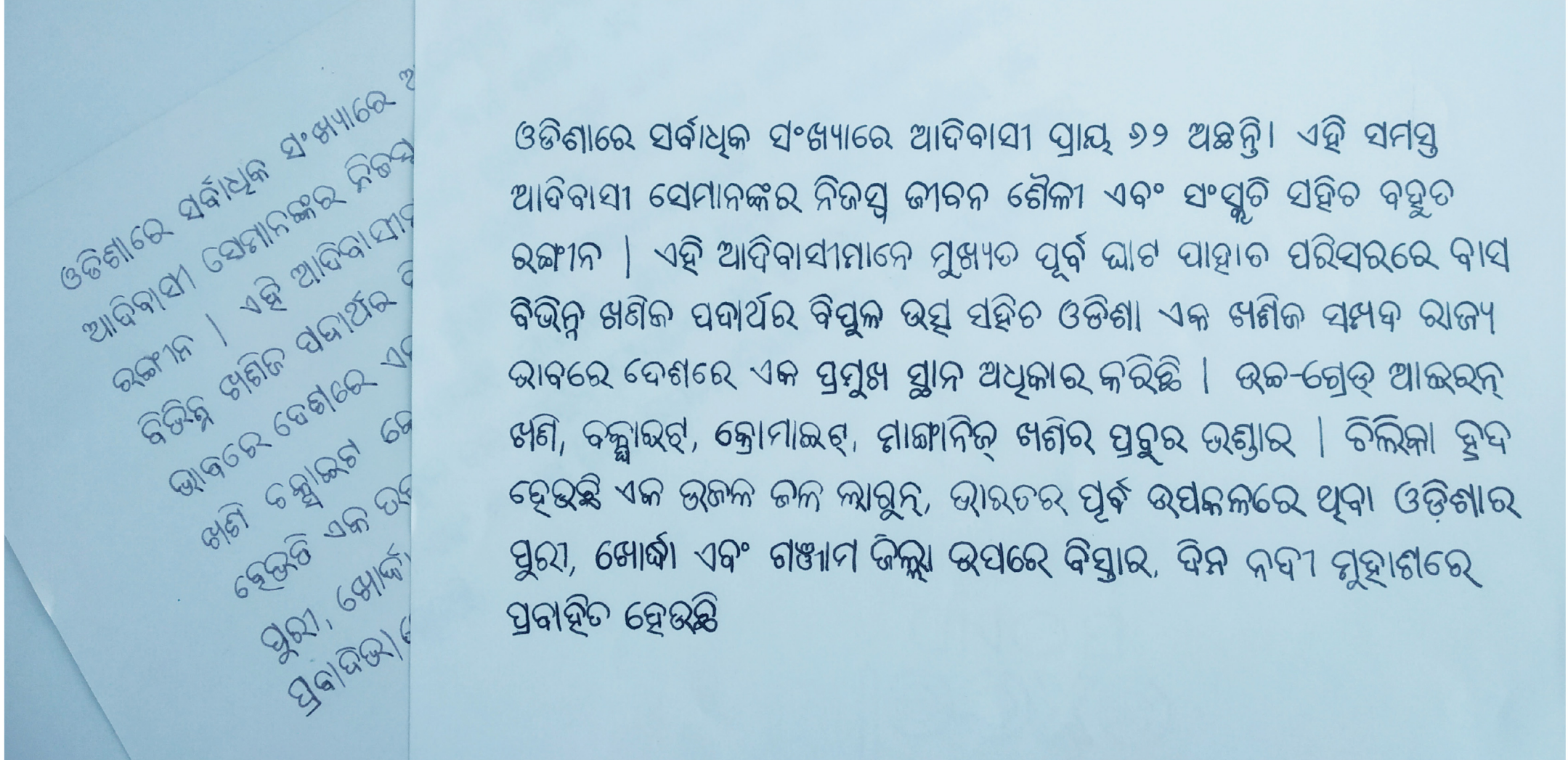






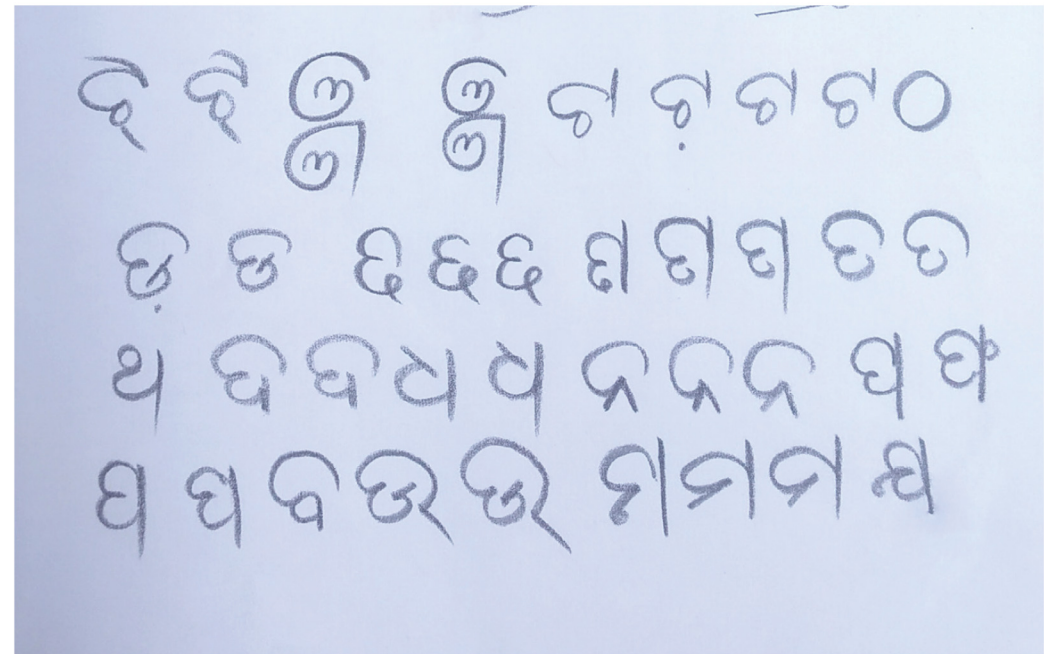
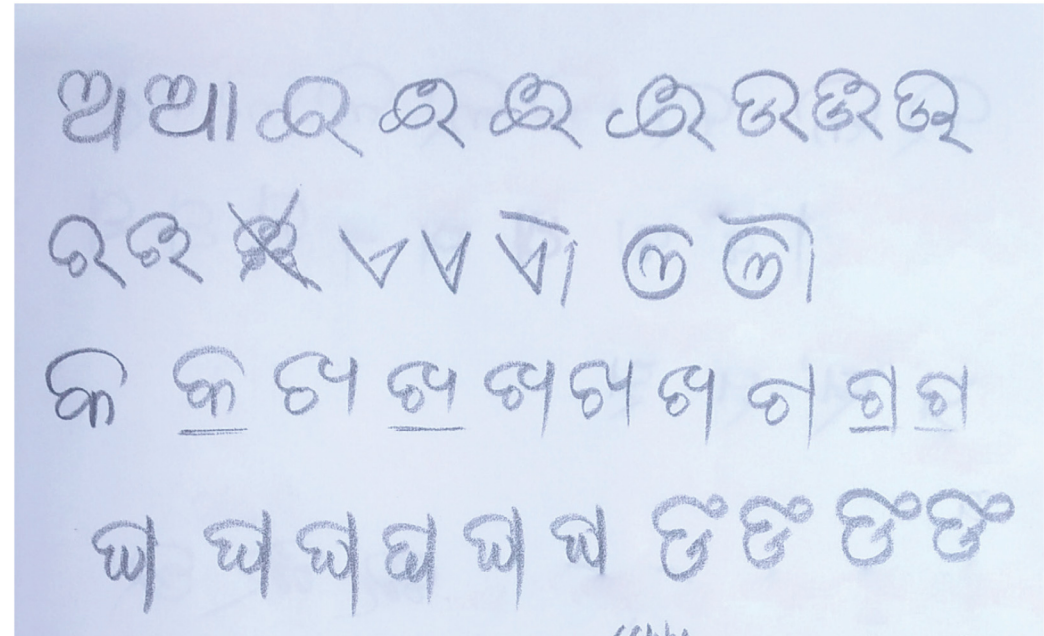
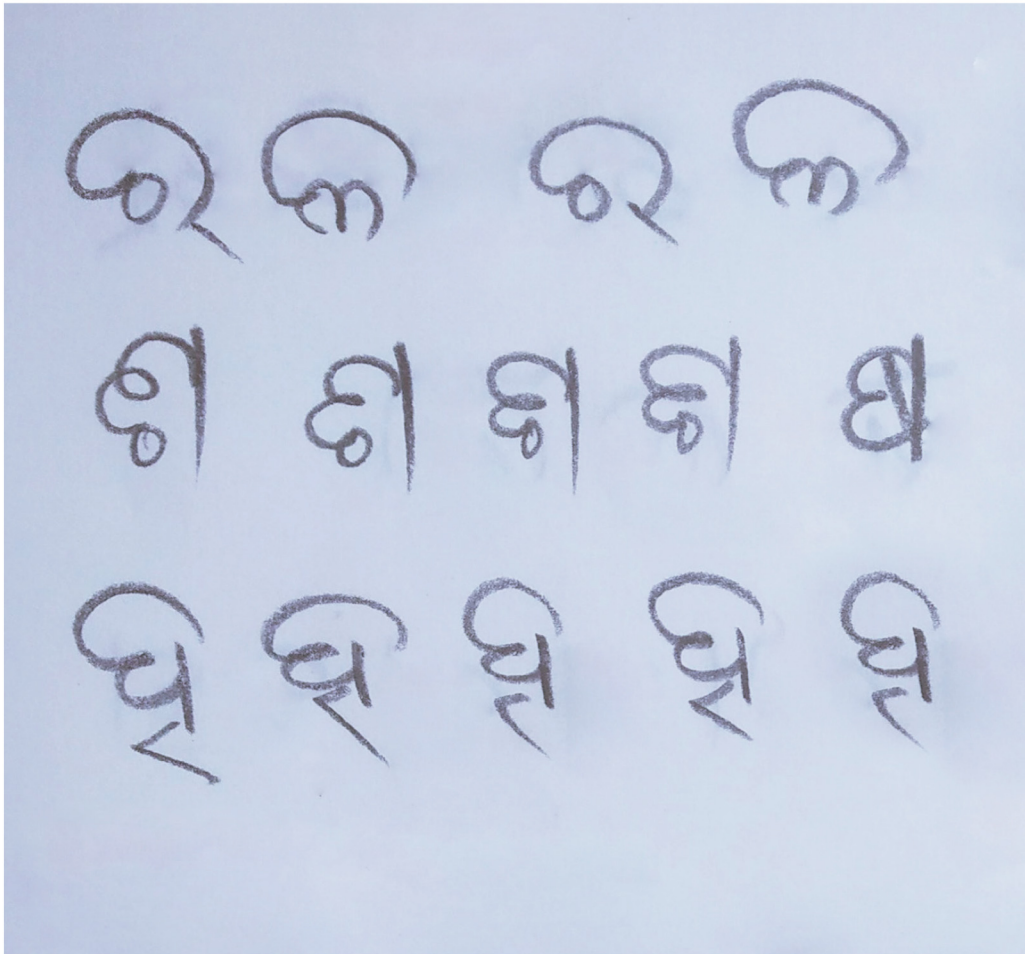
## 10.2. Writing freehand paragraphs with different tools

To get a better sense of the letter-forms and their composition as sentences, I wrote a few paragraphs on different papers with ink pen and felt tip pen to see how the letters get synchronized with each other.



### 10.3. Letter drawing with broad pencil

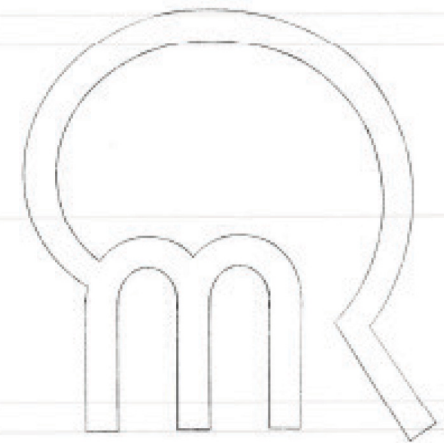
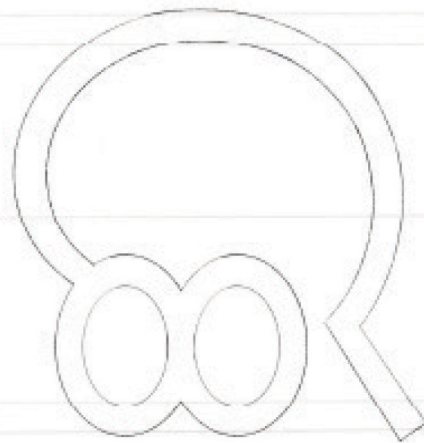
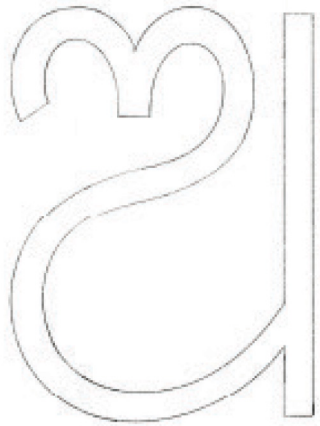
After writing the paragraphs, with the references from online lectures targeted for primary school kids the Odia letters were drawn with a broad edged pencil to get the letter consistency and develop a sense of the anatomy of the letters.

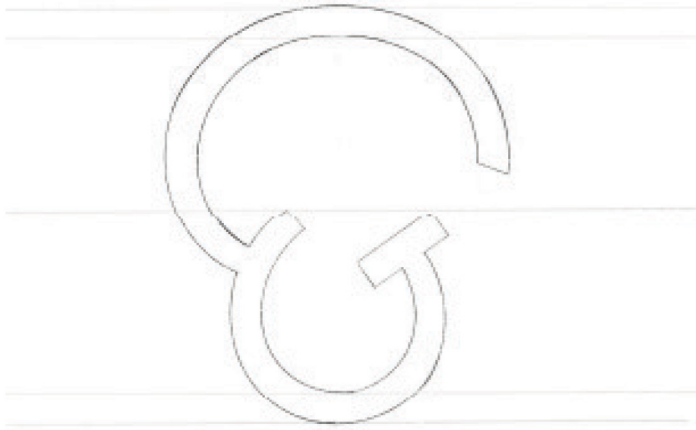
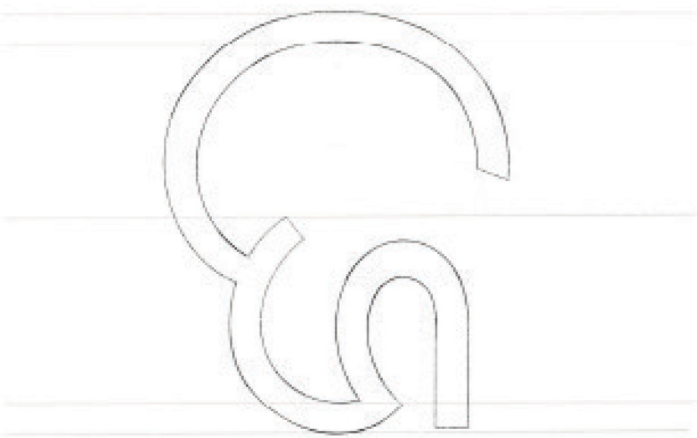
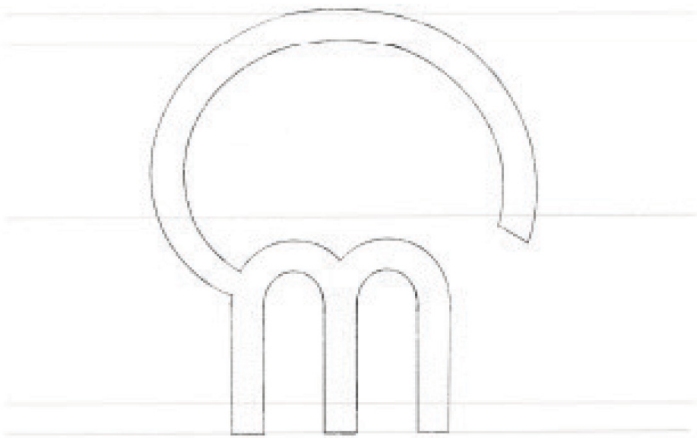
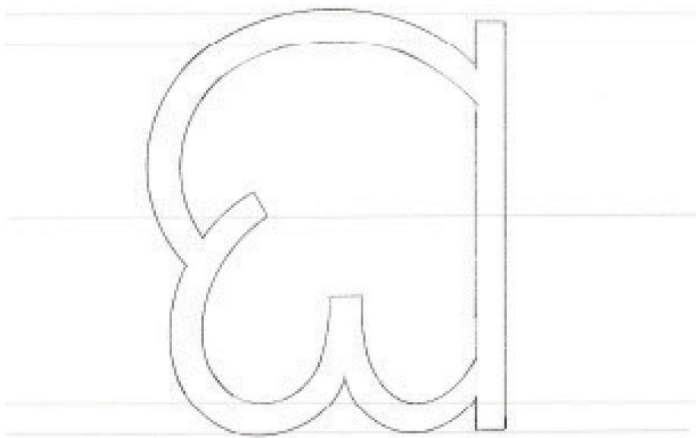


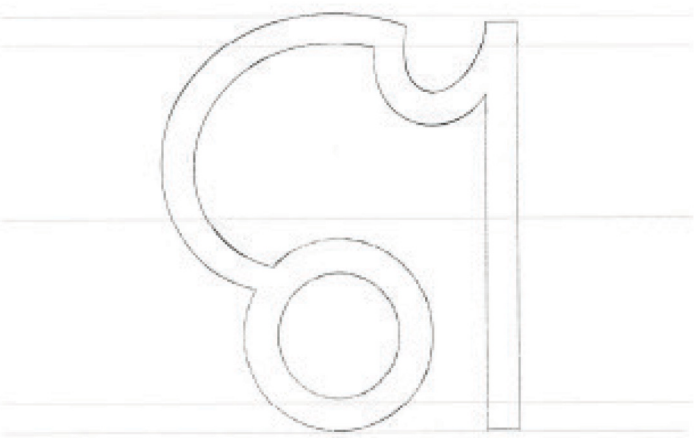
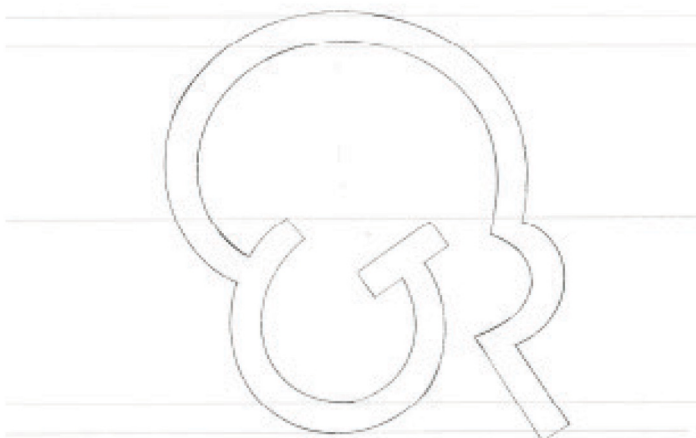
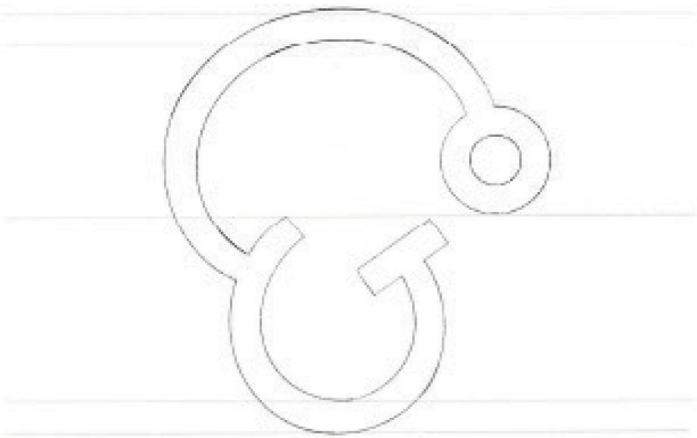
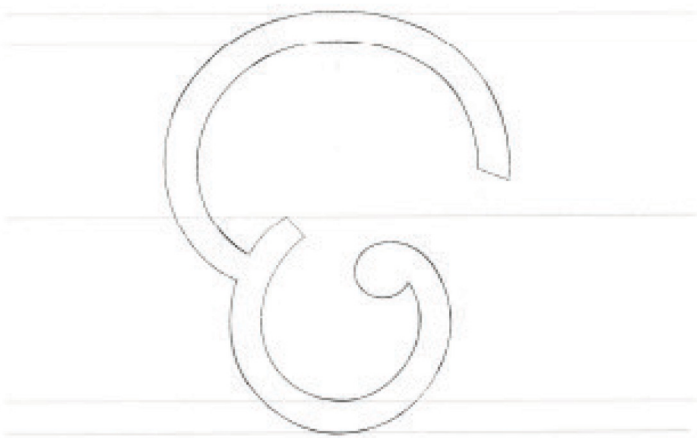
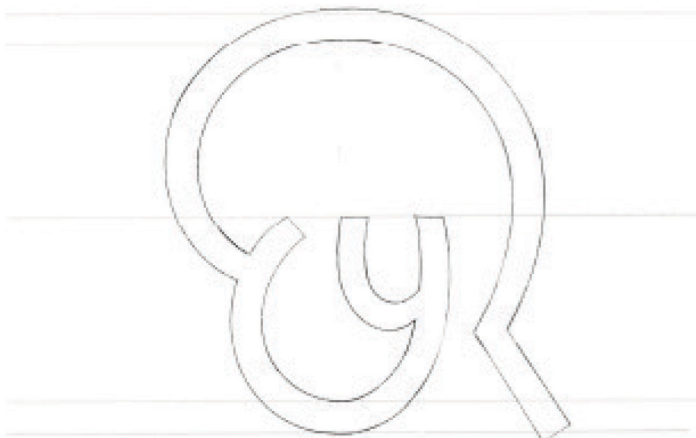
## 10.4. Outline Sketching

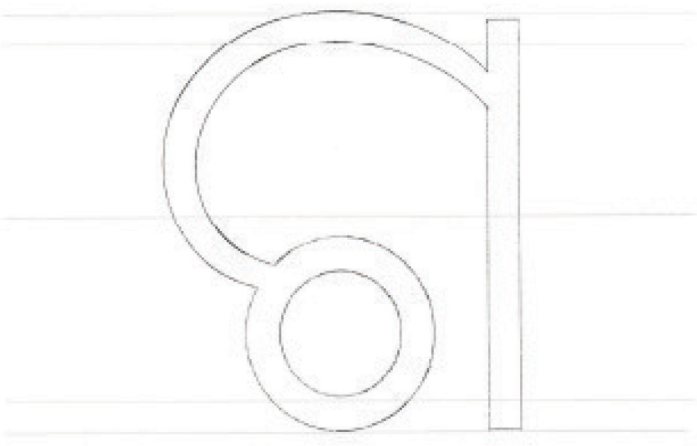
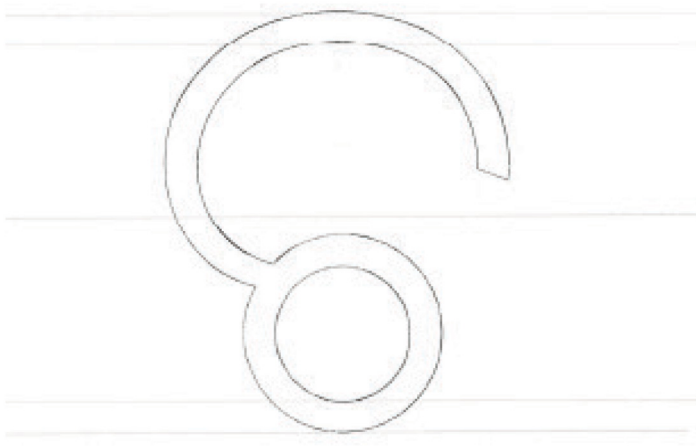
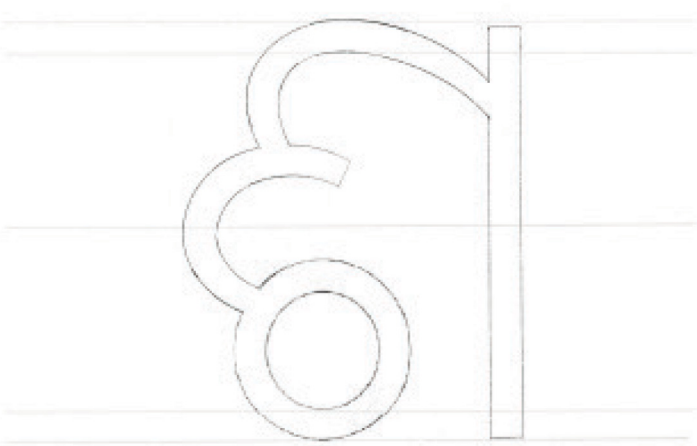
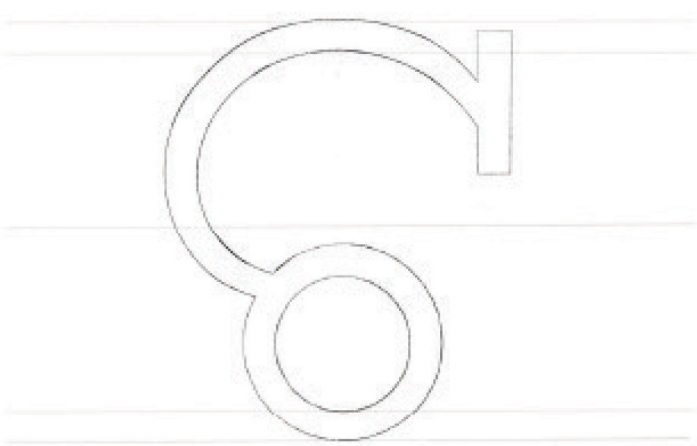
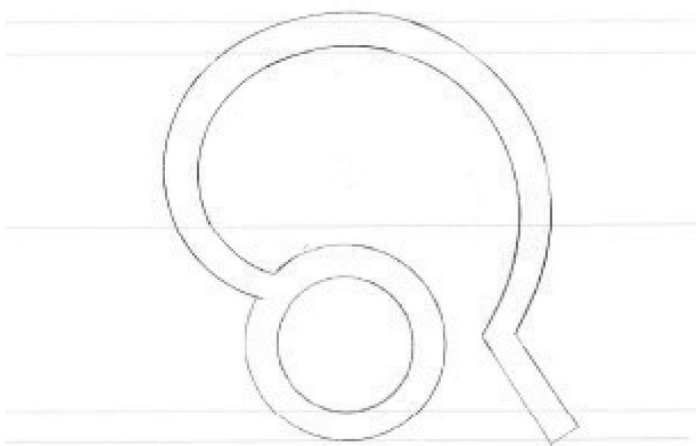
After the letter drawings, each character was sketched in the sequence of their uniqueness of the form, i.e. based on the grouping shown earlier

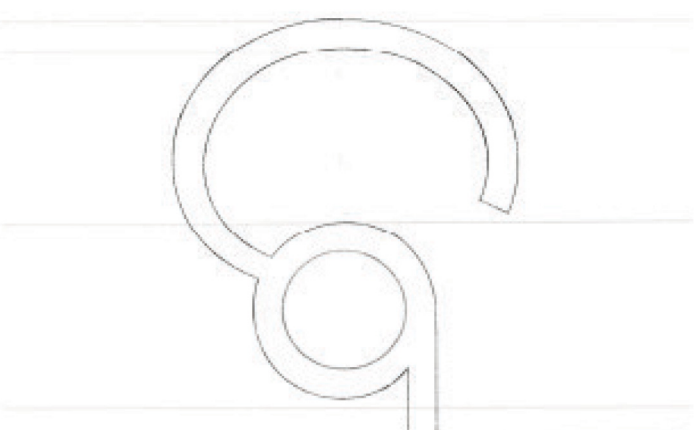
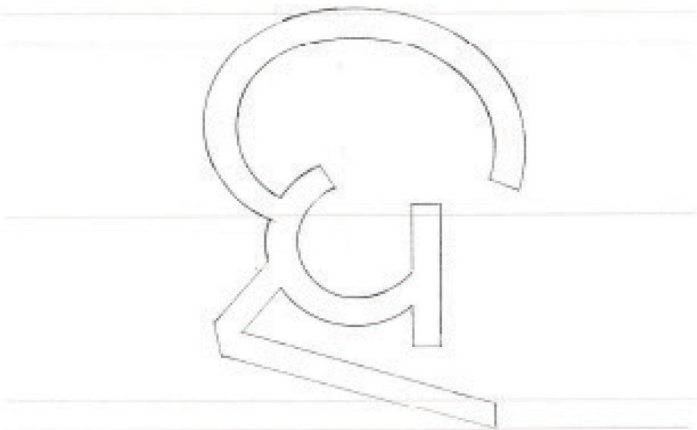
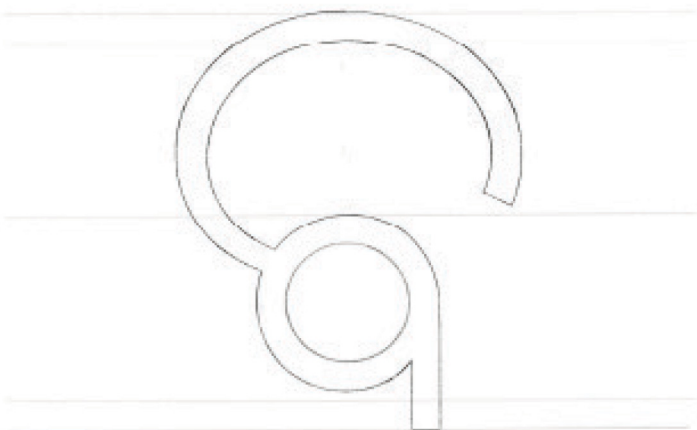
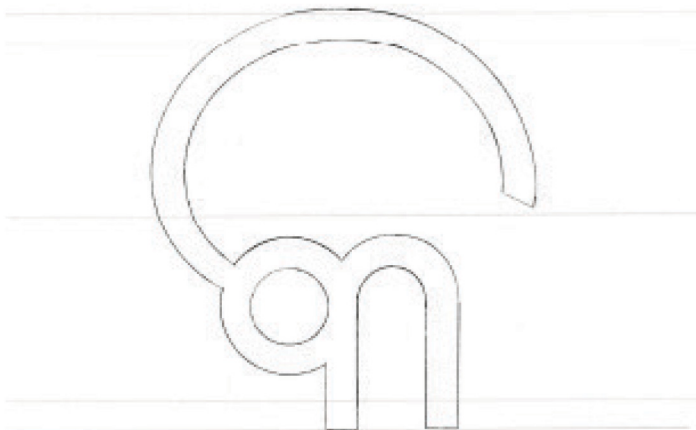
in which the primary characters were sketched first and then the similar characters were derived from them with the help of transparent sheets.



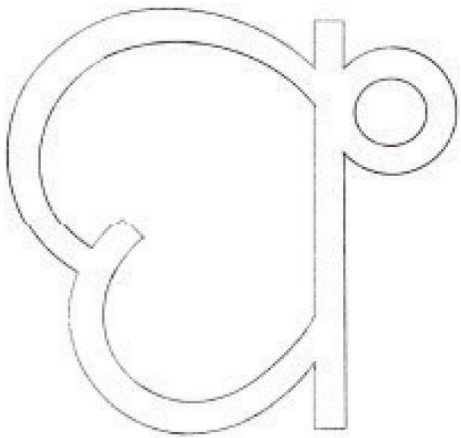
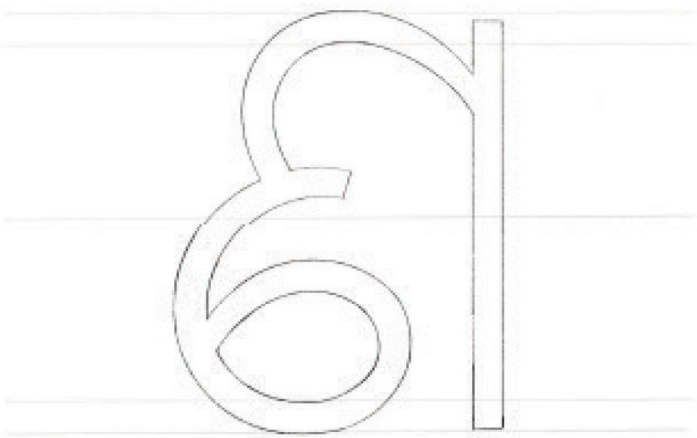
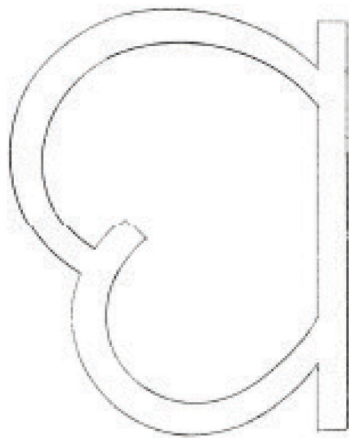
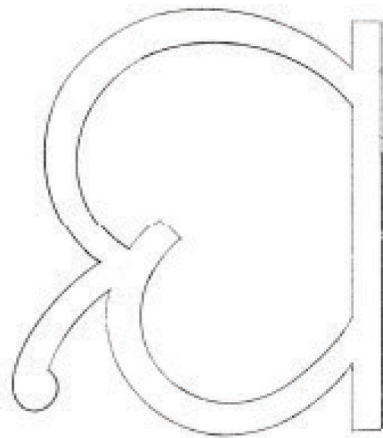
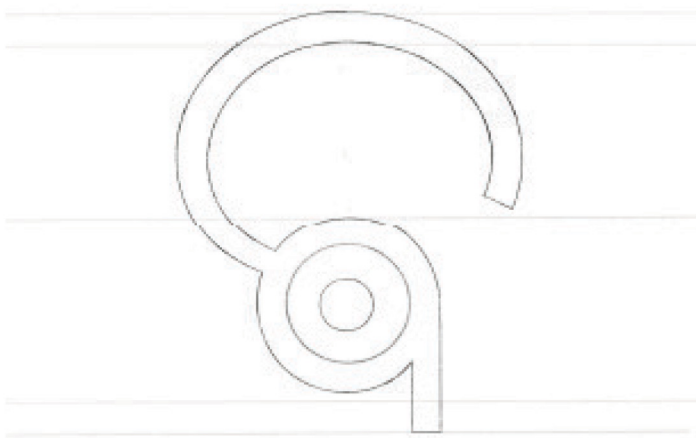


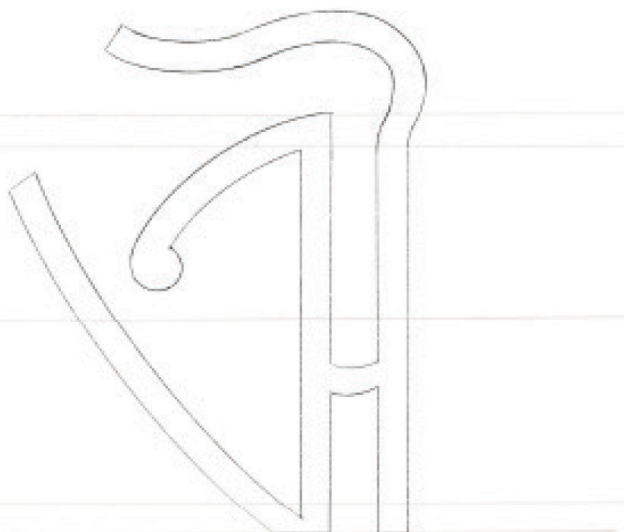
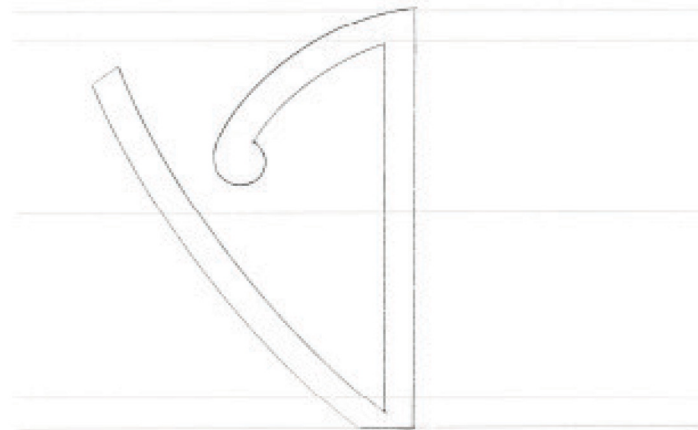
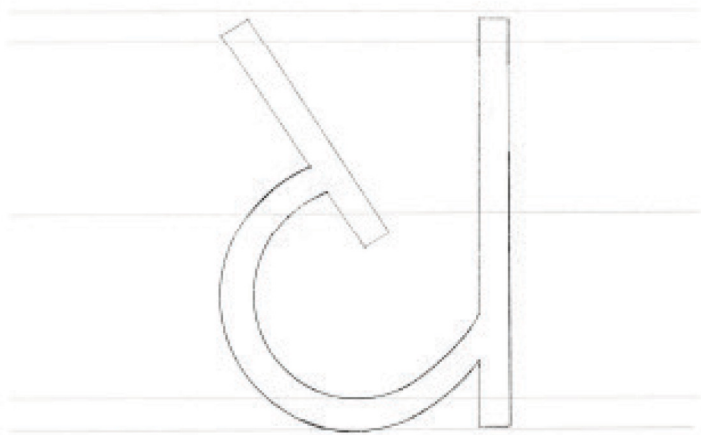
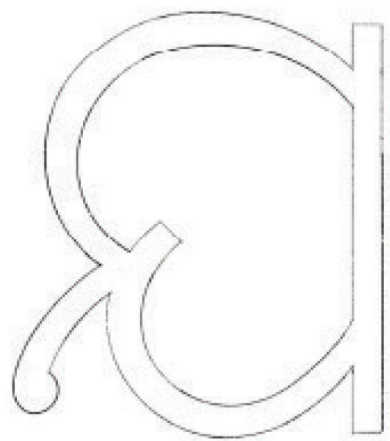


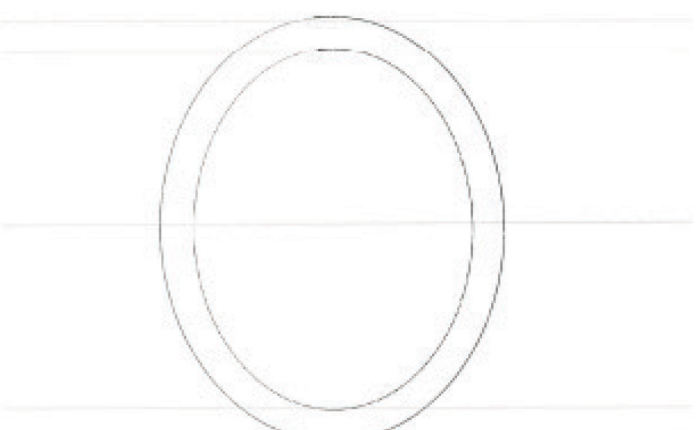
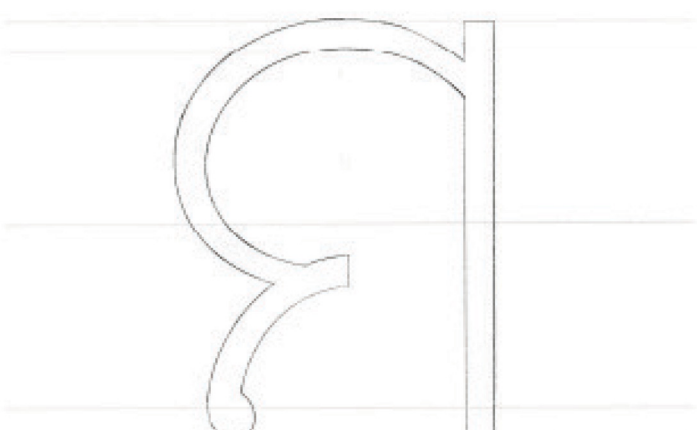
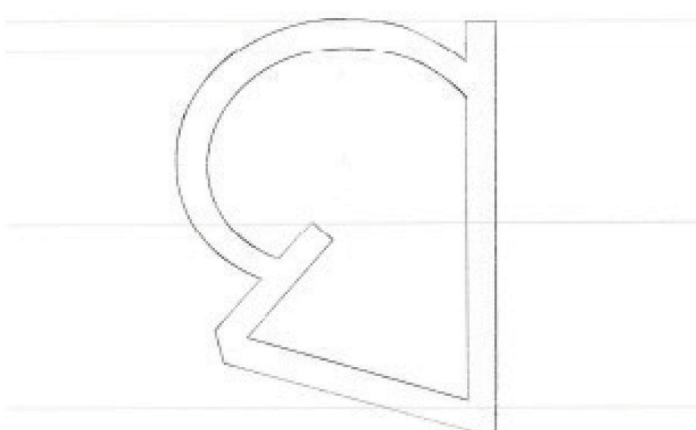
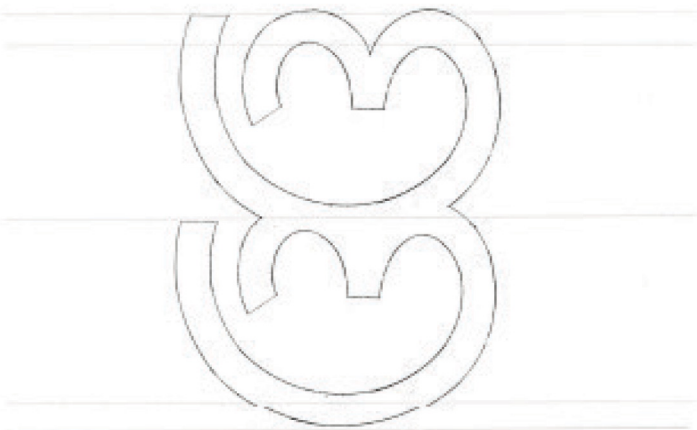
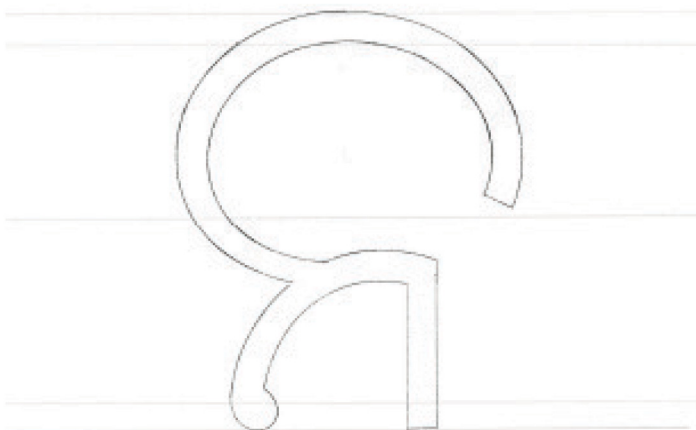












## 10.5. Vertical Grid

After completing the outline sketches of the major characters the characters were then used to derive a vertical grid to make the further process more efficient.

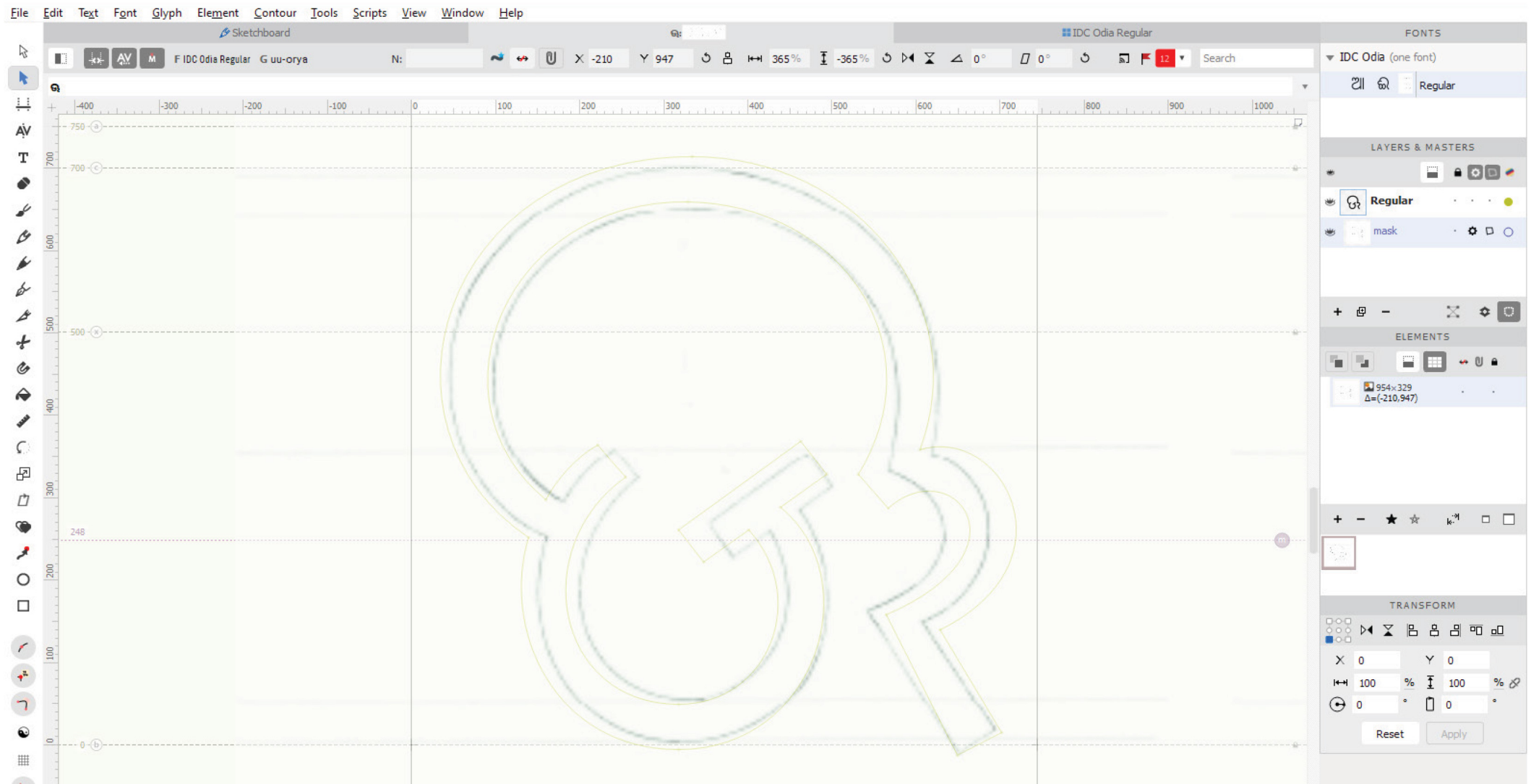
For the convenience of the further process of vector drawings the vertical grid was calculated in UPM. Given the baseline set at 0 the cap height was taken at 700.



## 10.6. Vector Drawing (1st Draft).

The outline sketches drawn earlier were used as a reference for starting the letter drawing process. Each sketch was imported in the masked background layer of the respective glyph.

The letters were then drawn based on the decided vertical grid and the irregularities of the hand drawings were subsided digitally. The glyph chart of the first draft can be seen in the next image.



File Edit Text Font Glyph Element Contour Tools Scripts View Window Help

Sketchboard IDC Odia Regular

Unicode Script: Oriya x Index Search

BASICS

- Draw a New Font
- Latin Simple
- Latin Pro

CATEGORIES

- All
- Letter
- Number
- Symbol
- Mark
- Separator
- Properties
- Suffix
- Flag
- Layers & Masters

SCRIPTS

- Latin
- Cyrillic
- Greek
- Oriya

SEARCH HISTORY

BOOKMARKS

OB01	OB02	OB03	OB05	OB06	OB07	OB08	OB09
OB0A	OB0B	OB0C	OB0F	OB10	OB13	OB14	OB15
OB16	OB17	OB18	OB19	OB1A	OB1B	OB1C	OB1D
OB1E	OB1F	OB20	OB21	OB22	OB23	OB24	OB25
OB26	OB27	OB28	OB2A	OB2B	OB2C	OB2D	OB2E
OB2F	OB30	OB32	OB33	OB35	OB36	OB37	OB38
OB39	OB3C	OB3D	OB3E	OB3F	OB40	OB41	OB42
OB43	OB44	OB47	OB48	OB4B	OB4C	OB4D	OB55

FONTS

IDC Odia (one font)

ଅଅଇଇଉଊ Regular

LAYERS & MASTERS

ELEMENTS

TRANSFORM

X: 0 Y: 0

H: 100% W: 100%

Reset Apply

.notdef 0 500 0 1/96 Cols: 8

## 10.7. Composing names

After the first draft was finished the letters were composed in the form of a few names and these were then put in different scales to check how these behaved once printed. To achieve the Width consistency a few letters were then modified based on the findings from the analysis

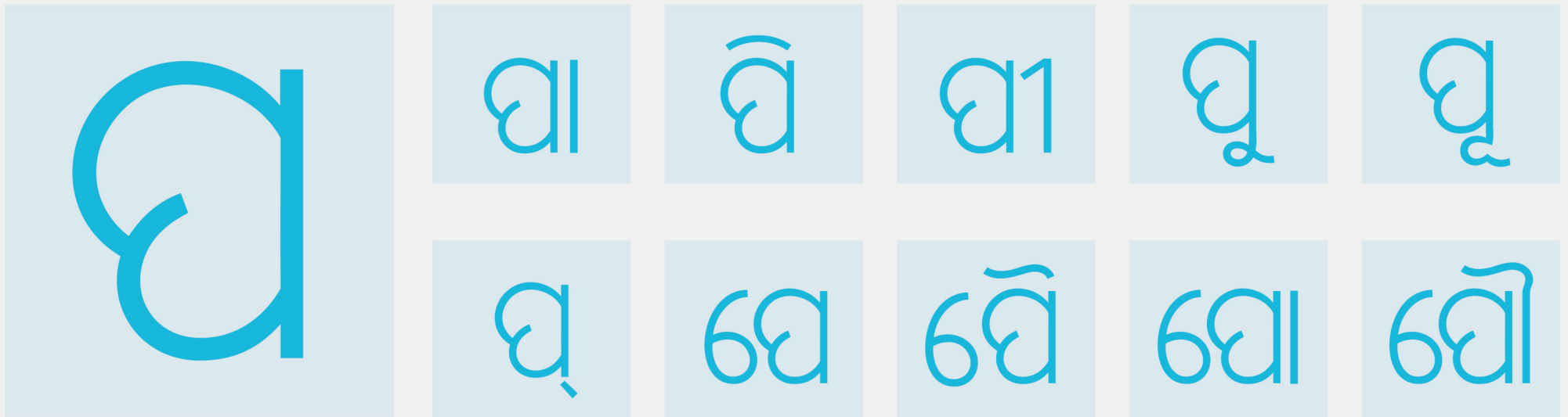
ଅନୁଭବ କଣିଷ  
ରଚନା ଦର୍ଶନ ସୁମୋଧ  
ଅମିତ ପାଟକୋଷୀ

## 10.8. Final Glyphs and Sampler

The image below shows the final glyphs which is followed by the diacritics usage and a poem composed in the designed font

ଅ ଆ ଇ ଈ ଉ ଊ ଋ ଌ ଏ ଐ ଓ ଔ  
କ ଖ ଗ ଘ ଙ ଛ ଜ ଝ ଞ ଟ ଠ ଡ ଢ ଟ ଡ ଶ ଷ ଧ ଦ ଧ  
ନ ପ ଫ ବ ଭ ମ ଯ ର ଲ ଳ ବ ଶ ଷ ସ ହ ଯୁ ଋ ଌ  
୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯  
◌̇ ◌̈ ◌̉ ◌̊ ◌̋ ◌̌ ◌̍ ◌̎ ◌̏ ◌̐ ◌̑ ◌̒ ◌̓ ◌̔ ◌̕ ◌̖ ◌̗ ◌̘ ◌̙ ◌̚ ◌̛ ◌̜ ◌̝ ◌̞ ◌̟ ◌̠ ◌̡ ◌̢ ◌̣ ◌̤ ◌̥ ◌̦ ◌̧ ◌̨ ◌̩ ◌̪ ◌̫ ◌̬ ◌̭ ◌̮ ◌̯ ◌̰ ◌̱ ◌̲ ◌̳ ◌̴ ◌̵ ◌̶ ◌̷ ◌̸ ◌̹ ◌̺ ◌̻ ◌̼ ◌̽ ◌̾ ◌̿ ◌̀ ◌́ ◌̂ ◌̃ ◌̄ ◌̅ ◌̆ ◌̇ ◌̈ ◌̉ ◌̊ ◌̋ ◌̌ ◌̍ ◌̎ ◌̏ ◌̐ ◌̑ ◌̒ ◌̓ ◌̔ ◌̕ ◌̖ ◌̗ ◌̘ ◌̙ ◌̚ ◌̛ ◌̜ ◌̝ ◌̞ ◌̟ ◌̠ ◌̡ ◌̢ ◌̣ ◌̤ ◌̥ ◌̦ ◌̧ ◌̨ ◌̩ ◌̪ ◌̫ ◌̬ ◌̭ ◌̮ ◌̯ ◌̰ ◌̱ ◌̲ ◌̳ ◌̴ ◌̵ ◌̶ ◌̷ ◌̸ ◌̹ ◌̺ ◌̻ ◌̼ ◌̽ ◌̾ ◌̿





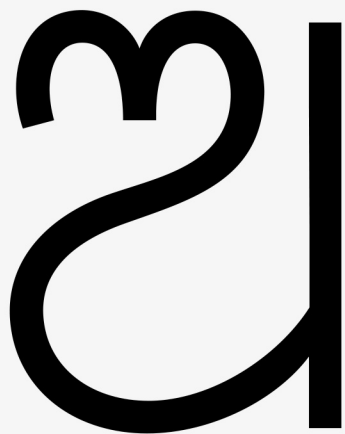
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ମୋ ଆରତ ନଳିନୀବୀନକୁ କର ଦଳନ ।

ଗଜରାଜ ଚିନ୍ତାକଳା ଆଇ ଘୋର ଜଳେଣା,  
ଚକ୍ରପେଷି ନକ୍ରନାଶି ଉଦ୍ଧାରିଲ ଆପଣ ।

ଘୋରବନେ ମୁଗୁଣୀକି ପଡ଼ିଥିଲା କଷଣ,  
କେତେ ବଡ଼ ବିପତ୍ତିରୁ କରୁଅଛ ତାରଣ ।

## 11. References

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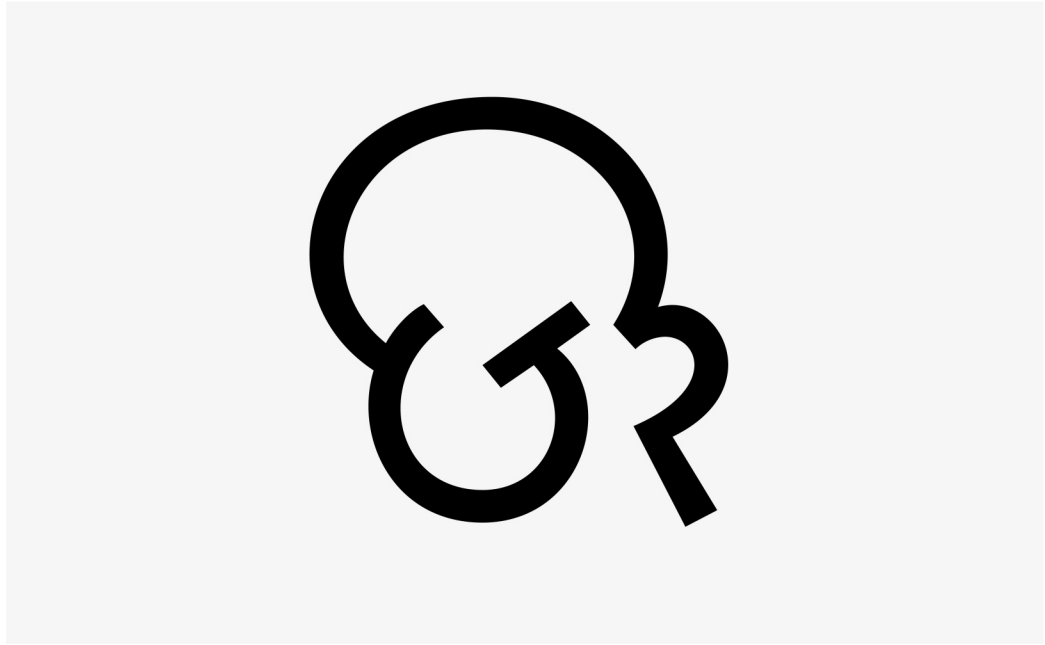
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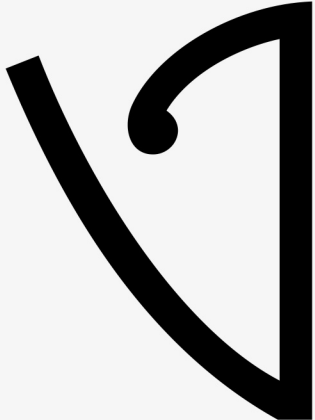


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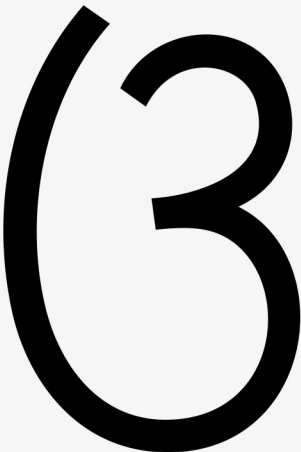




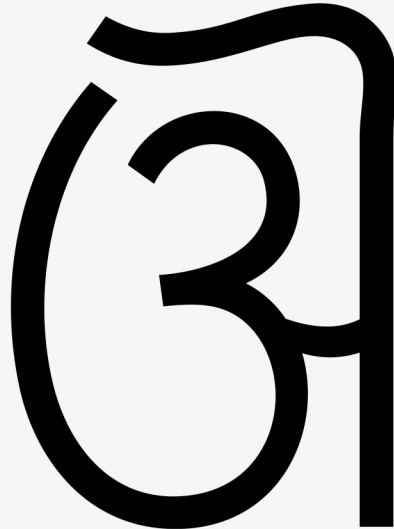
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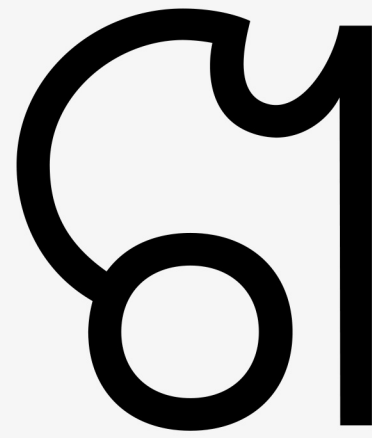
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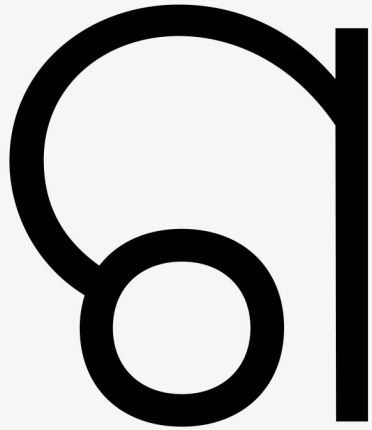
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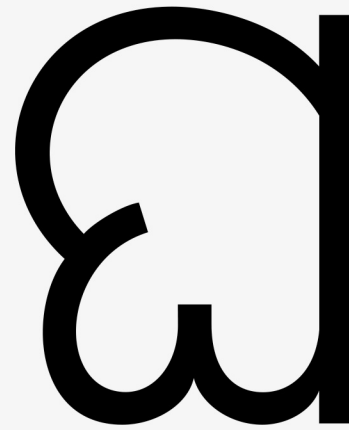
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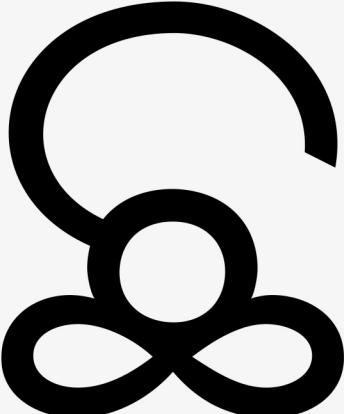
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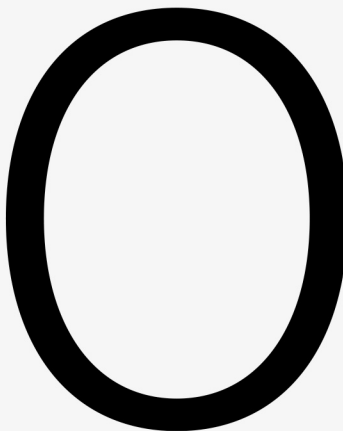
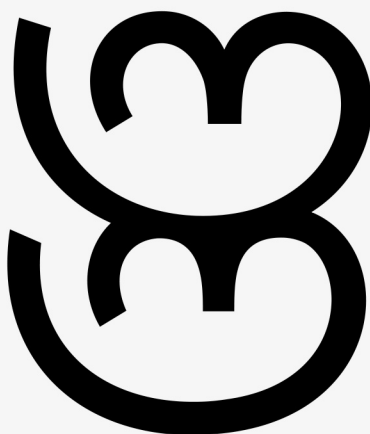
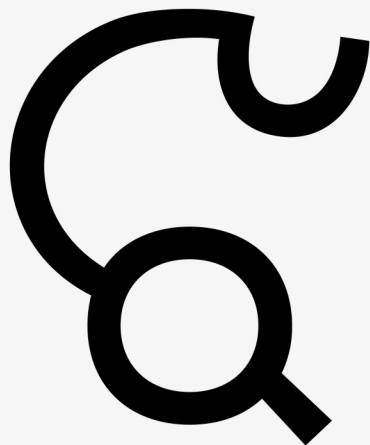
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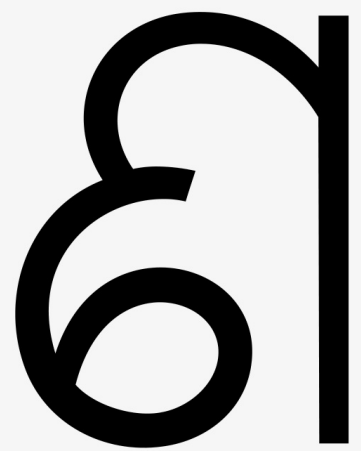


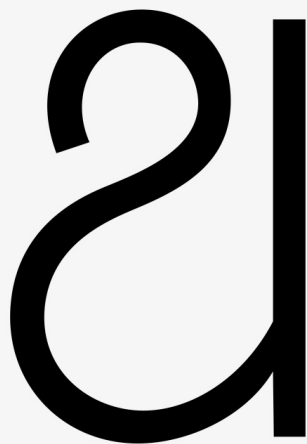
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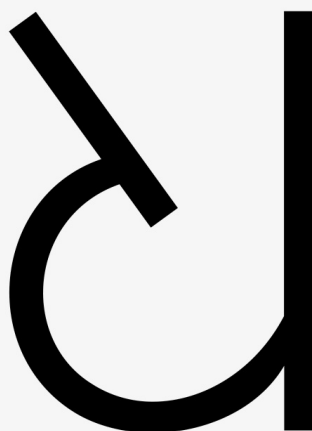





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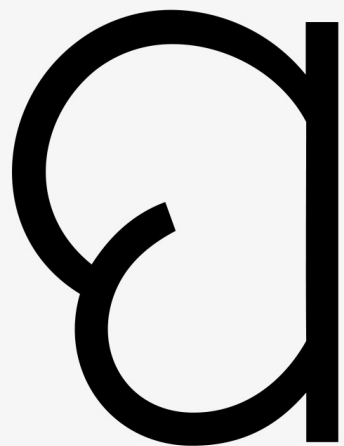
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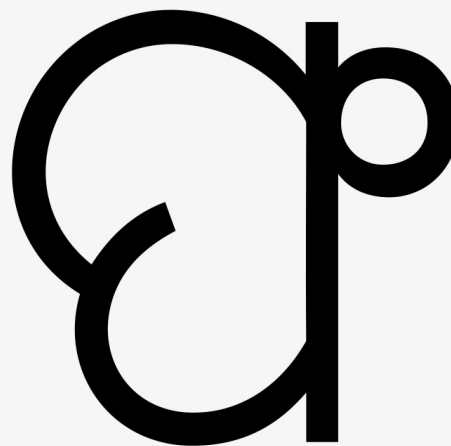
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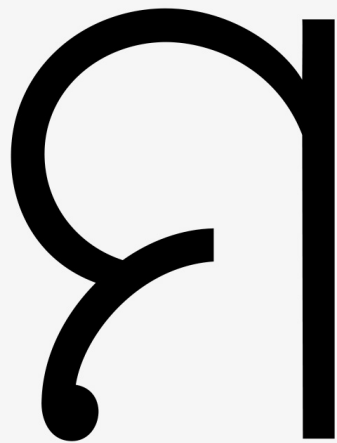
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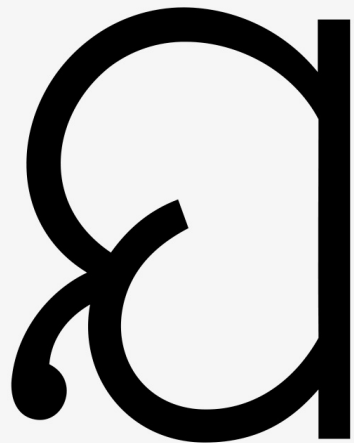
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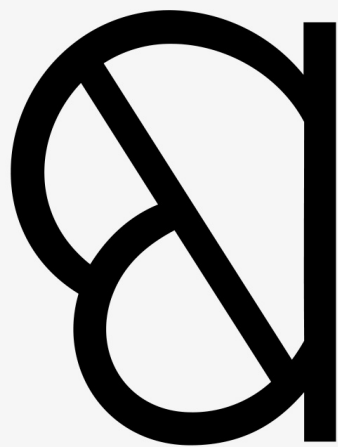
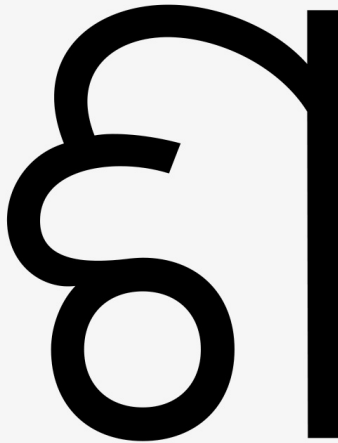
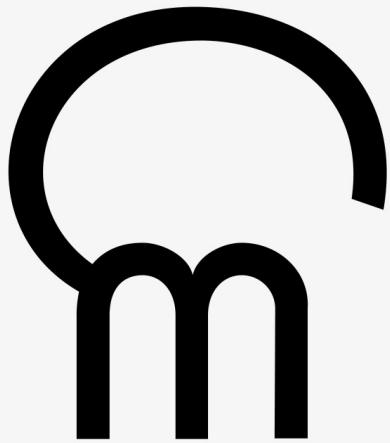
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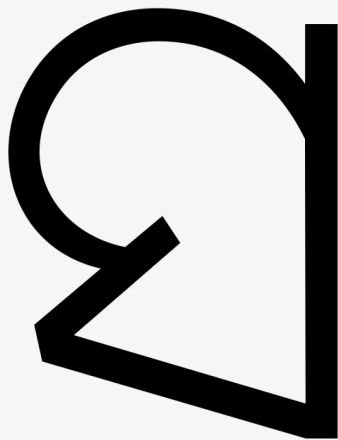


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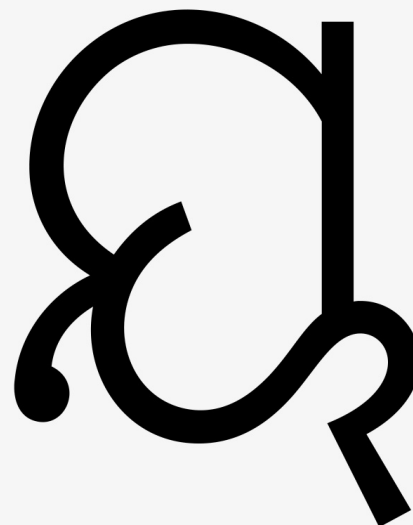


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