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### A calligraphic approach to Odia script

Manish Minz, Summer Intern, Whitecrow, [manishminz@hotmail.com](mailto:manishminz@hotmail.com)

#### **Abstract:**

India is a culturally diverse country with a very rich visual culture incorporating numerous beautiful languages, their varying dialects and scripts. Odia is now stated as one of the six classical languages of India, but in terms of visual aspect of lettering, type design and digital typefaces is lagging behind because of lack of information on the basic structure of its letterforms and their components and proportions, and absence of a bona-fide set of guidelines for the script.

This paper documents and discusses the process of designing a calligraphic manual for the Odia script. It talks about the rich history of the script, and explores the process and approach taken to develop a standardized instruction manual for writing the script in a calligraphic style. The project aimed at answering few fundamental questions regarding Indian typefaces: (1) How does one incorporate calligraphy in Odia writing? (2) What are the legitimate references for designing an Odia typeface? (3) Why do most of the Indian scripts lack availability of documented resources to support type-design?

**Key words:** *Calligraphy ,Odia, Instruction manual, Design Process.*

#### **1. Introduction**

India’s culturally diversity with its wide array of people is bound to in-still a multi-lingual and a multi-script profile in the country. Odia is one of the major spoken languages of India with 33 million<sup>1</sup> people speaking it. The Odia language belongs to the *Aryan* family of languages which includes *Assamese, Bengali* and *Maithili* and it is closely related to them.

##### **1.1 History of Odia script**

Clear evidence for the writing system in ancient India is available as early as 5th century B.C. which as may be seen from the numerous retrieved manuscripts written on palm leaves and other writing materials. Odia language is written in Odia script. Most of the Indian scripts originated from an ancient script called Brahmi. The indication of this lies in the *Ashokan* inscriptions of *Dhaul* and *Jaugada* which were written in 3rd century B.C. The form language of the script was an amalgamation of the *Indo-Aryan* language as opposed to Sanskrit. From the *Gupta* period onwards the language inscribed on copper plates and on stone inscriptions was Sanskrit. From 5th to 8th century A.D. the Sanskrit script developed what has been called box head characters. Post this there were regional variations in the script and the script used in *South Odisha* (later called the *Kalinga* script) was influenced by South-Indian scripts.

The next stage of development was the *proto-Odia* which was used from the 11th to the 14th century A.D. in Assam, Bengal and Odisha. It is from this script that modern Odia script evolved (also modern Bengali script). The Bengali script whereas, retained the horizontal tip line of the original script, it is said that Odia script changed them to curves due to the exigencies of the writing material, the palm leaf.

The main development of the Odia script took place during the rule of the kings of the Ganga dynasty from 1077 to 1435 A.D. as evidenced from the numerous copper plate grants and stone inscriptions of this period. By the time of Suryavanshami kings of Odisha (1435-1540 A.D.), Odia script had been fully developed.

## **1.2 Palm leaf tradition**

The most prominent writing surface materials used in ancient India were the Palm leaf and Birchbark. The palm leaves were also called as *Tari* and were used for writing Odia. A book of these leaves was bound together by a cord passing through all the leaves via a hole in the middle of each leaf. The letters were incised on palm leaves with a metal stylus also called a *Kittalekhani* or a *Lohakantaka*. The process was done by holding the leaf firmly down with one hand and the stylus pressed down cutting into the surface of the leaf. After that inscribing or incising, the leaves were usually smeared with carbon based ink and then cleaned and smoothened with sand leaving the ink in the incised letter so as to make them clearly visible.



Figure.1 Picture of the metal stylus used to inscribe in palm leaf manuscript. Reference taken from national archives, new delhi



Figure.2 A palm leaf manuscript

## 2. Odia calligraphy Manual

### 2.1 Basic grammar of Odia script

Odia script has a curved form and in its basic form it consists of 11 *Swaravarn* (Vowels and Diphthongs) and 38 *Byanjanbarn* (consonants). The script is written from left to right.

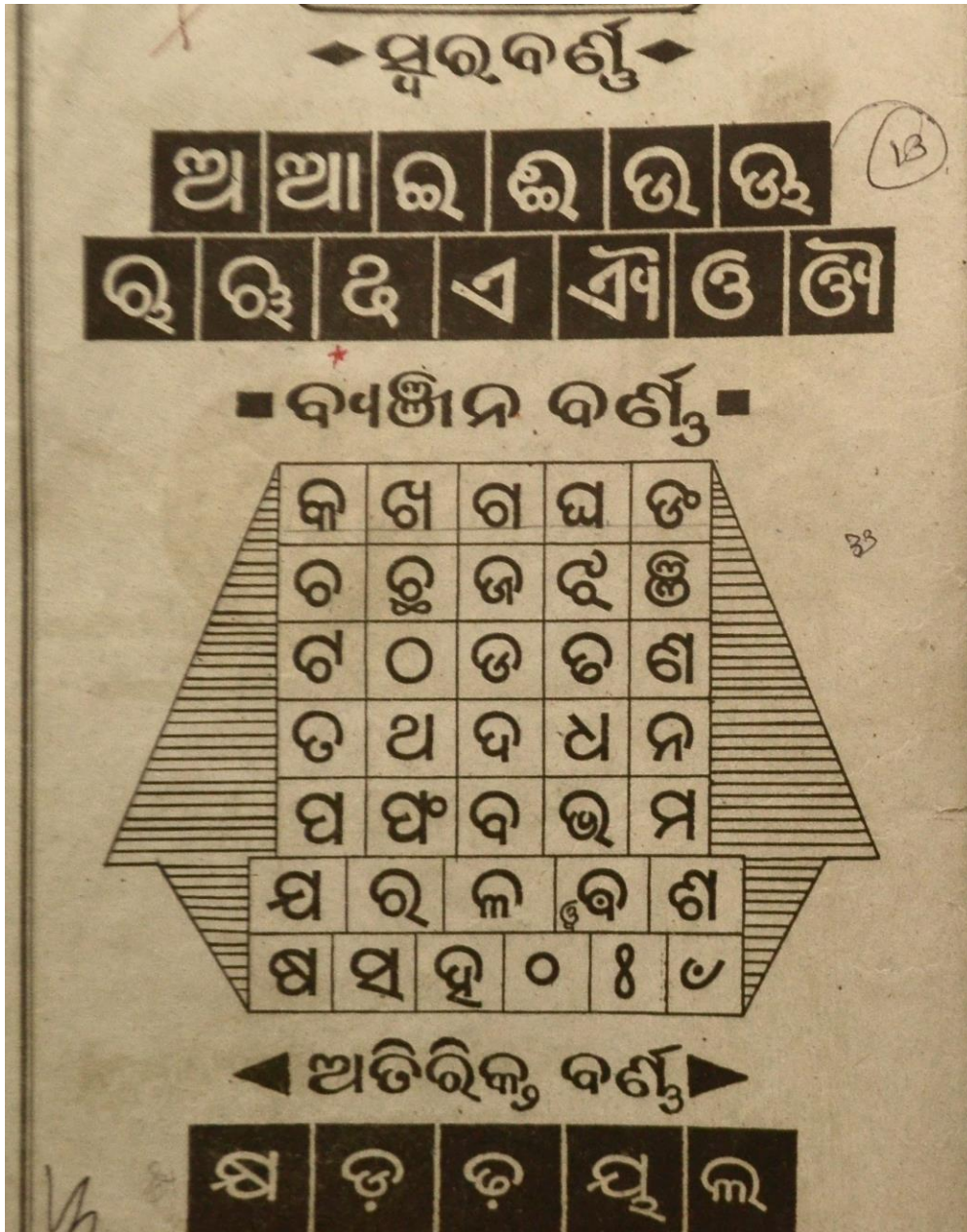


Figure.2 A book called chabila madhu varnabodh, It's a Odia grammer book for primary schools

## 2.2 Initial research

The project initiated with a search for Odia script samples and building a collection of these on the way; which included traditional literature pieces, magazines, primer books, Odia letterpress samples and Odia hand lettered samples. The following research questions were developed to give the project a direction:

- (1) What is the objective of designing this calligraphic manual?
- (2) For whom exactly are we designing this calligraphic manual?

In an attempt to answer the question, it was emphasized, that the core idea behind the manual would be for it to serve as a supplement for those who were well-versed with the Odia script, aiding them in writing it in a calligraphic style. It would also be a reference for type-designers and other people who would be working in this field. Even when the world is so well connected today, it still extremely difficult for one to find authentic information about regional scripts and the information available over the internet is poor and not legitimate.

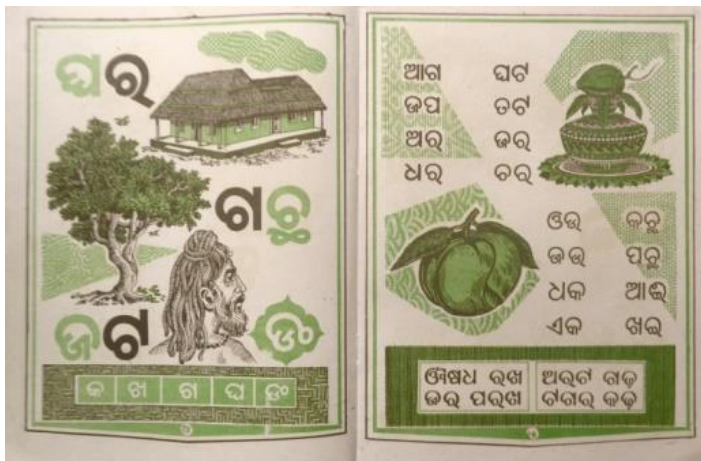


Figure.3 A page from primer books



Figure.4 A page from primer books

Data was collected through photo documentation, interviewing teachers, museum experts and artists and visits to the National Archive, New Delhi. The research involved finding information about history of the script, the cultural trends affecting the script, anatomy

of the letterforms and finding relevant examples for reference, to be incorporated while designing the calligraphy manual. National Archives of India , Odisha State Museum has a significant amount of books which answered a lot of the research questions by providing details about the history of Odisha, the Odia language and Odia script, and details about Palm leaf manuscripts. A visit was made to Odisha to gather an understanding about how children learn such a beautiful and complex language.

Interviews were conducted with school teachers who taught Odia writing to primary classes to learn about their teaching methods, the difficulties faced in teaching, learning and practising the script writing and about the quality of writing skills that students acquire over their years of primary schooling.

The interviews informed that except in Government schools, all CBSE and ICSE schools start teaching, reading and writing Odia from class 1 and initially they start writing from the *letter Tha*. The state government schools had Odia as their primary language. Few other questions put forward were:

- (1) How do teachers improve a child's handwriting in Odia?
- (2) How is the grammar of the Odia script taught to students?
- (3) How is the role of the *Matras* taught and positioned while writing?



Figure.5 Children's handwriting in Odia handwriting book

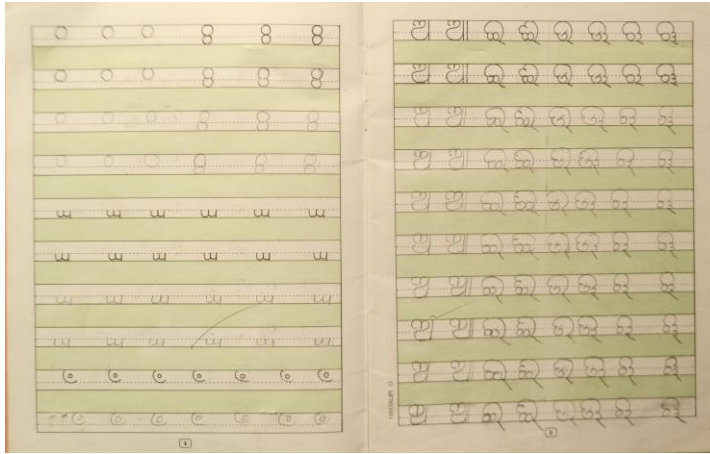


Figure.6 Some basic strokes explained in a Odia handwriting book

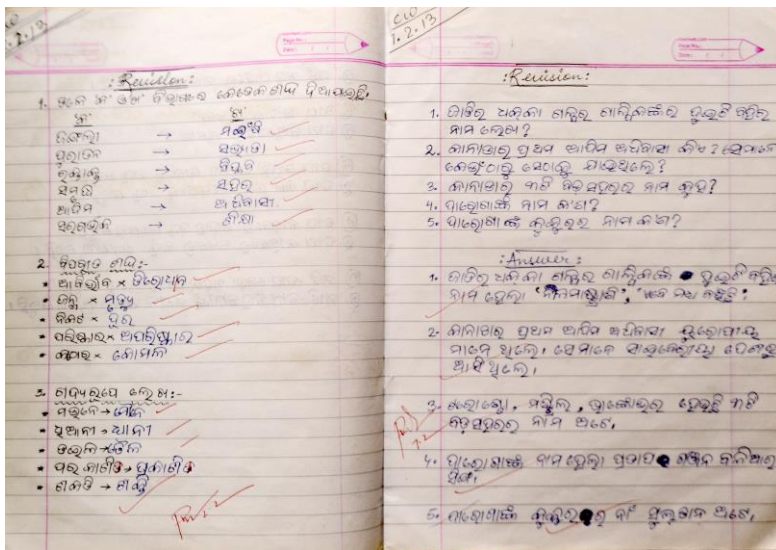


Figure.7 A student's class notebook

One of the important points that teachers mentioned was that when they are setting up question papers and they have to type the questions on the computer, there are a lots of conjuncts which are not supported so they write a simpler basic version of that conjunct .This leads to a doubt in child's mind about which letterform should they write. Another important insight which came forward was that the present Odia fonts are not yet fully designed to support the complete conjuncts set and require more research and work to be done on them. A visual documentation of the talk with the teacher and handwritten samples of the vowels, consonants and *Matras* was taken for reference for the project.

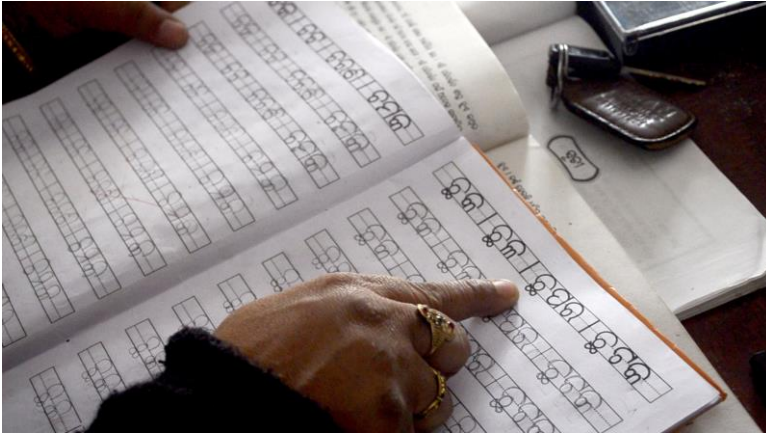


Figure.8 Teacher explaining about a letterform

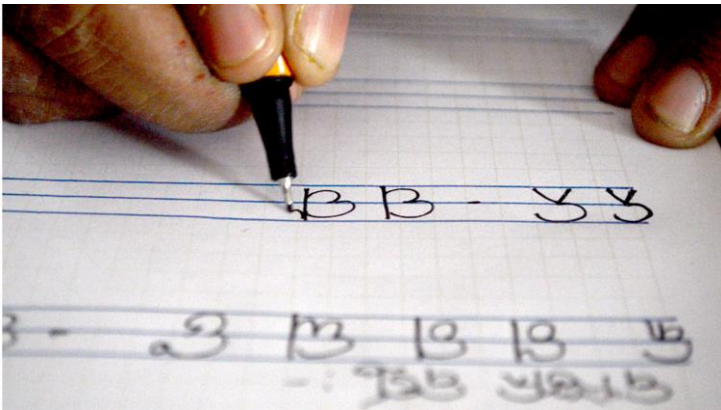


Figure.9 Primary school teacher's handwriting sample

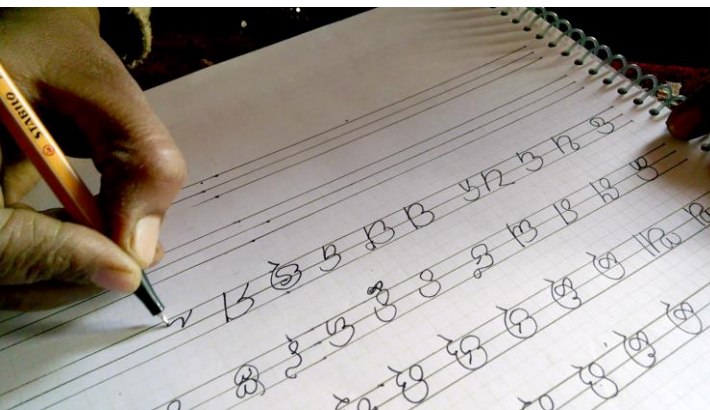


Figure.10 Handwriting sample

Another interview was conducted with a painter who does Odia calligraphy using a paint brush. They get training from an regional institute for Odia lettering. It was enquired that there was no book that would be referred to while learning calligraphy in Odia. There were a lot of very interesting observations made while



observing the painter as he was doing writing. His hand movements and how was he breaking up the letters to draw letterforms for getting the right proportions was documented. The interesting part was that he was simultaneously ensuring the proportions of the letterforms and was balancing them too in the calligraphy.



Figure.11.1 Step one, drawing the top left curve of the letterform

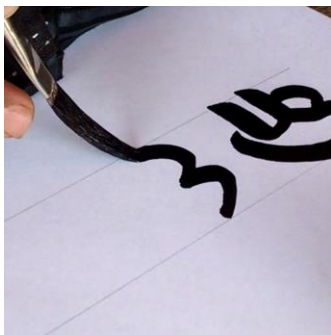


Figure.11.2 Step two, drawing the bottom left of the letterform

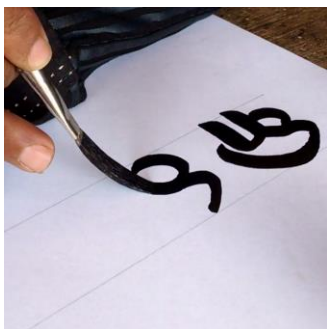


Figure.11.3 Step Three, drawing the bottom circle of the letterform



Figure.11.4 Step four, drawing the upper right of the letterform



Figure.11.5 Step five, drawing the final vertical stem of the letterform

A few examples of signboards, billboards were also documented from the streets of Bhubaneswar and Rourkela as reference samples of Odia Lettering.



Figure.12 Odia poster



Figure.13 Billboard advertisement of an Odia Soap show



Figure. 14 Odia hand lettering on wall in some shop

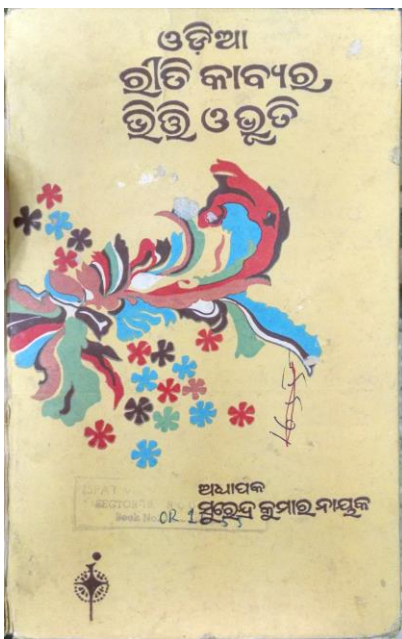


Figure. 13 Book cover of a book on Odia poems

### **2.3 Choice of calligraphic tools**

The project started with learning and understanding how to do *Devanagari* and Latin calligraphy. *Devanagari* uses left canted tools and Latin uses right canted tools. References to some calligraphic samples available on internet were also taken, which was collected in the initial research. This step was taken to derive an understanding about how to write Odia script in calligraphy and to find a suitable writing tool to be used.

#### **2.3.1 Form wise grouping**

The decision to be made was regarding which angle to choose for the script and for the same a letter-form had to be developed first, for which a form-wise grouping of the letterforms was done. There were a lot of problems while arranging the letterforms in groups like the most basic groups were the one with a vertical bar and the one without the vertical bar but many of the letterforms fell into multiple groups and there were some letterforms which were very distinct from the rest of the letterforms thus not fitting in the grouping criteria.

Formwise Grouping

୩ ୯	ଅ ଆ ଥ ଧ ଣ
୫	ଢ଼ ଢ଼ ଢ଼ ଢ଼
୦	ଢ଼ ଢ଼ ଢ଼ ଢ଼
୦	କ କ କ କ
୨	ଖ ଖ
୦	ଙ
୦	ଘ ଘ
୩ ୧	ଙ ଙ ଙ ଙ
୫	ଚ ଛ ଛ ଛ
୩ ୯	ପ ଫ ଖ ଘ ଘ ଘ ଘ
୫ ୩	ଜ ଜ ଢ଼ ଢ଼ ଢ଼ ଢ଼ ଢ଼ ଢ଼ ଢ଼
	ଠ ଏ ଥ

→ These three consonants do not fall in any of the groups.

Table 1. Formwise grouping of the letterforms

2.3.2 Comparative analysis

After the form wise grouping of the letterforms a comparative form analysis was done to decide as to which tool is to be chosen to be taken forward. Since the Odia script used to be written on palm leaf and inscribed with a iron stylus it already

had a mono-linear form. So the decision to be made was between the left canted and the right canted tools. For narrowing down letter form was taken from each group and its positive and negative points were compared to figure out which angle should be taken forward. After the analysis the right canted tool was chosen as the characters were better resolved when written with this angle. The end strokes of all the letterforms of the “e” group were well balanced and the inner counter space in most of the letterforms was also resolved and balanced.

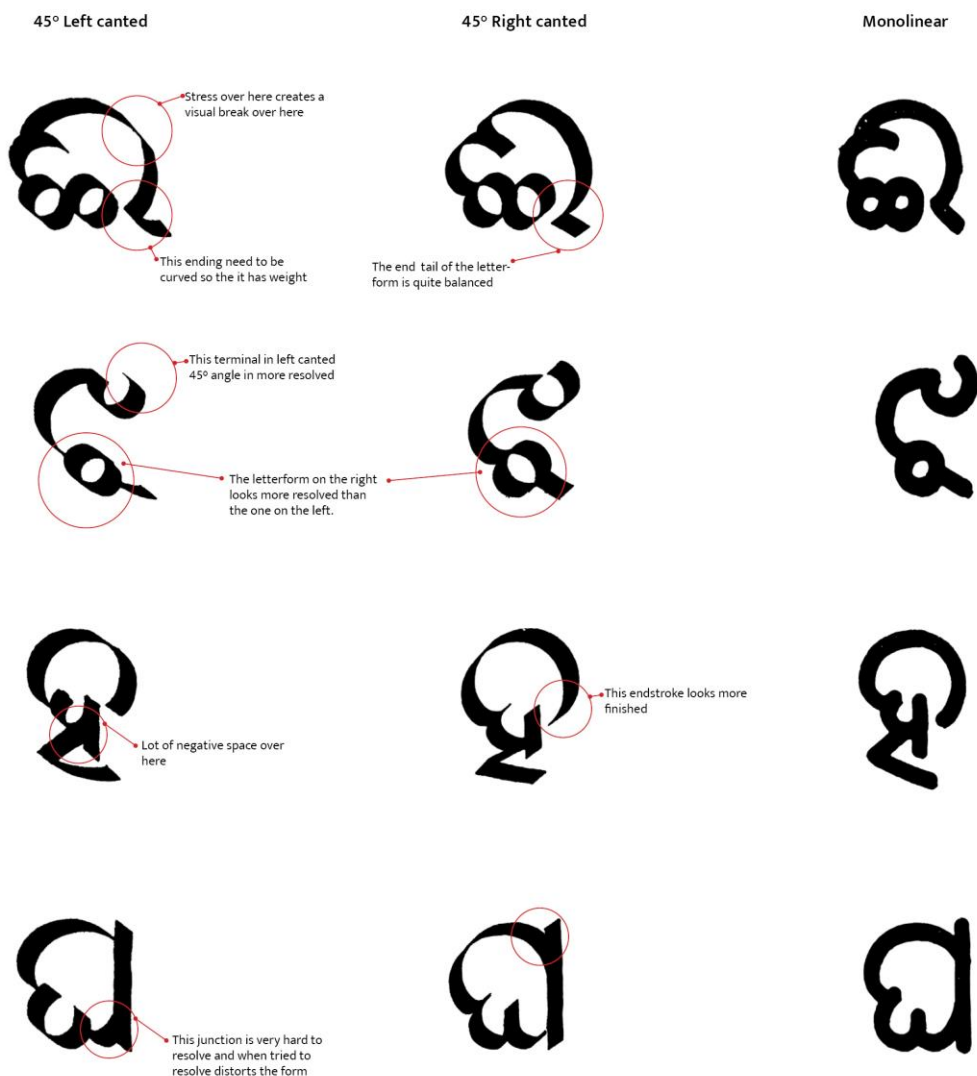


Figure. 15 Comparative form analysis in between the left canted angle and right canted angle

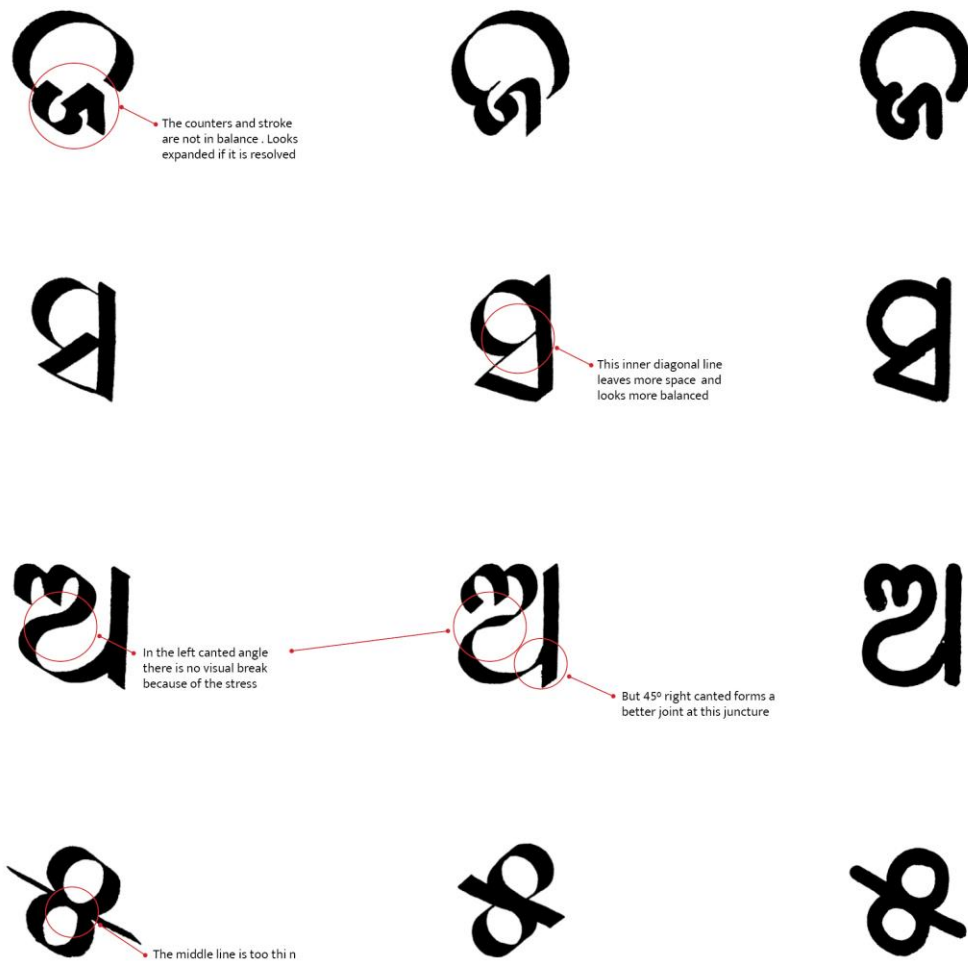


Figure. 16 Comparative form analysis in between the left canted angle and right canted angle

## 2.4 Determining the X-Height

The next step was to determine the x-height for the letterform. The process followed involved taking few complex forms (consonant and conjuncts) and writing them in different X-heights and figuring out which X-height would be suitable for the script. Odia has a lot of conjuncts and their forms are also very complex so it is really hard to accommodate most letterforms in lower X-height. Also, keeping in mind that it is supposed to be for learning calligraphy, the users should feel

comfortable while writing and not feel that the conventional form of writing has been tampered with.



Figure. 17 A consonant and a conjunct drawn on different ladder heights

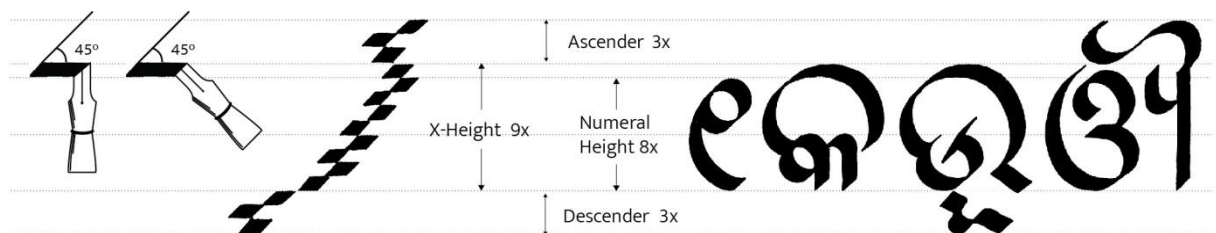


Figure. 18 X-Height, ascender and descender height

## 2.5 Instruction for writing letterforms

After determining the X-height, the essential task was deciding the step by step instructions about how to break a letterform so that it is was easier to learn, write and replicate in successive attempts.

### 2.5.1 Basic strokes

Written iterations of the Odia script were done using the right canted tool from here on to aid in further analysis and in making type-design decisions. The only source of information found about the letterform structure was the primer books, the handwriting mannerism and the way the painters write. Using these as reference work was done on the letterforms keeping in mind the rightful division of the letters so that it is convenient to write for a learner.



The first step the user needs to understand is about the basic strokes in Odia script so that one can practice those first and it would make it be easier and comfortable in writing the letter forms. The basic strokes in Odia script were figured out. Since Odia is quite circular in nature the user needs to be trained to be good at circular strokes.

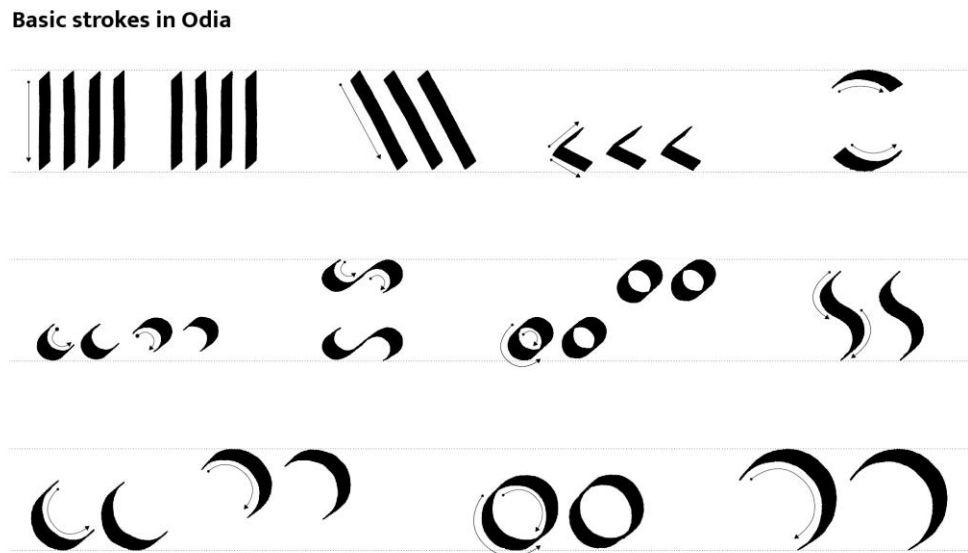


Figure.19 Basic strokes for drawing Odia letterforms

### 2.5.2 Vowels, Consonants and Matras

In calligraphy the construction of the letterforms with good proportion is essential and to achieve that is an iterative, two and fro process of writing a letterform and making minute adjustments to it and then building on the previous forms until the form is visually satisfying. The counter spacing in the letterforms are also very important i.e. both the positive and negative spaces should be in harmony. All the individual letterforms should visually resemble the same family and no form should look too expanded or condensed. Since the numbers have less complexity the ladder height of the numerals were set to 8 ladder height. Thus, a step by step numbered instruction was devised so as to provide easier guidance such that user would be able to learn proper basic proportions for all the vowels, consonants, *matras*, and numerals. Since there is no guide or authentic reference on the instruction about the placements of the *matras* reference to device a set of instructions was taken from primer books, handwritten samples, school textbooks, and other resource material.



Figure. 20 Iterations with letterform “dha”

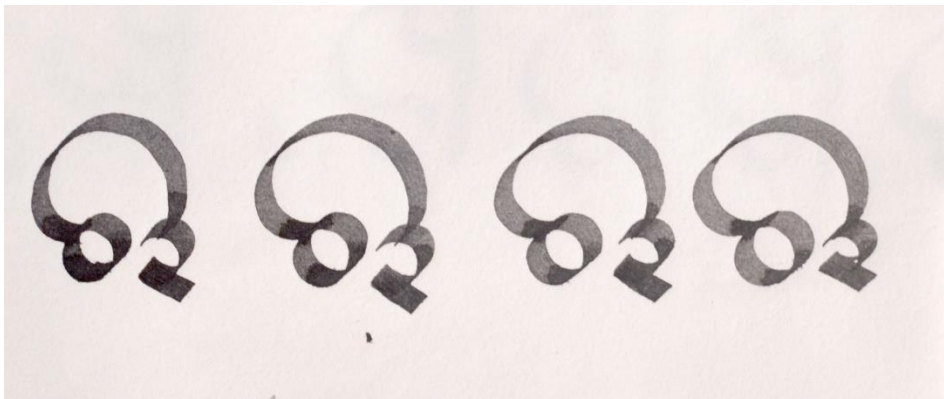


Figure. 21 Iterations with letterform “r”

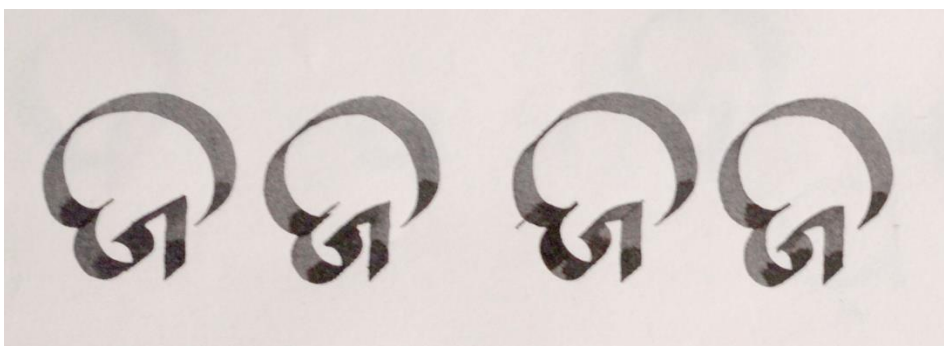


Figure. 22 Iterations with letterform “ja”



Figure. 23 Iterations with letterform “ña”

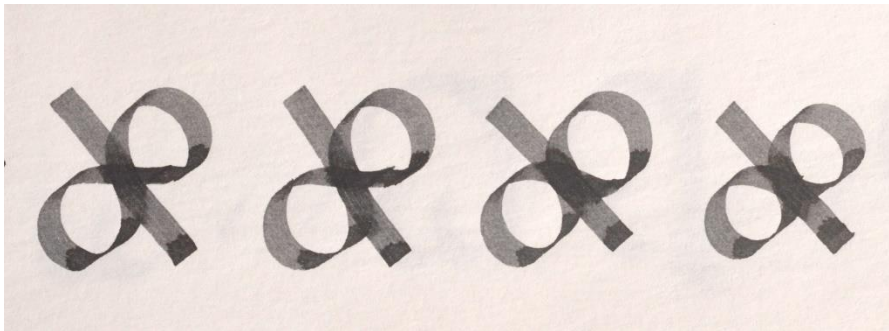
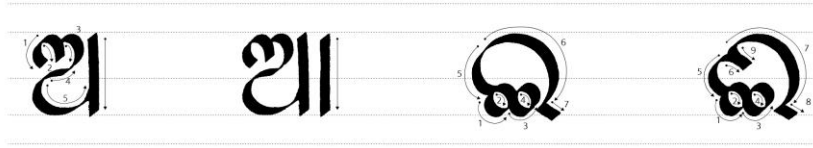
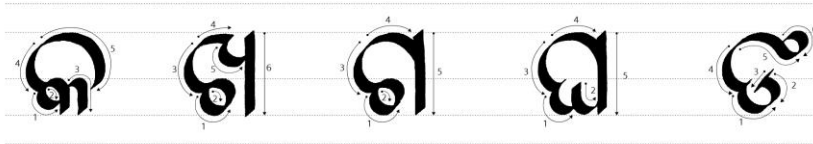


Figure. 21 Iterations with letterform “5”

Vowel



Consonants



Numbers

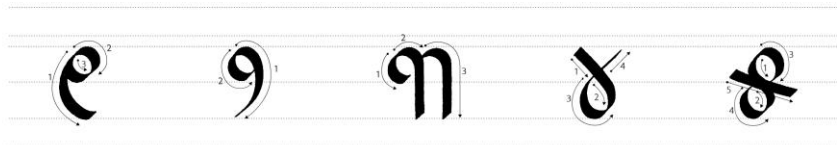


Figure. 21 Few letterform samples with step by step instructions on how to draw them



Figure. 21 Samples word and a sample text written in Odia calligraphy

#### 2.5.4 Experimenting with Odia Calligraphy

Practising formal calligraphy would help one understand the basic structure of letterforms and its components, proportion and guidelines. It is very important to understand the structure of a letterform before modifying it. Through structural modifications to the skeleton separating the components, simplifying, stylizing, decorating and enhancing specific features - a variety of letterforms can be created. These letterforms can further be explored with the use of different tools, surfaces and techniques. (Method for exploration of letterforms was taught by Prof. Santosh Kshirsagar.)



Figure. 21 Sample explorations of Odia letterform “Kha”

#### 2.6 Conclusion

The script is an important part of any language. Considering the current scenario of the visual aspect of lettering, type design, digital type, the lack of Structured information and reliable sources of learning its script writing; the proposed instruction manual for calligraphy would be a small start towards a standardized approach for Odia calligraphy writing and would serve as a resource for type designers and people related to this field. The paper also highlights the nuances of calligraphy and the methodology adopted to develop a calligraphic style of a script which can be adopted or referred to further developments in terms of design for Odia as well as other Indian scripts.

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## References

<sup>1</sup> Census 2001 Language data

[http://lsi.gov.in/MTSI\\_APP/%28S%280hko52y4jzdmkbadpdokgw3a%29%29/Login\\_Pages/MTSI\\_FinalReportFileName.aspx?eqs=2&eqs1=Orrisa](http://lsi.gov.in/MTSI_APP/%28S%280hko52y4jzdmkbadpdokgw3a%29%29/Login_Pages/MTSI_FinalReportFileName.aspx?eqs=2&eqs1=Orrisa)

<http://www.loc.gov/catdir/cpsol/romanization/oriya.pdf>

The evolution of the oriya language and script, K.B. Tripathy

Thik padha thik lekha, Govt of Odisha

The word is sacred, sacred is the word, B.N. Gowswamy, National mission for manuscript, National archives of India

Introduction to Manuscriptology, R.S. Shivaganesha Murthy

Chitra-pothi: Illustrated Palm-leaf Manuscripts from Orissa, J.P. Das

Study of Oriya letterform, S.K. Mohanty