

**EVOLUTION OF DIGITAL BENGALI TYPEFACE & DEVELOPMENT OF
BENGALI TYPEFACE SOMOYER SROT & NONDON**

by

RAHMANUR RASHID HILLOL

ID: 143-40-167

This Report Presented in Partial Fulfillment of the Requirements for the Degree
of Bachelor of Science in Multimedia and Creative Technology.

Supervised By

Mizanur Rahman Ashik

Lecturer

Department of MCT

Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Project titled “**Evolution Of Digital Bengali Typeface & Development Of Bengali Typeface Somoyer Srot & Nondon**”, submitted by Rahmanur Rashid Hillol to the Department of Multimedia and Creative Technology, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Multimedia and Creative Technology and approved as to its style and contents. The presentation has been held on *29/11/2018*.

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Associate Professor & Head
Department of MCT
Faculty of Science & Information Technology
Daffodil International University

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Adjunct Associate Professor
Department of MCT
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

Md. Samaun Hasan
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Department of MCT
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

Professor Dr Mohammad Zahidur Rahman
Professor
Department of CSE
Jahangirnagar University

External Examiner



Declaration

I hereby declare that this project has been done by us under the supervision of **Mizanur Rahman Ashik, Lecturer, Department of MCT** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

Supervised by:

A handwritten signature in black ink, appearing to read 'mjanis', is written below the 'Supervised by:' text.

Mizanur Rahman Ashik

Lecturer

Department of MCT

Daffodil International University

Submitted by:

A handwritten signature in black ink, appearing to be a stylized 'R' followed by 'a' and 'h', is written below the 'Submitted by:' text.

Rahmanur Rashid Hillol

ID: 143-40-167

Department of MCT

Daffodil International University



ACKNOWLEDGMENT

At first, particularly we are thankful to the Almighty Allah for blessing us and enabling to complete this Project paper. Designing Bengali Typeface is a very painstaking and time-consuming task and attending a project like this leaves us with a store of knowledge. This type of project will help us to contribute more to the Bengali Language. I'm thankful to my project coordinator. He has been guiding me on this project for a bit long time with his experience so well that we can understand very easily and get proper bits of knowledge on Type Design. Typography design is a very important course for Multimedia students.

I am really grateful and wish my profound indebtedness to Mizanur Rahman Ashik, Lecturer, Department of MCT Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of "Typography Design" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stage have made it possible to complete this project.

I would like to thank Bengali Type Designers around the world for their contribution toward this language. At last, we would like to thank our classmates. Many of our friends and also many well-wishers contributed ideas and made suggestions that greatly enhanced this research report. We would like to thank them as well. At the last but not least, we are also very thankful to the Internet which was very supportive and grateful medium for completing this research report. Where this research report succeeds we share the credit, where it errors we all accept the responsibilities.

I am grateful for the support I have received throughout this project. In particular the staff of the Department of Multimedia & Creative Technology, Daffodil International University. Then I need to thank: Thouhedul Islam Himel, Javed Bhuiyan, Abrar Ulsy, Mohammad Nazimuddoula, Niladri Shekhar Bala (India), Biman Chand Mullick (UK), Jyotish Sanal(Canada), Kaushik De (Magneto Digital), Riyad Shahr Ahmed Husain (Magneto Digital), Akif Ahmed (Mindscape Communication)



Abstract

In this project, I have created multiple numbers of Bengali Typeface for the coming generation of Bengali designer & type enthusiast. My work is highly based on solid design principle and aesthetics at first modality. My goal was to create quality designer Bengali Font which can be implemented in graphic & communication design. This paper also investigates the reason behind why there are only a few numbers of Bengali typeface where there is a million English. It also focuses on the making of Somoyer Srot Typeface and the development procedure of a Bengali font and experience while doing it. This report also tried to find how today's market leader Bengali Writing tools got their place & also how they share responsibilities to change the scenario. An overview is provided of Current Bengali Typefaces that have been produced recently.



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Chapter 1

Introduction

Typography, a craft traditionally practiced by specialists, is now widespread due to the advent of the information age and digital tools. This explosion of text communication has created a need for quality typefaces. In adapting to these technologies that evolved for Latin script, Indic scripts as with many other non-Latin scripts, have an added complexity.

Given the Bangla diversity, this explosion and the rapidly growing traditional media, television, newspaper, and magazines, has caused a more urgent and pressing need for quality typefaces and language support for the diversity of scripts.

During my course of Typography Design, I had an opportunity of working under the guidance of Mr. Mizanur Rahman Ashik. During this time I created a typeface using graph paper & digital methods. Not only did I gain an understanding of the type design process with and without involving software, but I also understood the same for different scripts. It was a starting point.

It was a grief that got me interested in doing typeface design. While exploring Dhaka & different part of the country, I see countless examples of bad typography especially Bangla typography on the shop sign, book cover, packaging, ads design & more. I always thought I can make these things better. Besides the great sacrifice of our martyrs of language movement, culture, and colors of Bangla that have always drawn me. Working on Somoyer Srot was a great opportunity to harvest a pool of inspiration.

"To provide a choice for better design."

To gain language support with the existing technologies, the advent of open-type, overflow and easy availability of digital tools -typography is required to scale up and meet the technological constraints.

When one looks up for fonts in English, there are thousands, but it is not the same for Bengali scripts. There's a compromise on typography almost every time a logo needs to be made bilingual, simply because of the lack of fonts. The only way to have some kind of visual presentation to support language diversity is to take this forward and provide a choice of fonts for the designers to choose from, making the design process more efficient.



The aim of this project is to outline the story of Digital Bangla Typography/Fontography, investigate its legacy and the hurdles, understand the reasons why it is so difficult to develop Bengali font and provide an overview of currently available Bengali type designs. With an eye to the technology involved, and the constraints that designers had to face. As the subject is recent, the project is mainly based on technicality and memories of my font development process. I have tried to extensively describe the technicality with ease.

Finally, I've appended an investigation into Bengali typesetting on personal computers at the present time, as its limits will help us to grasp a more precise picture of the current situation of Bengali typography.



Chapter 2

Research and Studies

2.1. The History:

Since the 16th century, the European production of non-Latin typefaces has been defined mainly by limited knowledge of the scripts and little respect for the readers. One exception took place in the English branch of Linotype in the 1980s, where an extensive agenda of new typeface design for Arabic and Asian scripts was undertaken, gathering language experts, designers, and programmers in the same team. This new approach led to some remarkable type design, such as Linotype Bengali. From 1981, when it was released, Linotype Bengali went through prepress technology mutations without any changes, till today. A quick glimpse of Bengali typography today would reveal the ubiquity of Linotype Bengali, and the astonishing absence of competitors.

2.2. The Great Bengal:

The Greater Bengal starting from Agartala in the east and ending in Purulia district of West Bengal consists of two countries with more than 250 million Bengali Spoken people. Most marketing communication and advertising, in prints, is set in English. However, the changes that are taking place today are mainly due to the spread of mobile phones: the telecommunication companies are trying to reach people in the countryside, and they are usually poorer and less fluent in English than city people. This means a huge market of hundreds of millions of possible customers. To reach them the companies need to communicate in local languages and their printed material has to be set in local scripts.

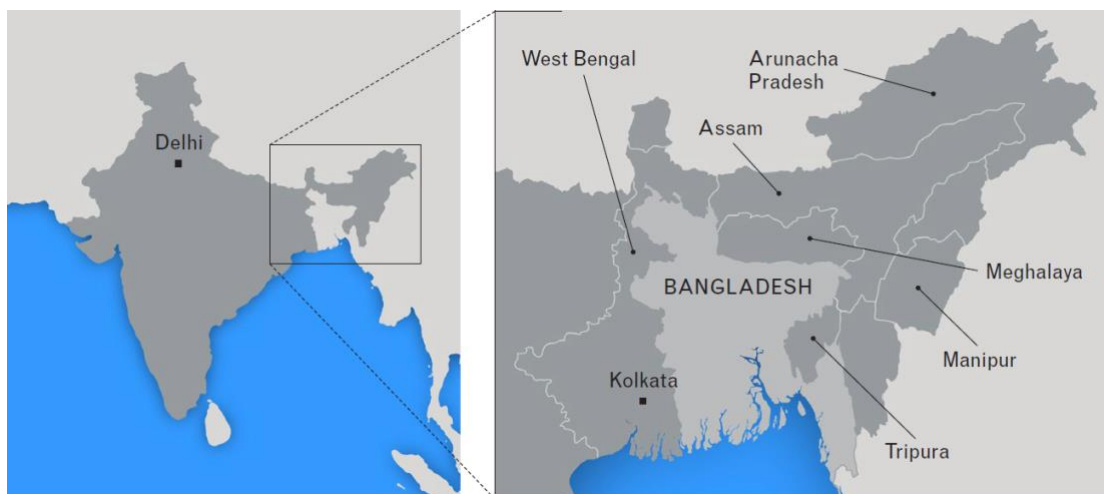


Figure1: The regions where Bengali is the official script. In the Indian states of Meghalaya, Tripura and Arunachal Pradesh Bengali are used along with other scripts, mainly Latin.

2.3. The Anatomy:

The Bengali script is evolved from ‘Siddham’ script which is an offspring of ‘Brahmi’, the origin of all Indic scripts [4]. The letterforms of Indic scripts including Bengali are more structural and compositional complex [5, 6]. All Indic scripts are very different from each other with respect to their shape, proportion, height, width, stroke ratio and path of the stroke [5].

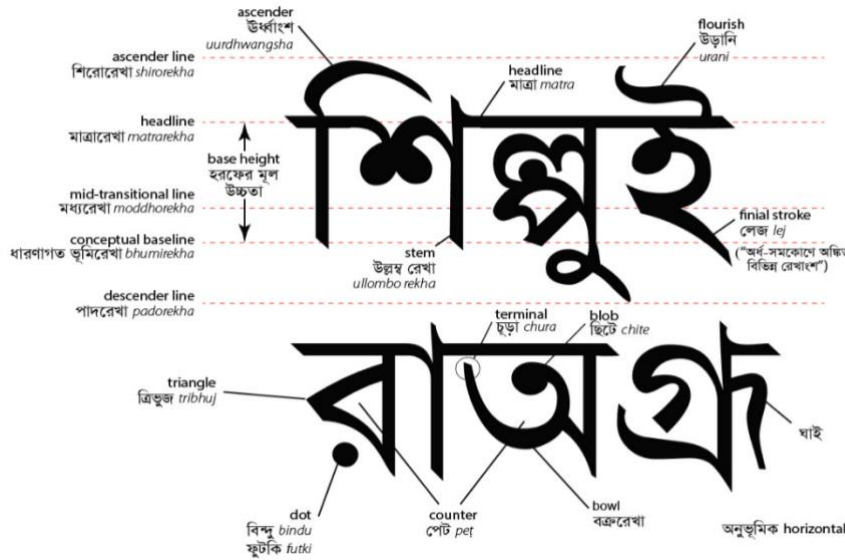


Figure 2: Anatomical Nomenclature of Bangla Typeface

It is through the means of typefaces that any script can be printed or displayed for the purpose of communication. Bengali typeface design has an elaborate history in print and publication over the last 200 years [7]. Typeface design in Indic scripts involves knowledge of calligraphy and composition of the script. Understanding the ‘script composition grammar’ of letterforms can certainly assist the type designer to design any typeface with better legibility and readability [4, 5]. The composition of Bengali script is not fully defined [8]. There is a scope for further investigation and design considerations.

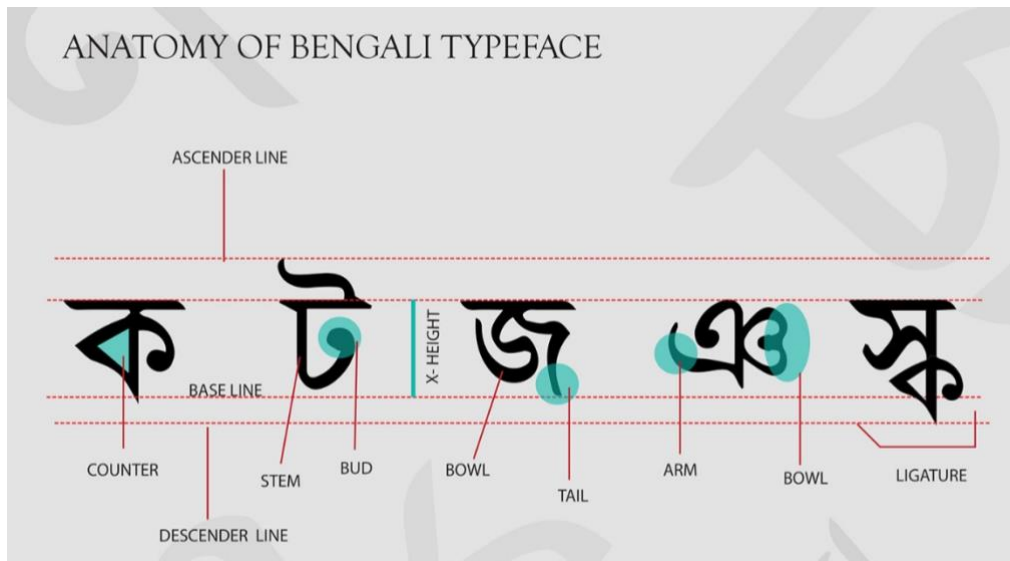


Figure 3: Simplified Anatomical Nomenclature of Bangla Typeface

Given this, the traditional communicators like design agencies and graphic designers generally work with layouts in English, while the Indic scripts are the prerogative of publishing companies for setting books, magazines, and newspapers. This chapter focuses on the implications of typesetting a Bengali text on a personal computer, analyzing the technology involved and its many problems, the strategies developed by local people and the services developed by Local software companies to address those weaknesses.

2.4. Bengali Script: An Overview

The Bengali alphabet (বাংলা হরফ) is used in the north-eastern part of India and in Bangladesh and with about 250 million users, it is one of the most widely-used writing systems in the world.

Vowels

অ	আ	ই	ঈ	উ	ঊ	ঋ
a	aa	i	ii	u	uu	r
এ	ঐ	ও	ঔ			
e	ai	o	au			

The transliteration of the letters follows the character names established by the Unicode consortium.



Consonants

ক	খ	গ	ঘ	ঙ	চ	ছ	জ
ka	kha	ga	gha	nga	ca	cha	ja
ঝ	ঞ	ট	ঠ	ড	ঢ	ণ	ত
jha	nya	tta	ttha	dda	ddha	nna	ta
থ	দ	ধ	ন	প	ফ	ব	ভ
tha	da	dha	na	pa	pha	ba	bha
ম	য	র	ল	শ	ষ	স	হ
ma	ya	ra	la	sha	ssa	sa	ha

Vowel signs

া	ি	ী	ু	ূ	্
-aa	-i	-ii	-u	-uu	-ri
ে	ৈ	ো	ৌ		
-e	-ai	o	au		

Figure 4: Bangla Letter Chart

2.5. Consonant Conjunct

One distinct feature of the Bengali alphabet is its library of consonant conjuncts - ligatures of several consonants coming together.

While some of these simply use the first half of the first letter or have it in a smaller size, many of them are fresh graphemes in themselves.



ন + ত = ত্ত
ক + র = ক্র

Figure 5: Consonant Conjunct

2.6. Birth of a ligature

In the days of movable type (early 19th c.), printing the diacritic of U provided a small challenge - it offset the following letter in some cases. Especially in the case of Sha and Ga, which often combine with U in words.

As it expended more space, added to the ink cost and caused legibility issues at the same time, the printers sought a way to get past the problem. They came up with unique ligatures for Shu and Gu, which addressed the spacing issue, and did so at a lower cost.

Thus, a ligature was born.



Figure 6: Before/ After

collisions between letters are often accepted in Bengali typography.

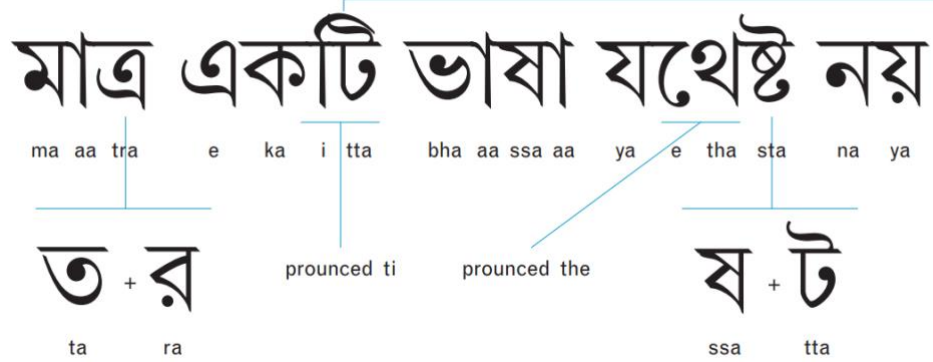


Figure 7: Orthographic analysis of a Bangla phrase with transliteration, notes and disclosing the consonant conjuncts.

Table 1 Letter anatomy table

Terminology	Borrowed Form	Description	Letter Forms
Arm	Latin [9]	A curvilinear stroke within the bound of 30 to 90 degree (approx.)	এ ঙ্গ ক
Lobe	Latin [9]	A curvilinear stroke within bound of 90 to 180 degree (approx.)	ই গ ও
Bowl	Bengali [7]	A curvilinear stroke about 360 degrees round	অ ত ড
Bud		A Blob feature connected to Arm or Bowl or Lobe	অ ঞ্জ ক খ ত
Knot	Bengali [8]	A blob feature connected to two continuous Arm or Bowl or Lobe	ম ই



Stem	Arabic [14], Bengali [7], Latin [9]	Vertical Bar	অ ক চ ন র
Half Stem	*	Short Vertical Bar	উ ছ
Shoot	*	A stroke comes out from Stem or Half Stem	অ জ
Delta	*	Connected triangular stroke	ব ক ঝ
Tail	Arabic [14], Latin [9]	A stroke comes out from main letter part individually. Most of the Ascender is Tail in Bengali.	উ ই ঙ ঐ
Wedge	*	A 'V' shaped angle at the bottom	অ ক থ
Loop	Arabic [14], Latin [9]	A round stroke with close counter	ঙ
Nose	*	A junction of two curves	উ উ ড
Dot or Bindu	Latin [9], Devanagari [6]	A Dot feature like in letter 'j'	র ড় য় ঢ়
Terminal	Latin [9]	Stroke end of main letter part	অ উ ত
Aperture	Latin [9]	Opening of Terminal	অ উ ত
Leg	Latin [9]	A stroke balancing the main body part	ই ঙ্গ দ

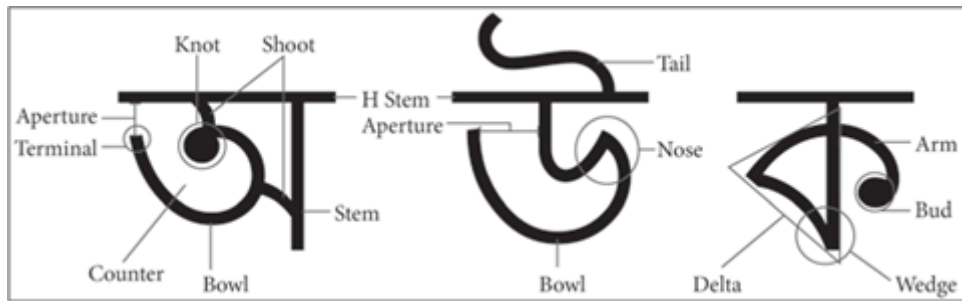


Figure 8: Letter anatomy of 'A', 'Harsh-u' and 'Ka'

2.7. Evolution of Bengali Script

The Bengali language dates back to around 11th c., emerging from an eastern offshoot of Brahmi. It is the administrative language of Bangladesh and one of the official languages of India. Additionally, it's the 5th most written language in the world.

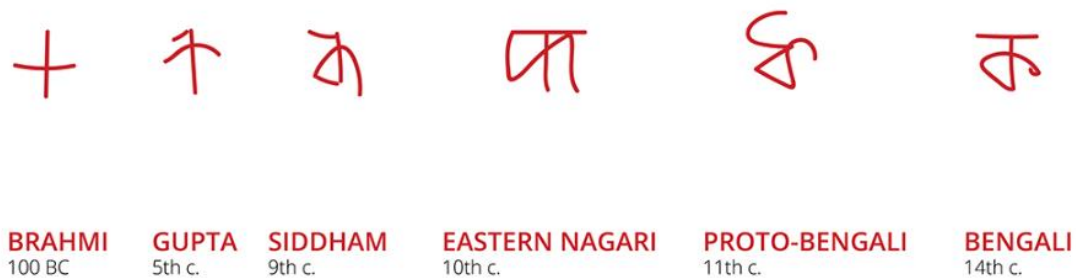


Figure 9: Bengali script of Different Era

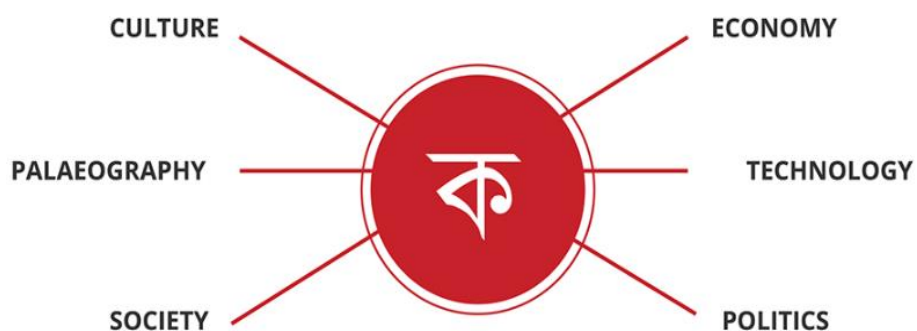


Figure 10: Factors behind the evolution

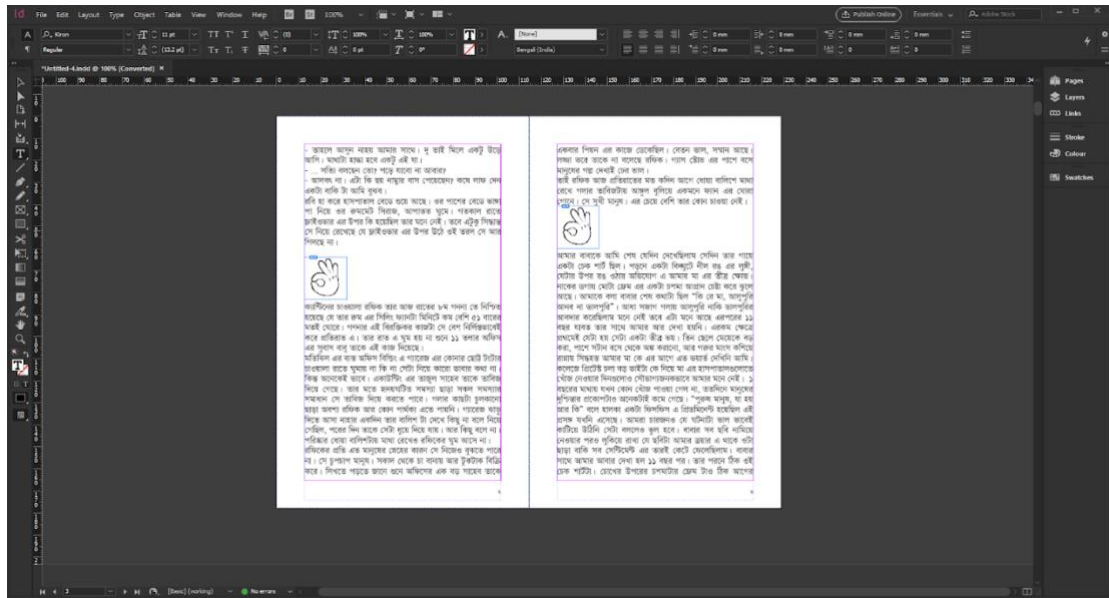


Figure 11: Interface of Bengali Typing in DTP Software, Indesign



Chapter 3

Project Workflow

3.1. Software:

Though Typeface development is an insanely complex task in case of technicality, the entire process used only two software.

3.1.1. Adobe Illustrator

Adobe Illustrator is a vector graphics editor developed and marketed by Adobe Systems. Originally designed for the Apple Macintosh, development of Adobe Illustrator began in 1985. Along with Creative Cloud (Adobe's shift to monthly or annual subscription service delivered over the Internet), Illustrator CC was released. The latest version, Illustrator CC 2018, was released in March 2018 and is the 22nd generation in the product line. Adobe Illustrator was reviewed as the best vector graphics editing program in 2018 by PC Magazine

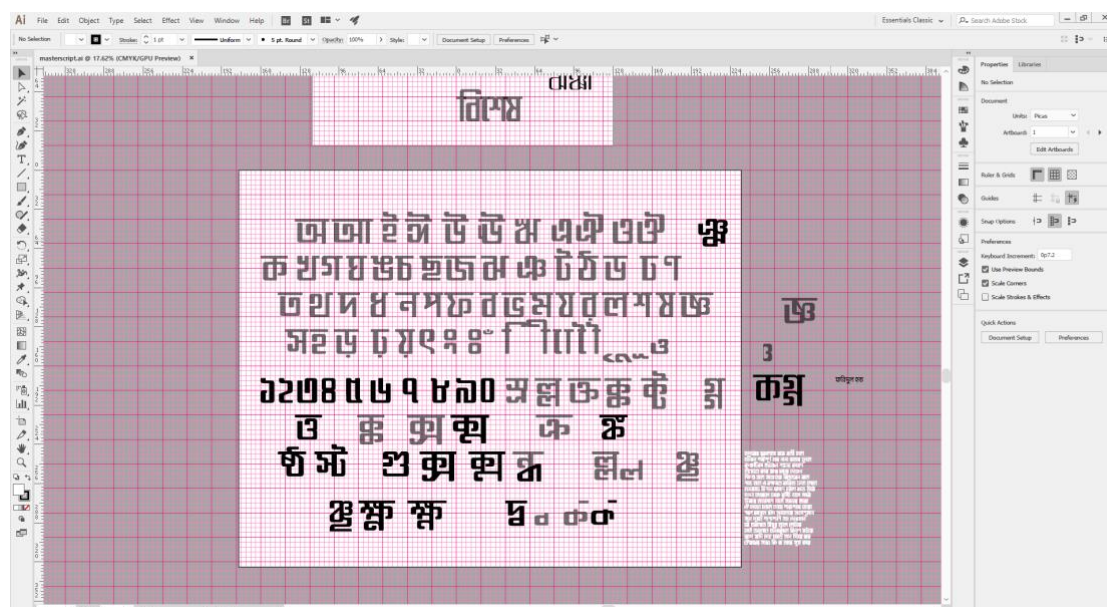


Figure 12: UI of Adobe Illustrator

Grid tool, pen tool, corner tool, shape tool is the things that helped me to develop a vector version of my design.

3.1.2. Fontlab Studio

Another tool that helped me to build the font for public use is Fontlab Studio. This great tool is widely known in the world of type designers as a trusted & user-friendly app.

FontLab is both the name of a company, Fontlab Ltd, Inc. and the name of their flagship font editor product (although version 5 was called FontLab Studio). Since the early 2000s,

FontLab has been the dominant software tool for commercial/retail digital font development. This is partly because the once-dominant Fontographer by Altsys ceased development after its acquisition by Macromedia. During Macromedia's merger/acquisition by Adobe Systems in 2005, Macromedia sold Fontographer's rights and code to FontLab Ltd, so FontLab now owns and maintains both of the most popular font editing/development tools.

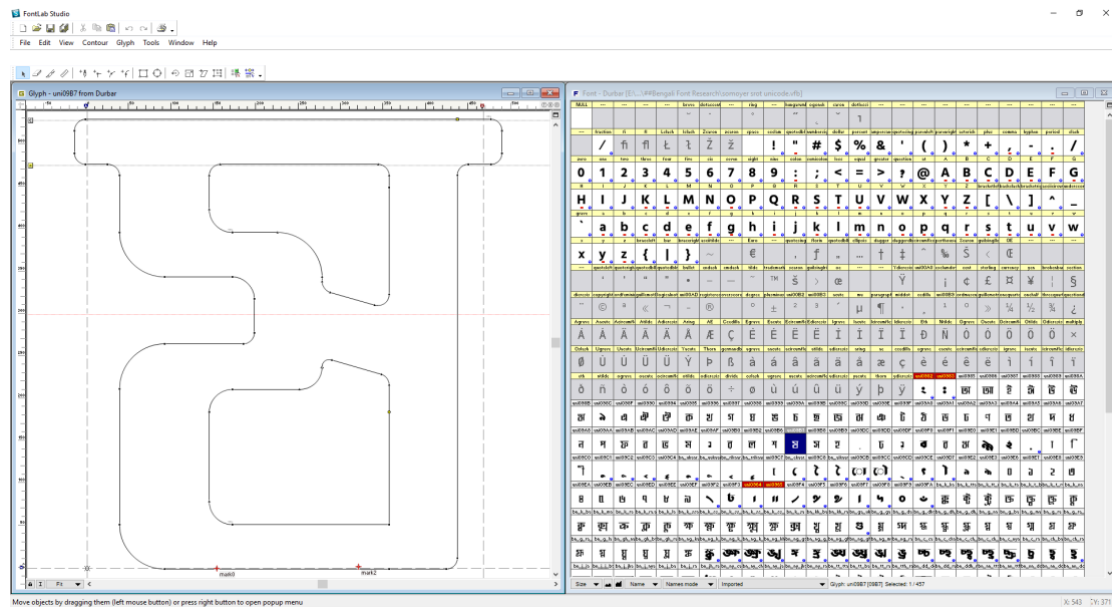


Figure 13: UI of FontLab Studio 5

3.2. Project Approach

My approach to this project started with research. I have to research on the evolution of the script, understanding how strokes form characters, the ligatures, and the cultural context of the script. After researching previous works in this sector, I started working on my design process.

3.3. Design Process

Stage 1: Encoding

Decide the character-set of the type-family

There are multiple types of Keyboard Encoding Available in Bangladesh & India. These type encodings are usually based on a typing tool. For example, Bijoy uses ANSI based encoding. Because of technical limitations, Bijoy Developer has to face in the late 80s. Bijoy is undoubtedly the most popular typing tool for Bengali in Bangladeshi Design & Publication Industries. Thus Bijoy failed to cope up with time and stopped developing their tool structure and new bengali typeface. On the contrary, It is a global compliance to follow Unicode



Consortium's standard encoding while developing Bengali typeface. So I choose Unicode as the preferred encoding for my font.

Stage 2: Letterform

Understanding the letterforms of each character in the script

In this stage, I had to go through intensive study on the letterforms of Bengali Typefaces.

Stage 3: Interpolation

Designing a type family of four weights i.e., light, regular, and bold.

To Design the Italic Version of the font, I have to apply an effect to the entire typeset.

This effect option is available on the tools of Fontlab

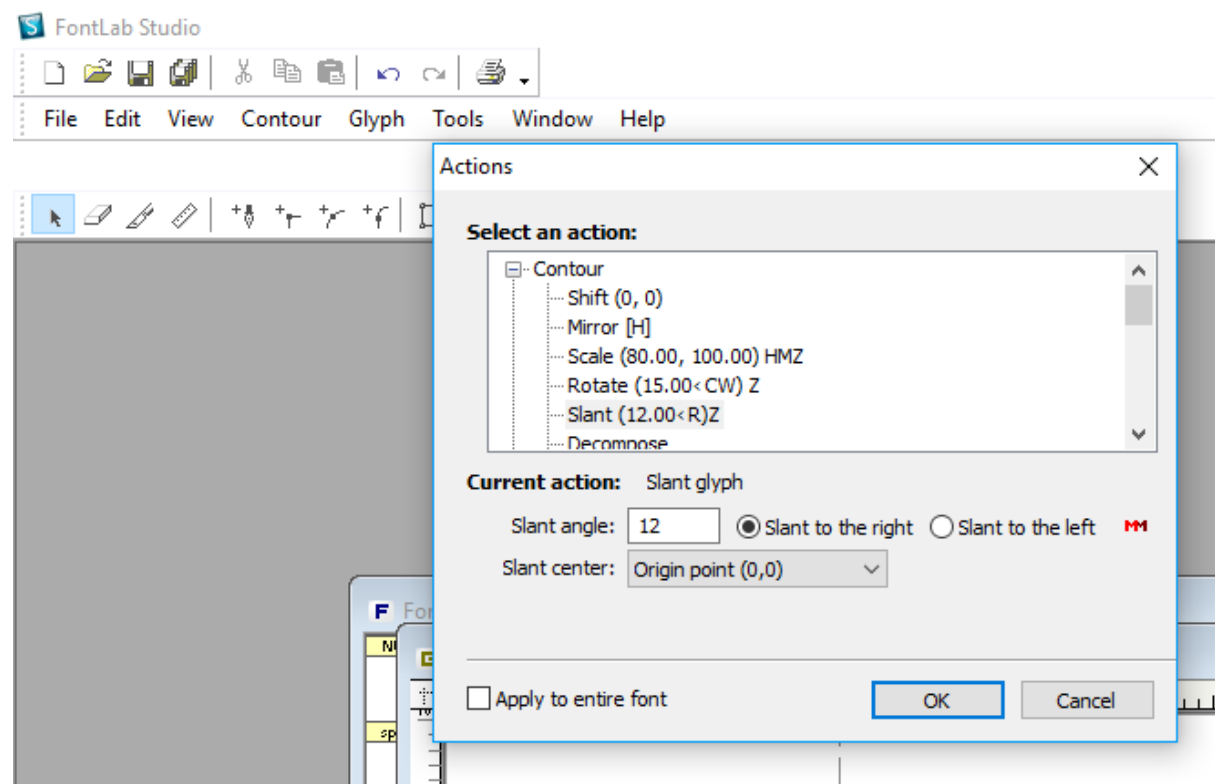


Figure 14: Italic Effect of the Font

Stage 4: Spacing

Creating Individual spacing for each character.

Each & every letter's spacing had to be adjusted manually to maintain uniformity all over the font. On the figure below, two dashed vertical line defines the space for each character.

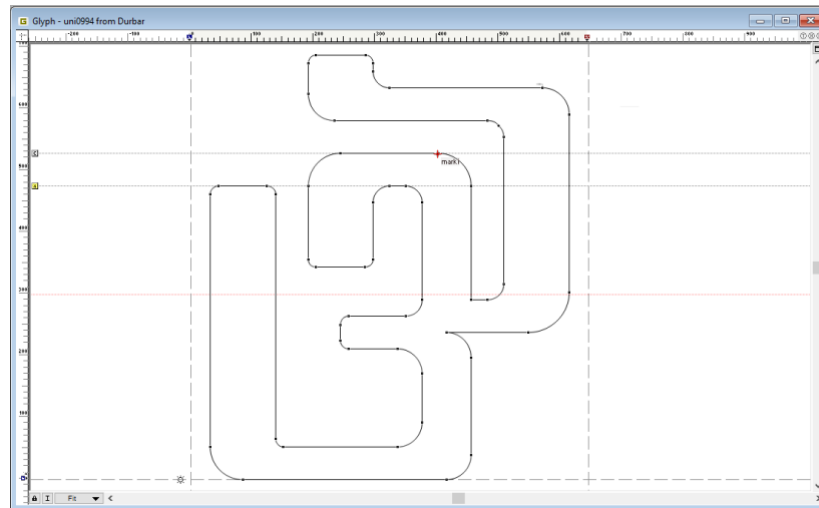


Figure 15: Character Spacing adjustment on Fontlab

Stage 5: Completing Nomenclature & Adding Font Info

This part is very important to make the font usable for the public. In this stage, I went to font info setting and added necessary information before exporting the font. Each & Every field have to be filled up before exporting the font.

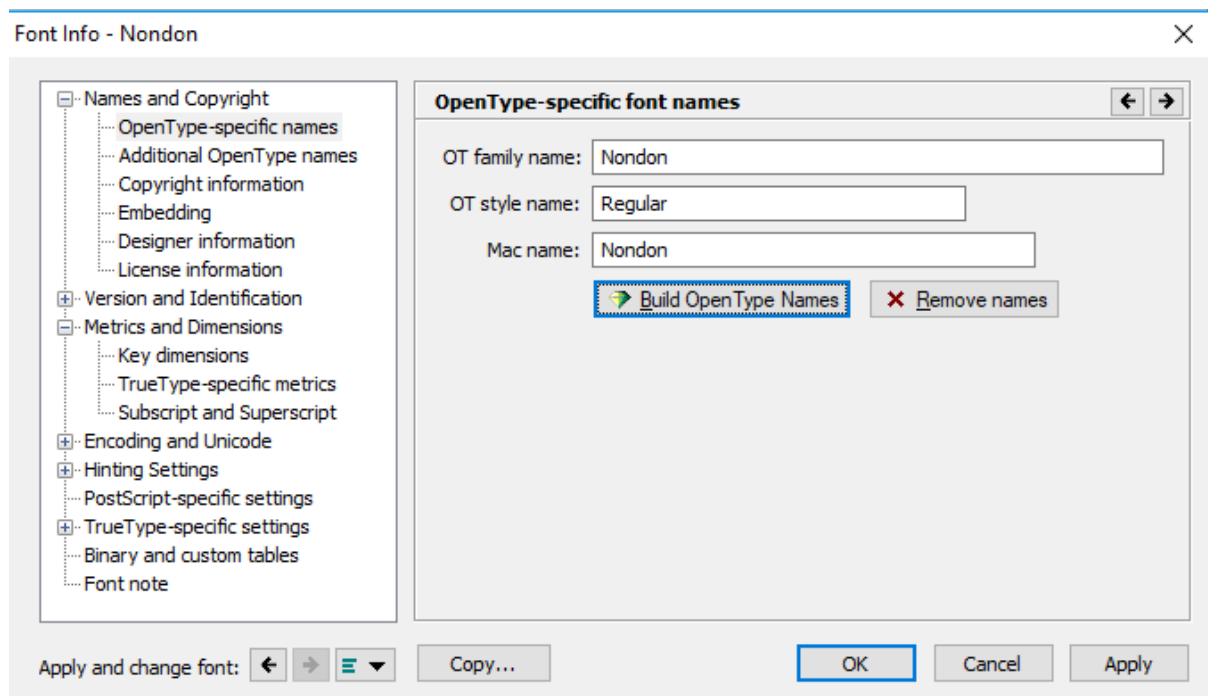


Figure 16: Adding Names & Information in Font Info Setting



3.4. Stages in Design

Stage 1: In this stage, I've prepared grid setting like the following. This will be my canvas on the entire workflow. To set up this preferred grid, I went to Adobe Illustrator Preference Setting and went further to Guides & grid setting, Setting is like following, Gridline Every: 10points, Number of Gridline: 10. The grid will look like this,

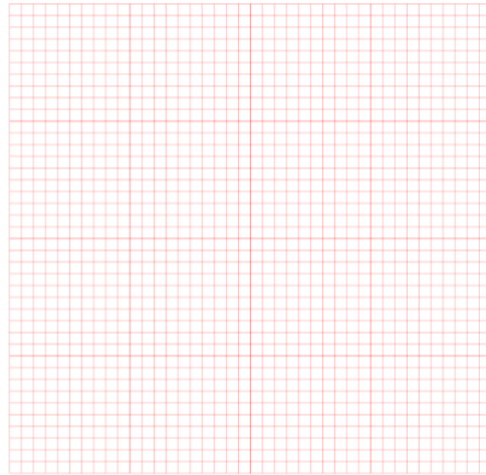


Figure 17: The Drawing Grid

Stage 2: In this stage, I blocked out character with the basic geometric shape. Point to be noted that all these shapes are aligned to the gridline.

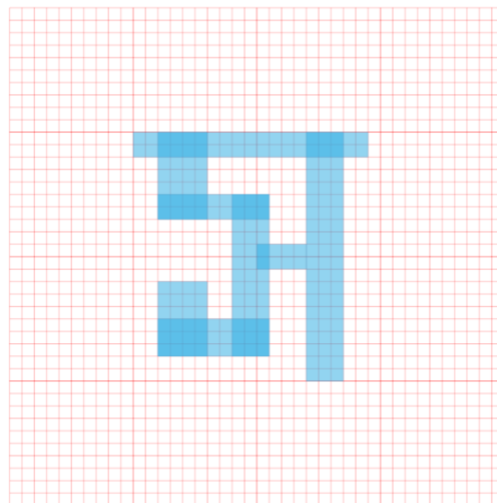


Figure 18: Blocking Out the letter structure



Stage 3:

In this stage, I applied my styling element to the blocked out design by rounding the corners.

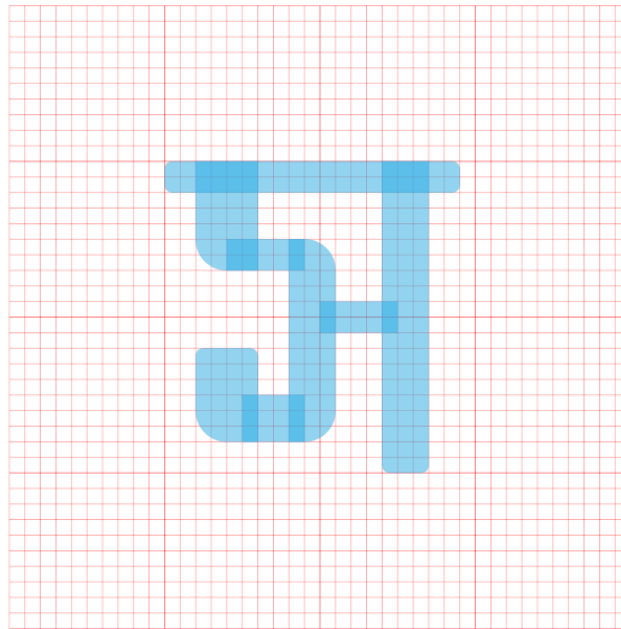


Figure 19: Adding Unique Design Feature

Step 5: Fine tuning the design

In this stage, I joined the individual shapes together and made a minor adjustment if needed.

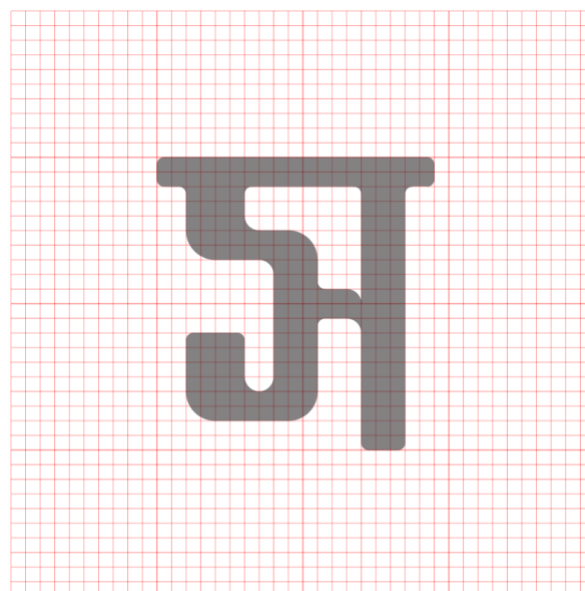


Figure 20: View after fine tuning

Each curve has its own mathematical properties.

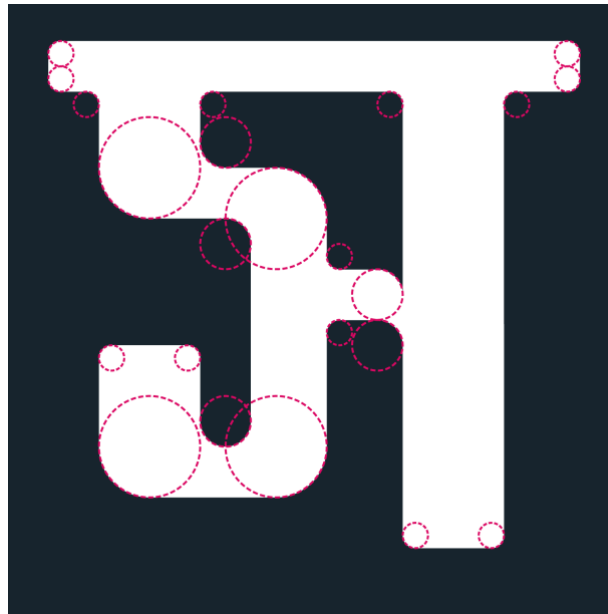


Figure 21: Visual Perception of Uniform round corner around the design

Script Feature:

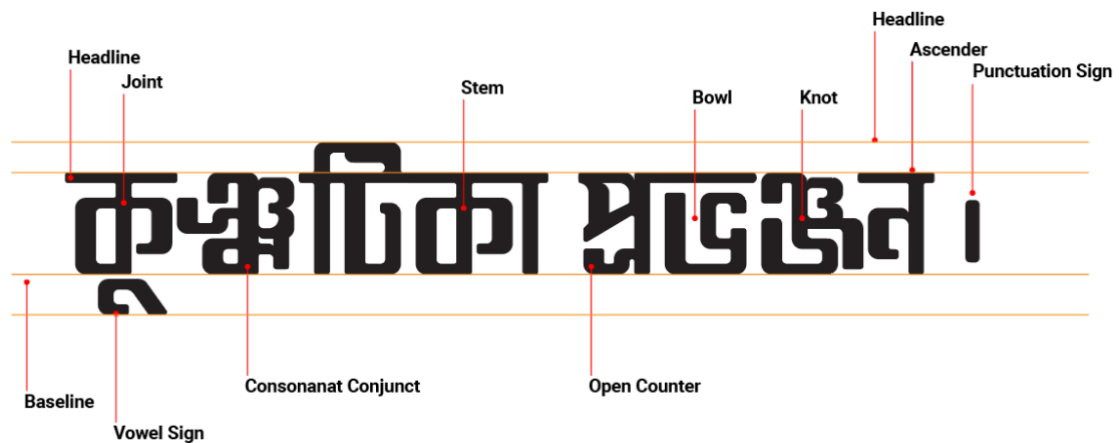


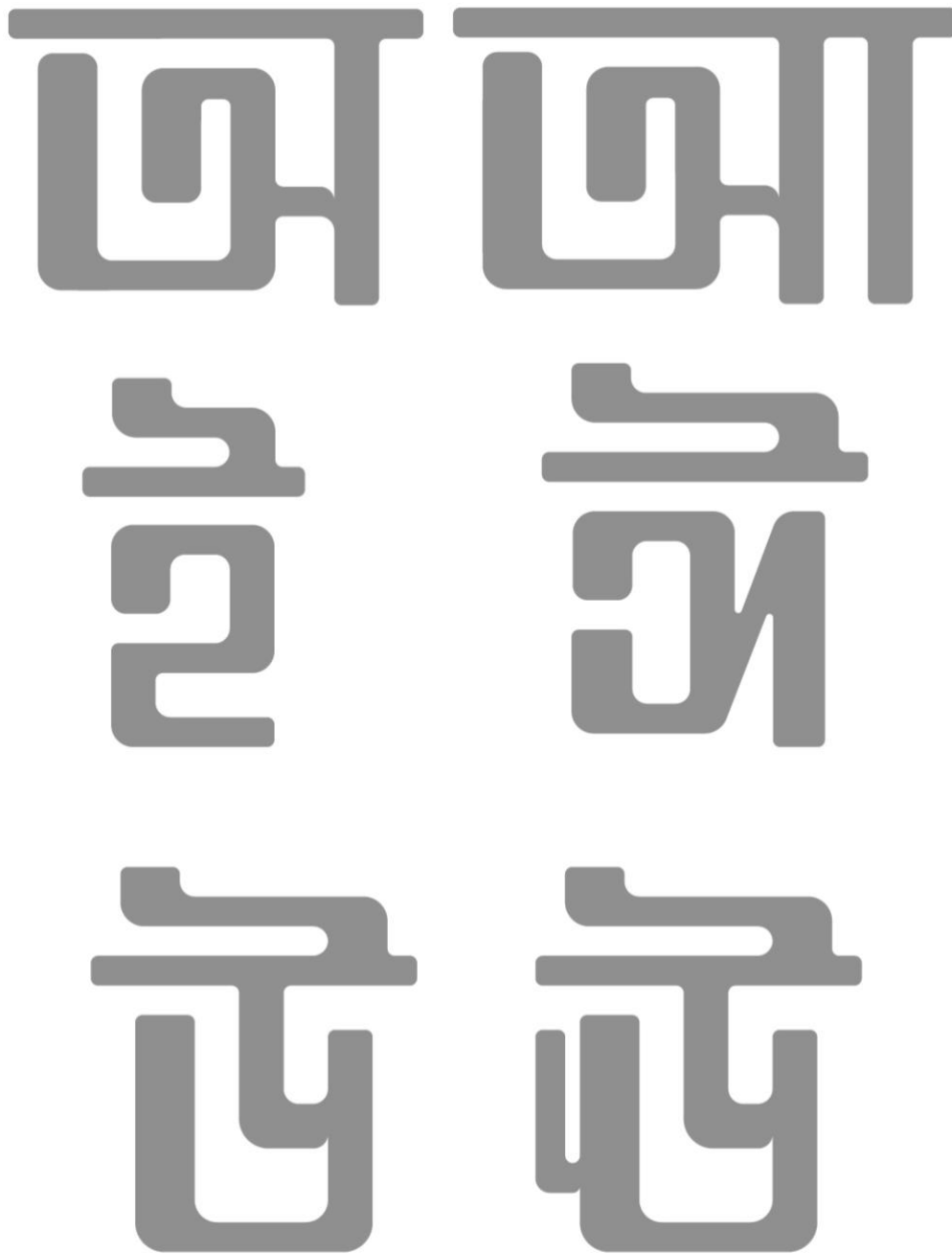
Figure 22: Script Nomenclature



Chapter 4

Preview of the work

4.1 Somoyer Srot





শ্রী
শ্রী
শ্রী



ক খ
গ ঘ
ঙ ঙ



உ டு
அ ஈ
ஈ ஈ



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১৭
১৮
১৯



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ਰ ਟ
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4.2 Nondon

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Chapter 5

Usage

5.1. Practical Implementation of Somoyer Srot:

Somoyer Srot has achieved a lot of popularity in Bengali design community before even the official publication of the typeface. I released the beta version of typeface to get some feedback from the community. I never thought the community will embrace this new kid in the town so nicely.

Thus there was a ton of bugs & limitations in the typeface beta release, people came up with really interesting use of the typeface.

Award Winning Dhaka based Marketing Agency, Magneto Digital gave me the biggest surprise by using my typeface on their Bengali Logo.

5.2. Practical Usage of Somoyer Srot:



Figure 23: Logo of Magneto

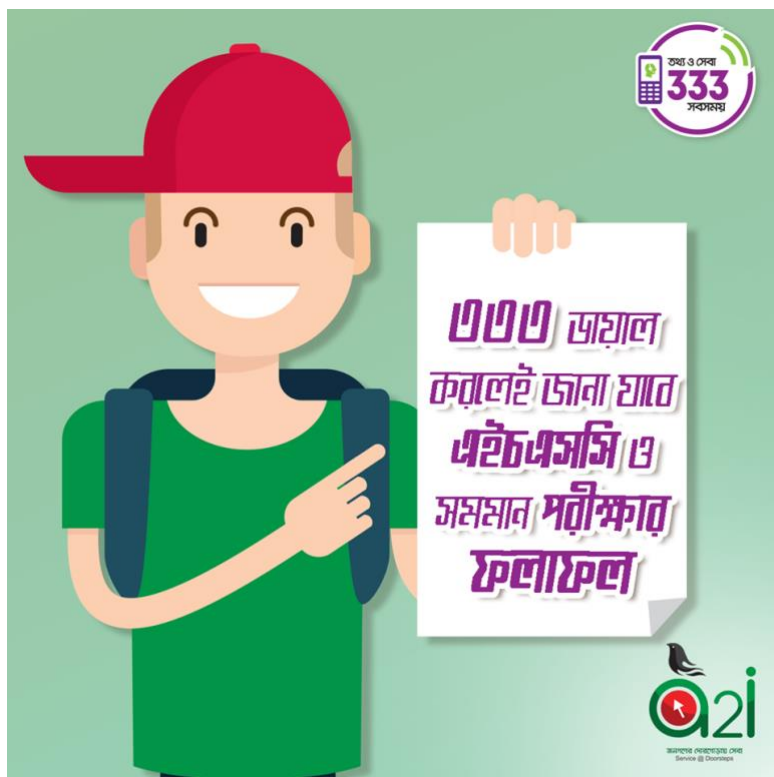


Figure 24: Digital Content by a2i, PMO



Figure 25: Digital Content by a2i, PMO



Figure 26: Digital Content by a2i, PMO



Figure 27: Digital Content by a2i, PMO



Figure 28: Mainstream Movie Poster by Shapla Media

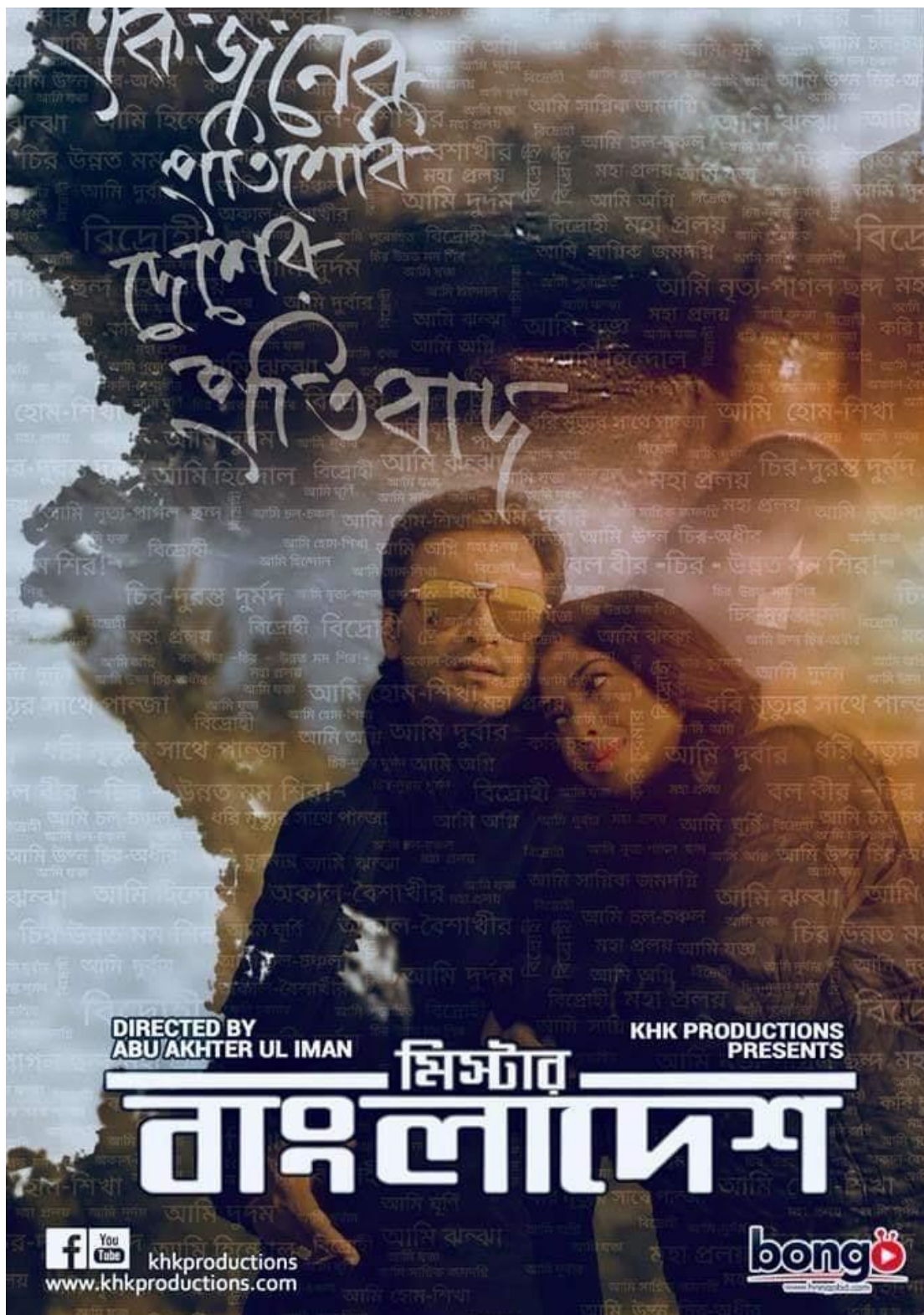


Figure 29: Mainstream Movie Poster by Jaaz Multimedia



Figure 30: Poster by GP



Figure 31: Artwork by Glitch Studio

5.3. Practical usage of Nondon



Figure 32: Promotional Design by Jaaz Multimedia using my font Nondon

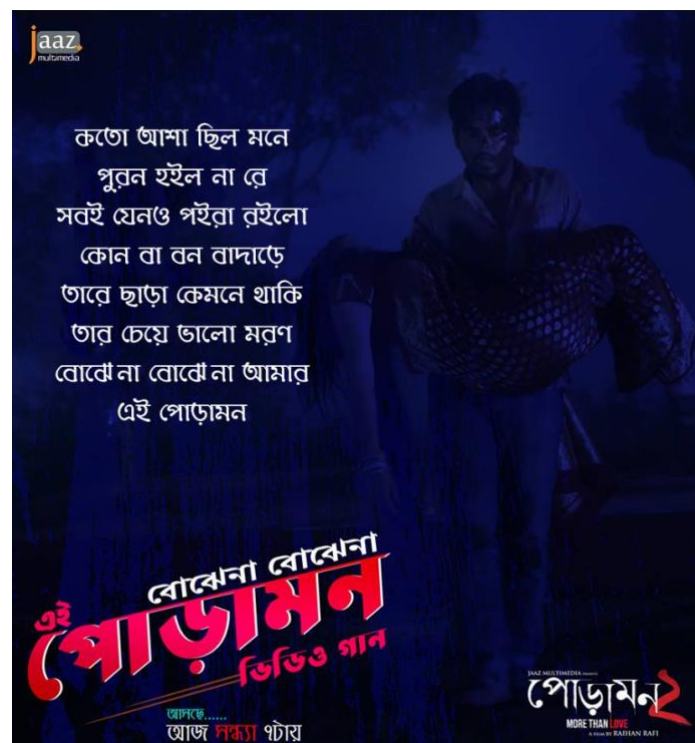


Figure 33: Promotional Design by Jaaz Multimedia using my font Nondon



Chapter 6

Analysis

Digital Marketing Industry got a revolutionary hit after 2012. Every brand is working hard to push their brand & product in front of a respective audience. A potential audience's eye only stops for 3 seconds to watch a content. So a marketer's mission is to develop eye-catching content so that people dive into it more. From a designer's perspective, a good design must have a good typography in it. Good typography is all about a pretty typeface. This is the moment when the importance of new typeface come in the table.

Despite having thousands of English font, there are only a few numbers of Indic font available on the web. This number is not more than 50, where Bengali is 7th most popular language in the world with more than 250 million spoken people.

In Bangladeshi, most of the fonts we use in our day to day needs has been developed by Ananda Computers, the company which is behind the popular Type Tool Bijoy Bangla. Other than Bijoy some independent type designer had come forward to design a quality typeface in Bengali. To some extent, I'm highly motivated by some of them.

ডিজিটাল বাংলাদেশের স্বপ্নটা আমরা মনে যতোই থাকুক, যতো দীর্ঘ সময় ধরেই আসি একে লালন করে থাকিনা কেন, এটি জাতীয় পর্যায়ে এমন প্রবলভাবে কখনও আলোচিত হতোনা বা হয়তো কোনদিনই এমনভাবে আলোকে মুখ দেখাতো না, যদি না ১২ ডিসেম্বর ২০০৮ শেখ হাসিনা ২০২১ সালে ডিজিটাল বাংলাদেশ প্রতিষ্ঠার কথা বলতেন। তিনি বাংলাদেশ আওয়ামী লীগের সভানেত্রী না থাকলে সম্ভবত ১১ ডিসেম্বর ২০০৮ অনুষ্ঠিত কার্যনির্বাহী কমিটির সভায় এটি বাতিল হয়ে যেতো। যদি তিনি দেশের প্রধানমন্ত্রী না হতেন তাহলে সম্ভবত বর্তমানের মন্ত্রী, উপদেষ্টা, সচিব ও মন্ত্রকালের আমলারা কেউ ডিজিটাল বাংলাদেশ শব্দটি

Figure 34: A Typeface developed by Bijoy

Most of the fonts Bijoy Developed are usually ANSI which are not compliant with the global standard of Unicode consortium. Most of the typeface Bijoy developed has hundreds of Bugs inside them. Almost every font has a kerning issue, alignment issue.

When developing the font I tried my most to mitigate these sort of issues.

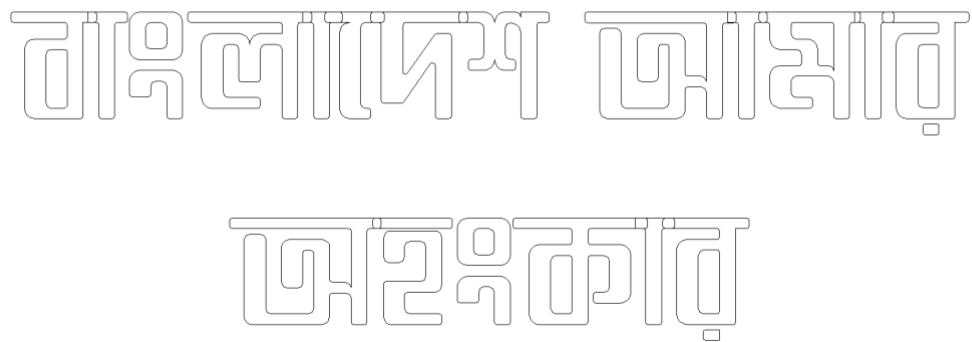


Figure 35: Wireframe of the font

In the development stage, I followed this gridline strictly to avoid this issue. This grid helped me a lot in translating vector designs to FontLab, by pasting at the exact same position.

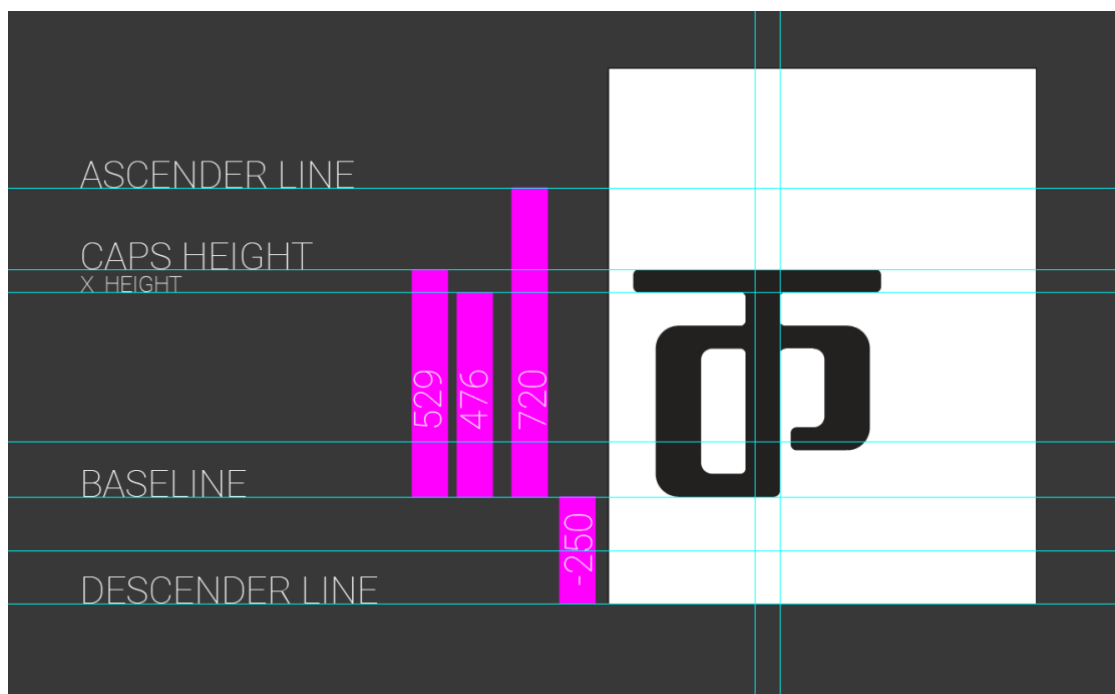


Figure 36: Gridline Setting in Illustrator

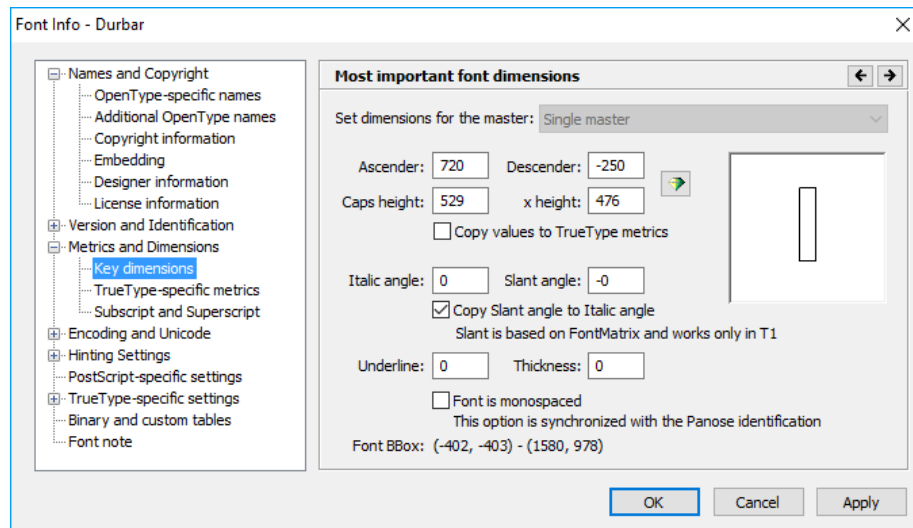


Figure 37: Gridline Setting in Fontlab

This process was behind the screen to ensure uniformity in design. Following this process also helped me to save a lot of time building the font.

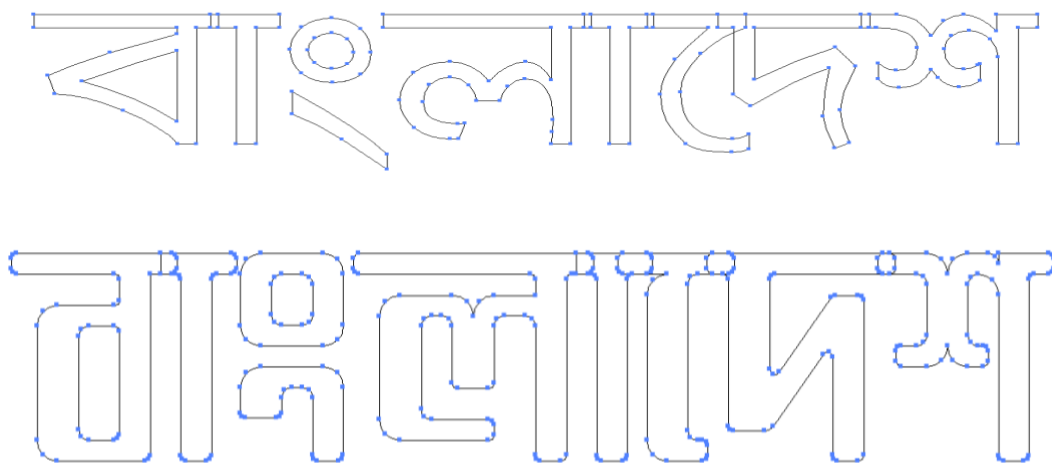


Figure 38: Side by side comparison of Popular Bijoy font, Kongsho & Somoyer srot.

A significant difference is visible on the figure. Fonts developed by Bijoy has many unnecessary points on the vector path that spoils the smoothness of the font. I tried to use as less point as possible.



Conclusion

The Bengali script has made a reasonable advancement from the mid-nineteenth-century metal types to its contemporary computerized format. the most unmistakable being that of an institutionalization of the characters' extents and rehashed frames accomplishing consistency and equalization. shockingly the institutionalization took some time where one would have anticipated that such a strategy would have been involved before giving an answer for sparing materials and so forth bringing about a less expensive generation.

Through this process, there has been a reduction of the traditional handwritten qualities that were once visible in the first metal types a feature that only ever occurred with a small selection of characters. the Bengali characters are very much of a mono-linear fashion a characteristic which had been predominantly visible in the handwritten manuscripts and is in existence in the contemporary digital format. one is still unclear with regards to which tool and method had been utilized yet with further investigation one would hope to decipher this so that the transition between paper and screen could be understood a little more. technology has evolved immensely over the past four centuries yet it has not had a great effect upon the design of the Bengali script. it seems to have steadily evolved between each transition improving the typesetting at each point.

This writing plan of this paper came in mind more than two years ago. From the very beginning, I had some specific points in my head about this paper. I was determined that I will write those things one day. According to the academic rules, there is a little linguistic change in my thoughts and experience, but I'm very happy that I was able to cover my entire experience with Bengali font in this paper. But I was relieved of one thing - no matter how plan I made, I had to hurry. I thought I would add a lot - but I did not. On the other hand, I did not think of many things but somehow it came here!

I love Typography especially Bengali Typography. I do not know how quality my work is, but I love what I do. I have a lot of limitations, I know that many times I just tried to overcome this with my passion. Those who are around me know this, they also support me. It's not too much of authorship to discuss this whole mythological story. Actually, I did not read many big books, I did not sit in the library every day. Here is my opinion, my belief, my experience. As it is, I know there are inconsistencies, excessive emotional expression - there is such error.



My Creative lessons are over. Now full-time career lessons will begin. I feel utter comfort by thinking a bit that the lesson I learned has the acceptance in my professional career day to day working range. In my opinion, it is very important. I believe this is practice will continue. In addition, the practice of typography will continue in Bangladesh.



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Rarh Design Blog: Typography in Bengal | <http://blog.rarh.in/?p=86>

Ekushey Foundation | www.ekushey.org

OmicronLab | www.omicronlab.com

BengalFonts | <http://www.bengalfonts.com/>