

Breaking the Binary

EXPLORING ORALITY IN INDIA
THROUGH TYPOGRAPHY,
CRYPTOGRAPHY AND CRAFT.

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Breaking the Binary:
Exploring Orality in India
through Typography,
Cryptography and Craft
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Abstract

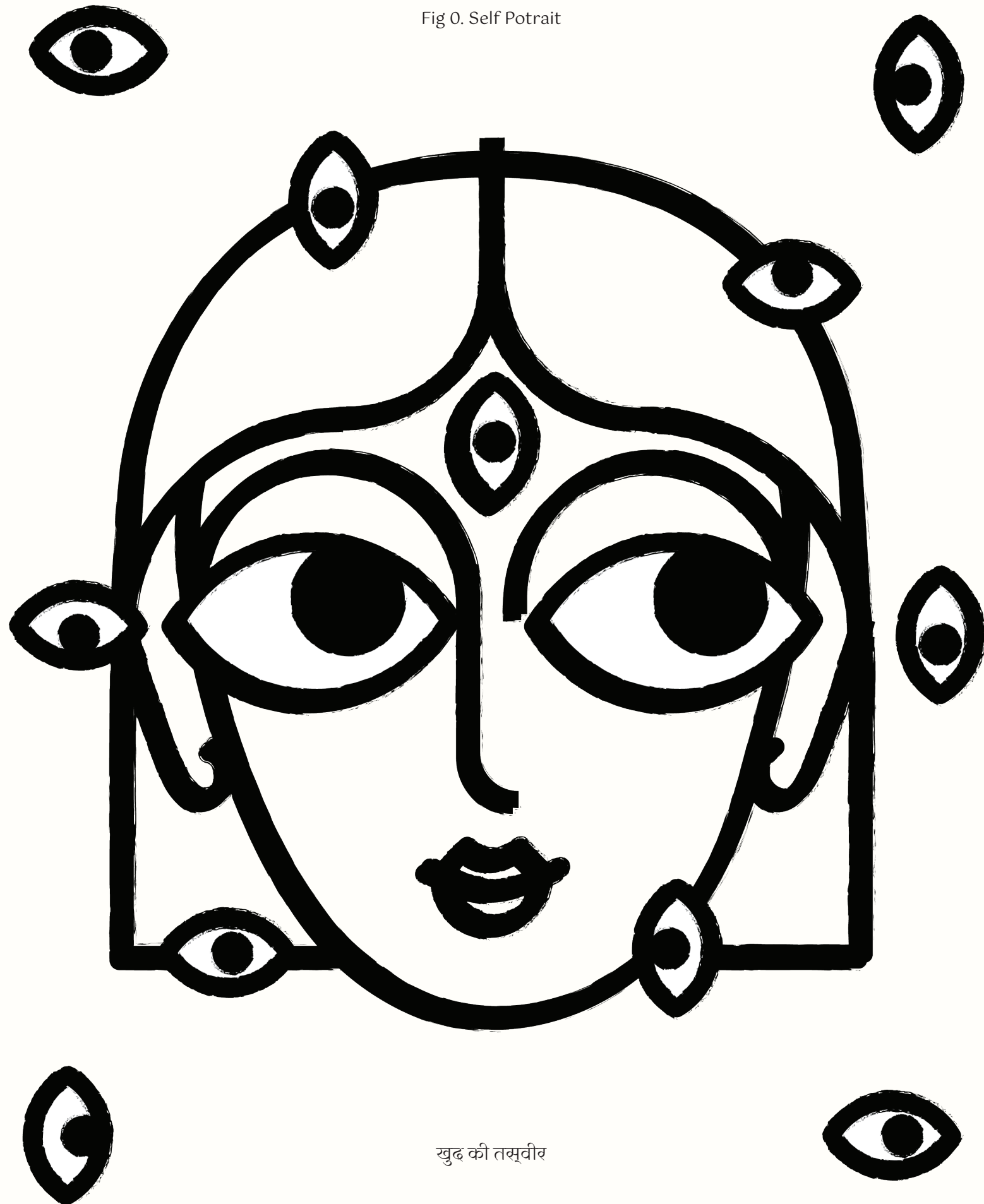
This thesis explores the fluidity of language through the fusion of heterogenous visual traditions — creating hybrid forms and coded communication. It voyages through the linguistic landscape of India. Delving into its social, political and cultural identities it finds expression in typography, cryptography, craft arts and poetry. From this body of work emerged the hybrid typeface Latinagari, a character set that fuses the letterforms of the Devanagari and Latin scripts.

Embodying both forms it is also neither. Being familiar to readers of either script, yet obscure. It both invites and denies the viewer's desire to read. Representing the in-between spaces of spoken language in India, it is its own being. Through it, a novel graphic language finds form and with it new opportunities for expression, communication and miss-communication. Like the way Hindi flows to English and back in contemporary Indian culture this visual vocabulary becomes its own thing, An expression of identity, a linguistic code and a way of knowing.

Table of Content

POSITIONING STATEMENT	10
INTRODUCTION	14
THE LINGUISTIC LANDSCAPE OF INDIA	20
Hindi	28
English	32
A PROTEST	34
A STUDY	36
A POSSIBILITY	54
The Poem	56
The Idiot and the Jungle	62
INVENTED SYSTEMS OF WRITING	72
THE CASE OF DISHA RAVI	82
EMBROIDERY AND CODED COMMUNICATION	88
Crossing Borders	90
Embroidered Journal	100
INDIC SCRIPTS ARE MY FRIENDS	118
Bengali-Assamese Script	120
The Structure of Devanagari	132
Differences between Latin and Devanagari	138
Similarities between Latin and Devanagari	142
CREATING A HYBRID WRITING SYSTEM	146
LATINAGARI AS A MODE OF EXPRESSION	166
Dear Vancouver	168
The Stranger at the Bank	172
Chai and Independent India	176
CONCLUSION	180
REFERENCES	182
APPENDIX	184
Thesis Presentation	186
ATTRIBUTIONS	202

Fig 0. Self Potrait



खुद की तस्वीर

Positioning Statement

I am a member of the Bengali Indian diaspora community. I am a non-practicing Hindu. I am agnostic in my beliefs but I benefit from a privileged position within the caste system even though I renounce its hierarchical inequality and discriminatory categorization. I speak Bengali, English, Hindi and French. Bengali is my mother tongue.

Due to violent religious tensions my ancestors were displaced from East Pakistan, currently known as Bangladesh, to what is presently known as India during Partition {the division of British India in 1947 into two independent Dominions: India and Pakistan whose borders were drawn along religious lines by British colonialists}. Future generations settled within Kolkata, West Bengal, India. My parents moved to Indonesia where my sister and I were born and since then we have lived in Trinidad and Saudi Arabia. I moved to Mumbai, India to pursue my design education and career and worked within advertising before beginning my masters degree.

Now, I am on this journey of my masters which started out with me afraid to leave my 216 square foot room overlooking the Arabian Sea in Mumbai due to the risk of catching COVID-19. This thesis has traveled from India to Saudi Arabia to Canada and quarantined thrice. This thesis explores facets of my personal and cultural identity through making. I exist in the in-between. As a person of third culture identity, I am both an insider and outsider to other cultures and my own.

This insider/outsider relationship most obviously manifests in my connection to language. English is the language that I am most fluent in. It is the language I most use to interact with as a result of my upbringing. Having moved around the world, English became my de facto lingua franca and was the main mode of language used for my entire education. I can speak Bengali but cannot read or write it. Though I can interact with people of the Bengali community, my access to the language's literature and knowledge is limited.

I can speak Hindi and I learnt to read and write it later in life. It is the mode of language I use to interact with the Hindi speaking circle of the Indian diaspora and what I spoke when I was living in Mumbai. I can speak, read and write French at a conversational level. I began learning it in high school and continued to as I studied at a French design college in Mumbai. My identities and their complexities are part of my practice and manifest through the making that I create throughout this thesis.

Tax filing. Medicine Labels. Bank forms all follow this English default. Language in India is reflective of class/caste disparity. English is an imposition of India’s British colonial past and its “elite” status is reinforced through an increasingly globalized economy. The majority of Indian speakers don’t know English yet so much of the communication is in English which creates a disparity in accessibility to information which privileges the upper class and is reinforced by systems such as education. Within my own design education, teaching the complexities of typography in the Indian context was barely scratched upon as a heavy focus was placed towards Latin typography.

The intention of this research is to explore the intricacies of language in India through the hybrid spoken interactions between Hindi and English and how that manifests through typography, cryptography and embroidery. The essence of this research is to represent the unique fluidity between Hindi and English interactions and capture its hybrid nature, socio-political complexities, and cultural identity through my practice.

This thesis explores the journey of an invented script that is both Hindi and English but also neither. The emphasis of this research is to visually translate the oral fluidity between Hindi and English through typeface design but also to question the right to access of information, definitions of cultural identity, and the power of the written word. Who gets to read and who doesn’t? What does it mean to manipulate the written word?



Water changes every few miles,
the language every 4 miles.



कोस-कोस पर बदले पानी,
चार कोस पर वाणी।



Kos-kos par badle paani,
chaar kos par vaani.

Fig 2. Pixel Indus Script

অসমীয়া
assamese

বাংলা
bengali

कॆगॄ
dogri

बड़ो
bodo

كٲشُر
kashmiri

कोंकणी
konkani

മലയാളം
malayalam

ગુજરાતી
gujarati

ಕನ್ನಡ
kannada

हिंदी
hindi

ꯀꯪꯂꯩ
meitei

मैथिली
maithili

मराठी
marathi

తెలుగు
telugu

ଓଡ଼ିଆ
odia

தமிழ்
tamil

ᱥᱟᱱᱛᱟᱲ
santhali

اُردُو
urdu

संस्कृत
sanskrit

नेपाली
nepali

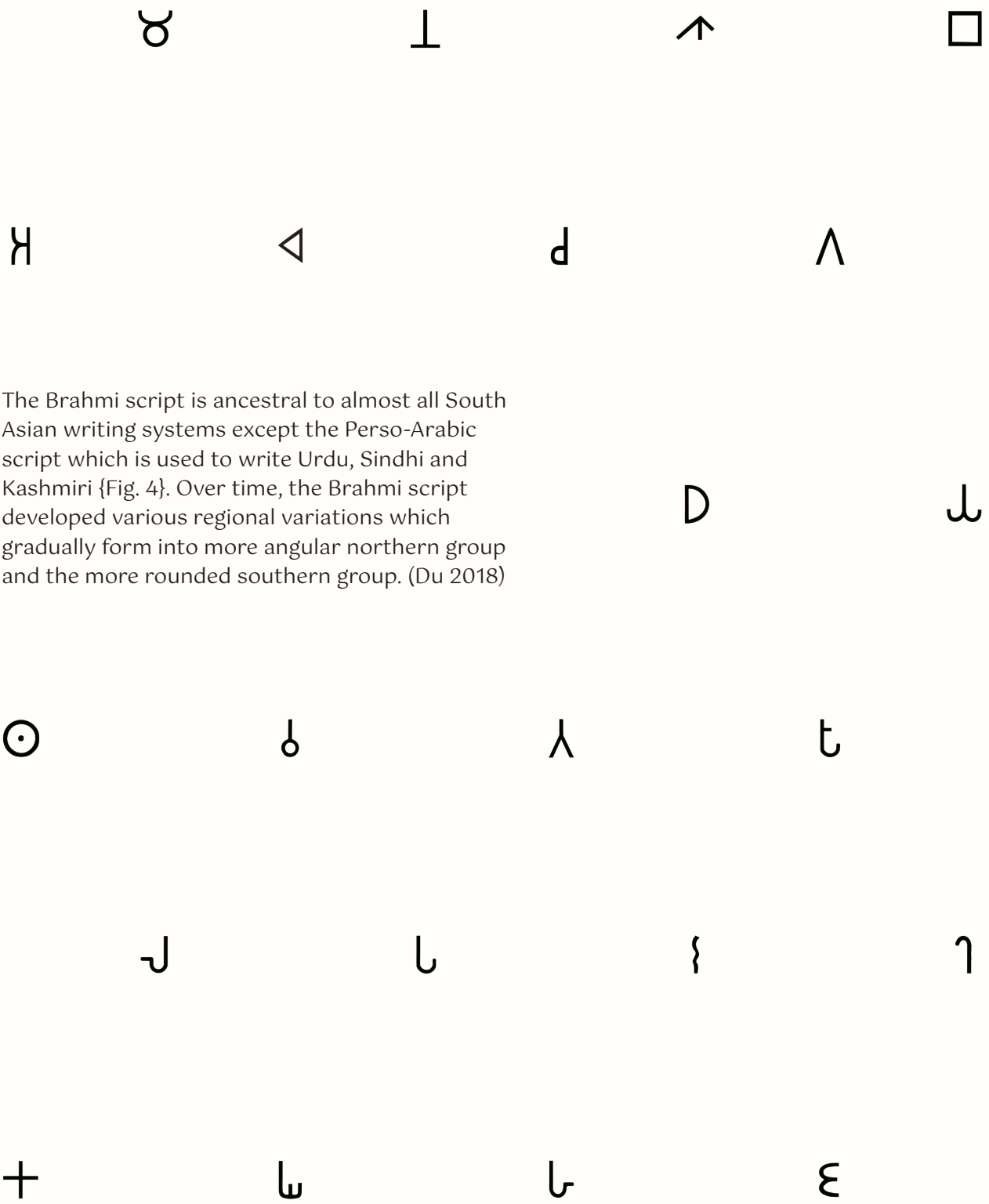
ਪੰਜਾਬੀ
punjabi

سنڌي
sindhi

English

The Linguistic Landscape of India

23 official languages. 13 official scripts. 720 dialects. Language in India paints a rich portrait of the diverse realm of cultures that are home to the country. These languages represent the history, literature, traditions, beliefs and philosophy of myriad communities that exist within the Indian region and extend to the Indian diaspora. Within this diversity, there is often tension that is reflective of the country’s socio-political conflicts.



The Brahmi script is ancestral to almost all South Asian writing systems except the Perso-Arabic script which is used to write Urdu, Sindhi and Kashmiri {Fig. 4}. Over time, the Brahmi script developed various regional variations which gradually form into more angular northern group and the more rounded southern group. (Du 2018)

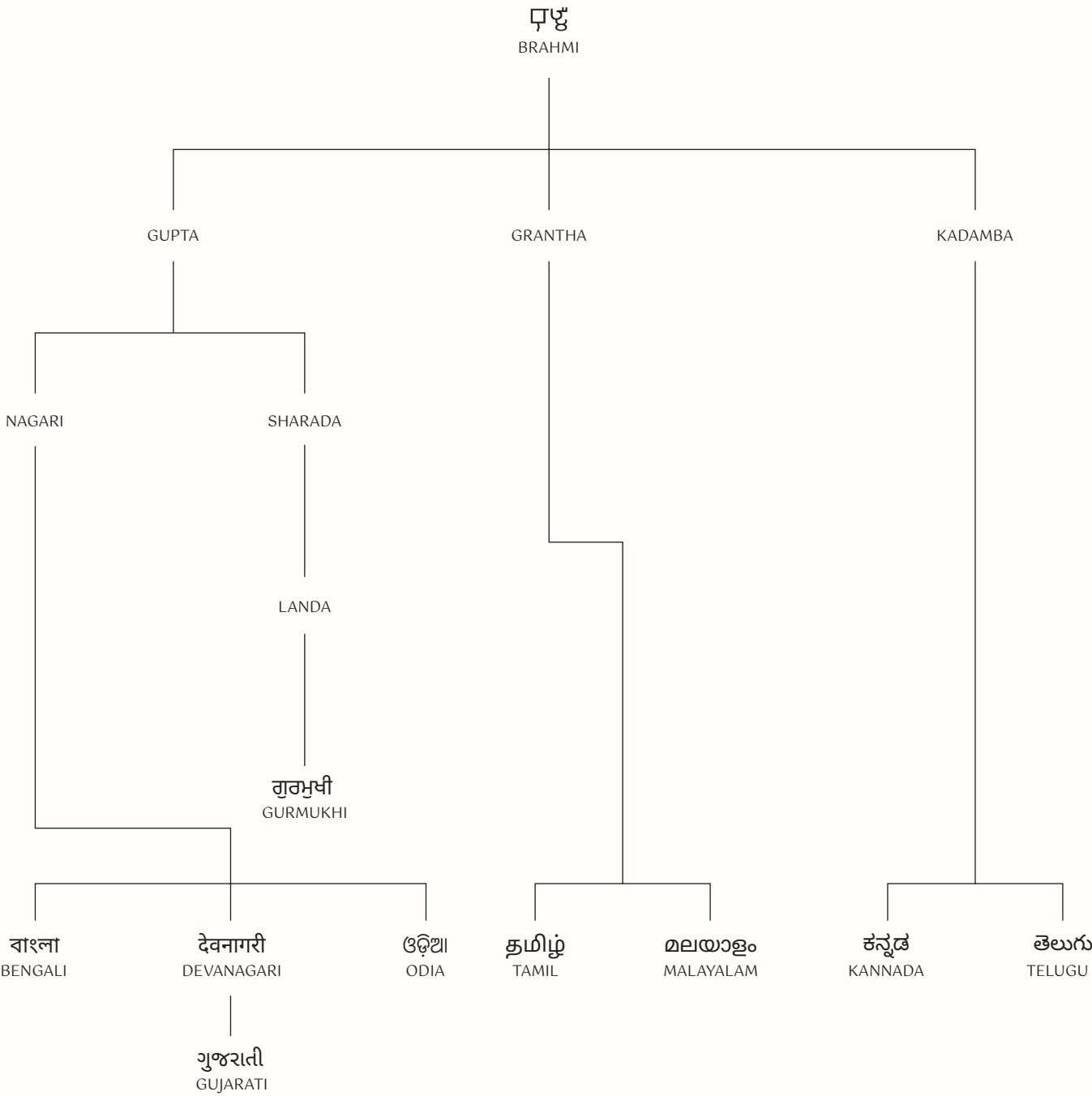


Fig 3. Evolution of Indian Scripts

Fig 4. Indian State Borders

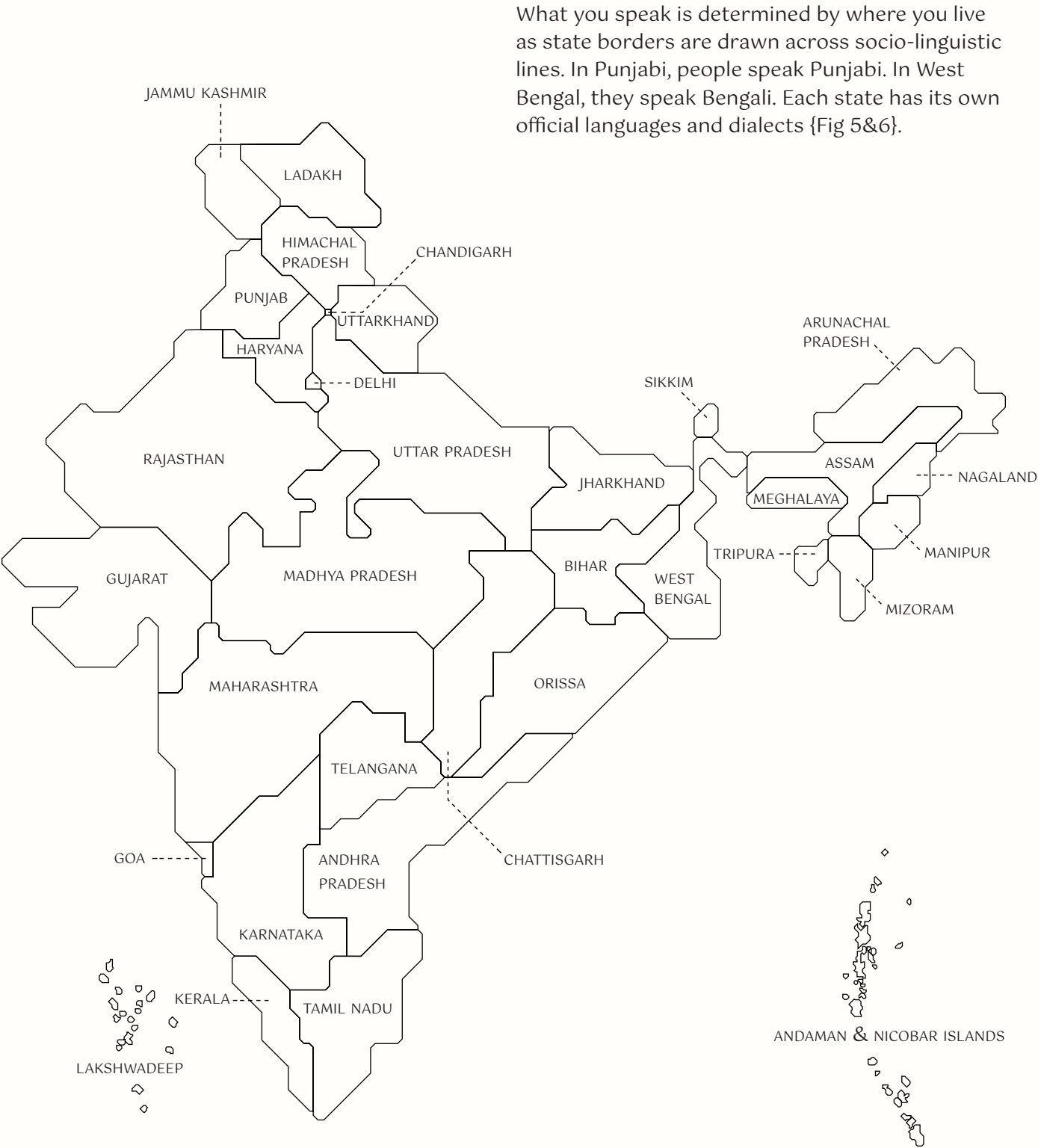
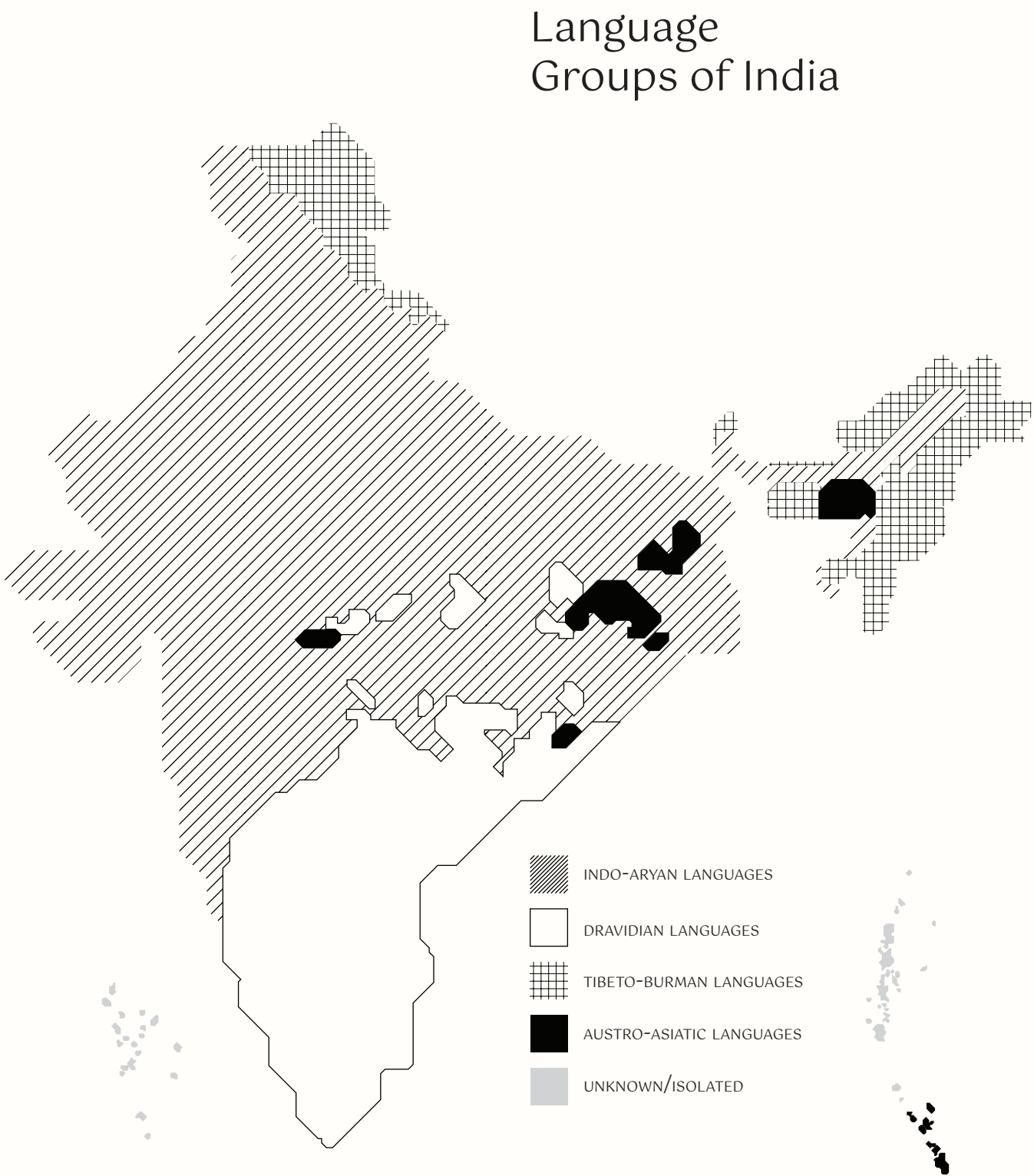


Fig 5. First Language by region



Fig 6. Indian Language Groups



There are two major language groups within India: the Indo-Aryan language group and the Dravidian language group {Fig. 7}. Indo-Aryan languages are generally spoken within the northern regions of India and Dravidian languages are generally spoken within the southern regions of India.

Indo-Aryan languages have evolved from Sanskrit/Prakrit combination. Various Prakrits have gradually developed into modern languages like Marathi, Hindi, Bangla, Gujarati, Punjabi, etc. Where as Dravidian languages {Kannada, Malayalm, Telugu, Tamil} have evolved from Proto-Dravidian roots.

All Indian languages have their own socio-political contexts and they often intersect but for the sake of this thesis, I choose to focus on the socio-political contexts of Hindi and English in particular.

Hindi हिंदी

There is a large portion of central India, called the Hindi belt, where the majority population of those states are Hindi speakers. Hindi is the most widely spoken language within India {2011 language census: 43.63% of the population said Hindi was their mother tongue} and serves as a lingua franca over large parts of India.

Hindi itself is diverse in dialects and can vary region to region. The Hindi spoken in Rajasthan is not the same Hindi spoken in Bihar. Hindi, along with English is one of the two official languages permitted in the Constitution of India for business in Parliament. Hindi adopts devanagari as its official script.

There is a common argument that since a majority of the population speaks Hindi/ Hindi dialect, it should be the national language. This garners much opposition, mostly from the southern states, as “Hindi as a national language” discounts the 56.37% that don’t speak Hindi. Under the current Indian government, there has been a renewed push for Hindi as a national language in order to further the current government’s polarizing ideologies.

In 2021, on the occasion of Hindi Diwas {Hindi Day}, Home Minister, Amit Shah pitched for the wider use of the Hindi language in the country and declared it to be "the basic basis of our cultural consciousness and national unity." (Srinivasan 2021) Historically, this push for Hindi as a national language is not new. This is a debate that has been had since the advent of Independent India.

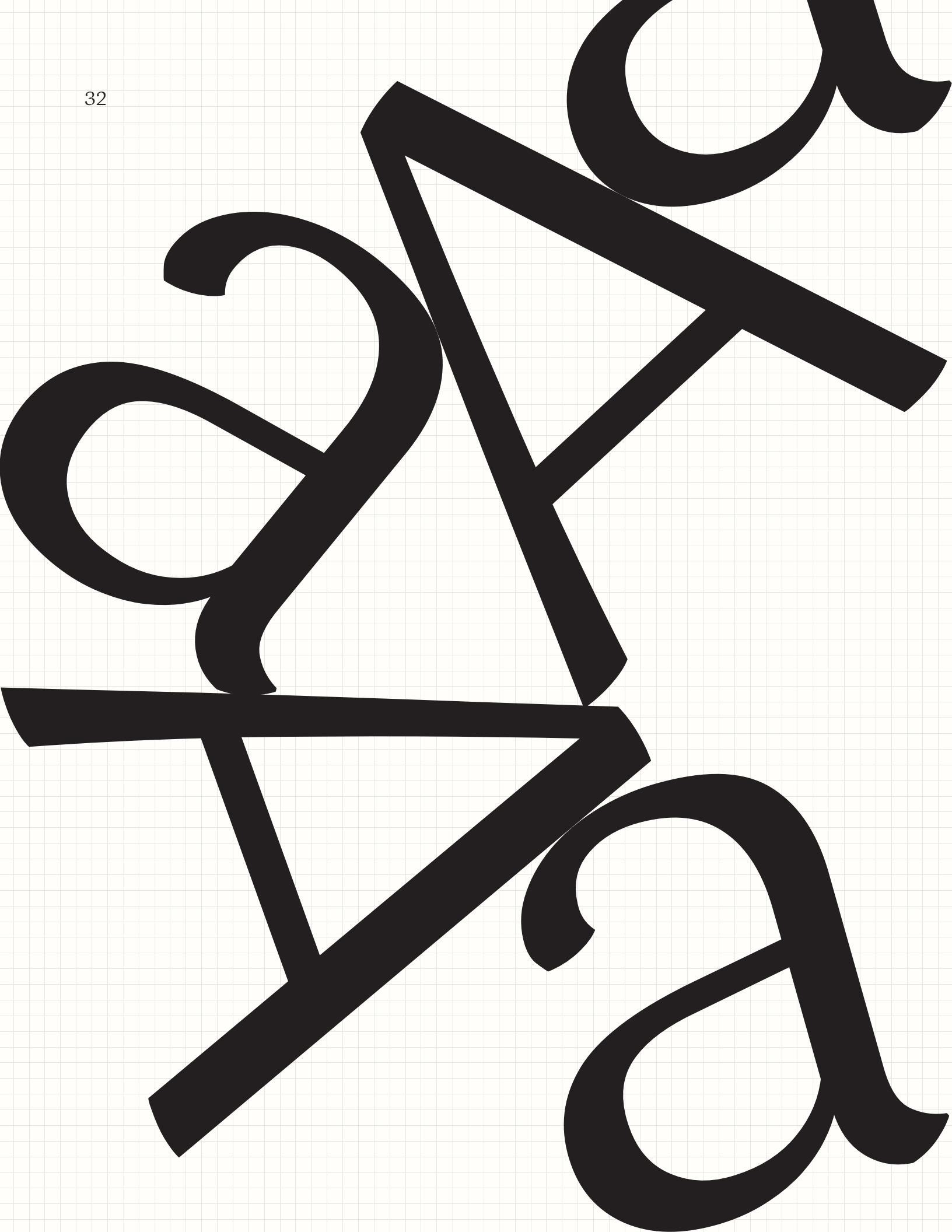
Hindi is not the problem. The problem is the weaponization of Hindi under the false banner of unity in order to promote the current government’s exclusionary agendas. The Hindi that the Union government today wishes to crown as the national language is a different species altogether. It is firmly rooted to a vastly associational Sanskrit with all its casteist baggage intact. Its highly associational vocabulary is being used to purge thousands of words it has assimilated through the centuries from regional dialects and Islamic and European languages.

Sanskrit has always nursed a diglossia {in which two varieties of the same language are used within a community} between the mostly upper caste and upper crust male users of the classical version, and the rest, including women from all castes and communities (Pande 2017). This push for Sanskritized Hindi is reflective of the current government’s trajectory of violent Hindutva politics {an ideology advocating, or movement seeking to establish, the hegemony of Hindus and Hinduism within India} that is distinctly casteist and anti-Muslim.

Streets, buildings and cities are changing their names of historically Mughal heritage to Hinducentric ones in an effort to purge Muslim names from cities and establishments (Frayer 2019). Allahabad is now Prayagraj. Mughalsarai railway station to Pandit Deendayal Upadhyaya station. Faizabad to Ayodhya. Renaming cities, streets and other historical landmarks is an ongoing process in India. In many cases, post-independence governments renamed British anglicized names to establish a unique Indian identity. Calcutta to Kolkata. Bombay to Mumbai. Madras to Chennai. But that identity was pluralistic and involved a variety of faiths practiced in India.

But this is not a rename but a reinterpretation of history through Hindu eyes. Since this government came into power in 2014, there has been a severe spike in communal violence against religious minorities. Cow vigilante groups targeting Muslim, Dalit {formerly known as “untouchables”}, or Adivasi {indigenous} communities in the name of so-called cow protection (Human Rights Watch 2021). Students and teachers wearing Burqa and Hijabs were denied entry in schools and colleges in Karnataka as per orders from the Karnataka government (Sabarwal & Srinivasan, 2022).

These cases only scratch the surface on the deeply entrenched discrimination against religious minorities under the current government’s rule for the sake of a “Hindu first” India. Under the current government, this push for Hindi as a national language is part of a larger plan to establish a Hindi. Hindu. Hindustan India.



English

Most Indian languages have developed within South Asia while others were adopted into the country such as English. India has a complicated relationship with English; a symbol of the nation's colonial hangover. British colonialism caused English to become a language for governance, business and education. English's dominance is an integral part of a corporate global economy and modern labor market that privileges the lives of those Indians who can speak the language. Within much debate among states over the topic of a national language, English has emerged as a de facto lingua franca over much of India.

These tensions were reflected within my own design education and career in India. Design is a small part of the larger cultural production system. It informs and is informed by culture. There is a break between culture and design in India. Design education and culture does not reflect the possibility of a multitude of perspectives, opinions and way of life. This education has been transplanted from Western institutions of knowledge but were removed from their original contexts to be retrofitted to India which is alienating to people of a local context.

Why are most of India's communications significantly portrayed through English? Tax filings. Bank forms. Signage. Driver's License. Marriage certificates. Medicine Packaging. Advertising etc. The presence of English is so ingrained into everyday communications and it's disconcerting as 20% of the population speaks English and only 4% speak it fluently. The majority of the population do not speak English but the language has emerged as one of the most crucial determinants of social status, income, prestige, and employment. That means 4% of the country's population has the ability to determine, control, and oppress the majority 96 percent simply by virtue of knowing English (Bhatia 2017).

A Protest

I am part of that 4%. The way I have practiced and been taught design only reflected that 4%. All the work that I designed catered to that 4%. These were systems that I questioned but only started to challenge in the onset of my masters education at Emily Carr. My own design education was very “standard” or as November Studio describes as Bauhaus-Swiss modernism-Helvetica is the best- corporate work is everything design education (Bhatt 2020). As I was questioning my practice, there came this realization that this English language elitism that is perpetuated through my work alienates 96% of the population.

One of my first explorations was to challenge my own biases around language and design that have been upheld by the systems around me. I printed out the english alphabet in Helvetica and painted letters from 13 Indian scripts above the printed letters {Fig. 8}. Devanagari. Bengali. Gujarati. Odia. Dogri. Kannada. Malayalam. MeiTei. Gurumukhi. Santhali. Tamil. Telugu. Urdu. Helvetica was my choice typeface because it’s a symbol of my design education. When I stepped back and looked at these juxtaposed letters, the truth was most of these letterforms were alien to me, even the ones I am familiar with. I grew up speaking Bengali but I can’t read or write it. I

speak broken Hindi and can’t read or write it very well. Having to learn English was a necessity in order for me to gain access to certain privileges and knowledge but in the process, I lost touch with my native tongue. This was not an exercise to suggest that English should be ignored. English serves as a lingua franca for international trade and intercultural communication.

This is a critique of my practice and the elitist system that withholds access to information and power based upon the language one speaks. This was to say these languages cannot be ignored. They are not the silent majority. They exist. They are spoken, they are read and they are written. They should be part of India’s design context. This work allowed me to take the first step to shaping my practice to unlearn as I go and keep in mind the pluriversity of perspectives that are rooted within and outside of India and my own Bengali Indian diaspora identity.



Fig 7. Indic versus Helvetica



A Study

As part of unlearning elitist attitudes in my design practice, I had to look at the environment around me. If what I create is elitist design, then what is considered non-elitist design? There is a clear distinction between high and low design in India.

“... anything seen on the street is usually termed “vernacular design” and is generally considered “low”—things like street posters, pamphlets, political signs and murals, and even local magazines that aren’t in English. Something designed with software in a big office for a corporate client is considered “high” design—as it was designed. The vernacular stuff was just made. See the difference?”

- November Studio

Fig 8. A collage of signages from Worli, Mumbai



Fig 9. Vijay Provisions Store Signage and Vector Replication

When I was living in Mumbai, I photographed signage around my neighborhood of Worli. I used to try to recreate the signages I found particularly interesting as a study of their typography, iconography and its aesthetics {Fig. 10}. I managed to gather a sizable collection of these photographs. I decided to study these signs from the perspective of language. The local languages of Mumbai are Marathi, Hindi and English which use the devanagari and latin script respectively.

The signages existed in four different levels: LOCAL BUSINESSES, POLITICAL MURALS, GOVERNMENT ORGANIZATIONS, and GLOBAL/ NATIONAL CORPORATIONS. I looked at the signages at these four levels because I wanted to understand how different contexts lead to different treatments and attitudes toward multilingual typography and what it says about the larger social, political and cultural context at hand. What were the signs communicating through their multilingualism or lack thereof? What social hierarchies were being presented through their typography?

LOCAL SIGNAGE

Local signage refers to signage of any place owned by people of that locality. This can denote a building, the xerox shop, stationary stores, bakeries, convenience stores etc. Local signage has variations of multilingualism within their typography. The signage can incorporate only the local language {Fig. 13}, only English {Fig. 11} or use both simultaneously {Fig. 12}. When both English and the local language is used, the typography of each script is given equal importance in terms of its treatment even if each script is treated differently. There is no evident hierarchical structure which favors one script over the other. It comes down to the preferences of the owner of the place and what they think might attract people to their place of business.

लोकल साइनेज



Fig 10. Handpainted signage of Hargun House building



Fig 11. Handpainted signage of City Bakery in Worli



Fig 12. Handpainted signage on truck

POLITICAL SIGNAGE

Political signage is often sanctioned by local political parties as a way to spread their messaging during elections or even not during elections. These signs are commissioned to and hand painted by sign painters and volunteer artists often on walls for different political parties. They mostly use the local language but may use English sometimes along with the local language as well {Fig. 14 & 13}. As it has to be understood by the general population, both English and the local language are both implemented. Though they favor the local language as the general population understand the local language by and large {Fig. 15}. In the context of politics, the use of local language is used for widespread messaging and may make the political party seem more approachable as they use the language of “the common man”.

राजनीतिक साइनेज



Fig 13. Handpainted Political Mural in Latin



Fig 14. Handpainted Political Mural in Devanagari



Fig 15. Handpainted Political Mural in Bengali in Kolkata, India

GOVERNMENT
ORGANIZATION

Government signage refers to informational signs designed by government organizations in order to relay information to the general public. It is portrayed in both the local language and English as it has to be understood by everyone. If it only uses one language, they use iconography to indicate what the signage is conveying. The local language and English are treated equally in terms of typography where not one language is favored over the other {Fig. 16 & 17}. Since this information is conveyed to the general public, it is important that there is no one language favored over the other so the information can be relayed to a wide audience.

सरकारी
संगठन



Fig 16. Public Transport Organization
Metal Sign



Fig 17. Seaside Public Safety
Informational Board

NATIONAL / INTERNATIONAL COMPANY

Signages for national and international corporations refer to signs for global or national brands that feature their logo in their place of business. National and International corporations use signage only in English. They delegate the local language version to a subordinate position. Often set in a default typeface in the corner as it is mandatory by law to have a local language translation on the signage; which sometimes the store may not follow {Fig. 18 & 19}. These signs are where a hierarchy is most clearly perpetuated.

English and privilege go hand in hand in India. There is a clear caste and class element at work. An upper-caste person is more than three times likely to speak English than someone from the scheduled castes or scheduled tribes. 41% of the rich could speak English as opposed to less than 2% of the poor (Rukmini 2019). These signs reflect the intersections of caste, class and economic privilege that comes with knowing English.

राष्ट्रीय
/ अंतरराष्ट्रीय
कंपनी

Fig 18. Sign outside of a store of a suitcase brand



Fig 19. McDonald's Sign in Latin and Devanagari in a mall

In contrast, when I was living in Saudi Arabia, national/international corporations gave equal hierarchical treatment to both the Latin or Arabic versions. Saudi Arabia has a bilingual policy that requires international brands to appear both in Latin and Arabic. However, Arabic adaptations are often done too hastily or incorrectly (Pater 2016) {Fig.20}. National corporations design their Arabic logos with better typography than their international counterparts, keeping in mind the visual and cultural heritage of the Arabic script {Fig. 21}.

India and Saudi Arabia are two different cultural contexts so it is understandable they treat signage differently. Saudi Arabia has a national language {Arabic} while India has none so to speak so the default falls to English but it was interesting how each country treated their local languages differently in the context of national and international brand communications. One makes space for the local language while the other sidelines it. What would it look like to make space for local languages in the context of national/international brands in India?

What if I applied the same policies of bilingual signage in Saudi Arabia to signage in Mumbai? What would that look like? I decided to create a local language equivalent logo for an international brand in India. How would a local language equivalent logo look like for a Nike store in Mumbai? In Mumbai, the local languages spoken are Marathi and Hindi, both which adopt the devanagari script. How would a devanagari equivalent Nike logo appear?

Fig 20. Fedex logo in Arabic on a white van



Fig 21. has been removed due to copyright restrictions.

Fig 21. Logo with Arabic and Latin integrated on storefront



As I was making the devanagari equivalent logo {Fig. 22}, I realized I didn't know how to design in devanagari. Typographic errors were being made as I was not aware of the rules and guidelines to designing devanagari type. The devanagari version is not as vertical as the latin version. There are issues with spacing between the letters. As a result, the devanagari letterforms do not look like they belong to the same typeface as the latin logo version. This exercise highlighted my lack of knowledge pertaining to indic typography.

There also is this binary being created between the languages when they are designed separately. That it has to be either one or the other. There is a sense of uniformity and conformity as I try to ape the latin version using devanagari. This binary is not reflective of how language is spoken in Mumbai. Hindi mixes with English and English mixes with Hindi. These don't exist within languages don't exist within their own bubble. They exist within the larger structure of Indian social, political and cultural construct. There is a co-existence but also tension.

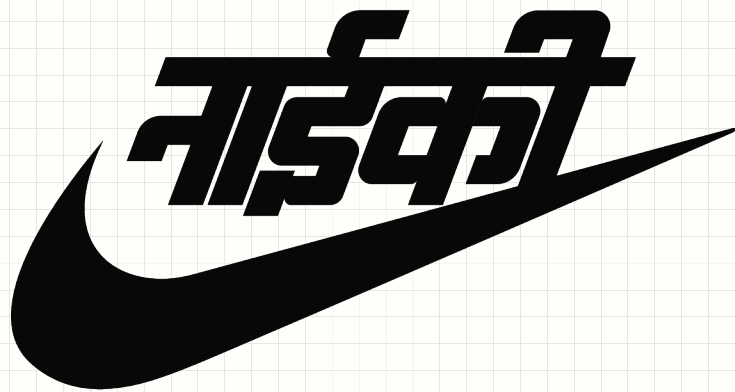


Fig 22. Nike Logo in Latin and Devanagari



How do I represent that? How do I reflect the fluid orality between Hindi and English in this design? Mixing the scripts together seemed the next intuitive step {Fig.23}. Readers would have to know both languages in order to understand and neither can be ignored. This hybrid allows a multitude of perspectives to be showcased through one form. There's harmony. There's tension. Is this hybrid logo functional? No but this goes beyond functionality and becomes something else entirely. A representation.



Fig 23. Nike Logo in Latin and Devanagari Hybrid



A Possibility

Thus I began exploring the hybrid spaces of spoken language. Where and how do the intersections of spoken languages exist and how do I visualize them? To explore these intersections, I created a list of words that are shared between various languages called loanwords. These words are adopted into or etymologically influenced from one language to another.

ENGLISH	HINDI	BENGALI	ARABIC	JAPANESE	FARSI
idiot		বোকা boka		ばか baka	
jungle	जंगल jangal	জঙ্গল jongol			
relax	आराम aaram	আরাম aram			آرام āram
pajama	पजामा pajaama	পায়জামা payajama	بيجامة bijama	パジャマ pajama	
loot	लूट loot	লুট loot			
candy	कैंडी kaindee	ক্যান্ডি kandi		キャンディー kyandi	
cheetah	चीता cheeta	চিটা cita		チーター chita	

There were interesting linguistic connections being made here. Some surprising. Some obvious. The connections between Hindi, Bengali and English make sense as most of these words were adopted into English through British colonization. The word, candy, has a much longer history. The noun use is from late Middle English sugar-candy, from French sucre candi ‘crystallized sugar’, from Arabic sukkar ‘sugar’ + qandī ‘candied’, based on Sanskrit khanda ‘fragment’ (Lexico).

Farsi also has a lot of similarities to Hindi and Bengali as South Asia was under Mughal rule which spanned for more than two centuries. Ethnically Turco-Mongol, early Mughals spoke the Chagatai language {an extinct Turkic literary language}. They later became Persianized and transferred the Persian literary and high culture to South Asia. The word Hindi itself is a Persian loanword.

Though the words may be shared, their scripts are different. How do I explore these intersections of spoken language through its visual form?

The Poem

The late RK Joshi, professor, calligrapher and techno-designer, used to write multilingual concrete poems in Latin, Indic and other scripts {Fig. 24}. Inspired by his practice, I created my own multilingual poem using loanwords between Bengali, Hindi and English.

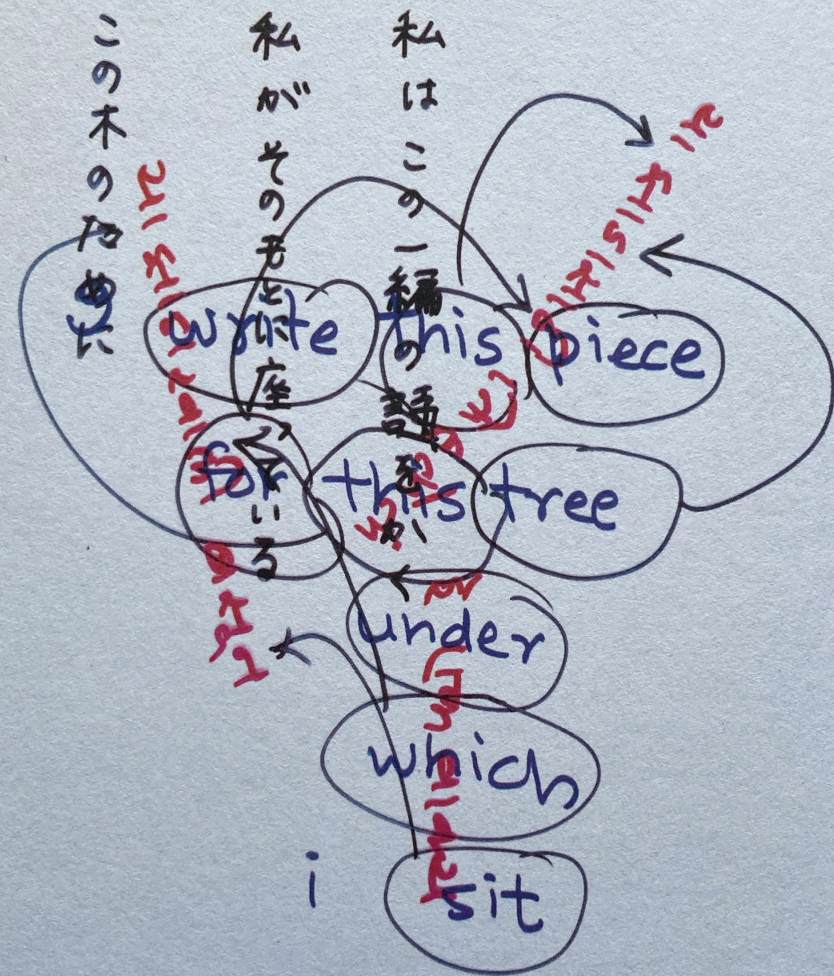


Fig 24. Scan of RK Joshi's 'Tree' -
Multilingual Concrete Poem
from the book, Dekho by
Codesign, Mumbai

This involved using three scripts {Latin, Devanagari, Bengali} to create the poem. Bengali and Devanagari are similar in structure but Bengali letterforms are more sinuous and curvaceous.

Initially, I wrote the poems separately in the three scripts. I first wrote the poem in English and then translated it to Hindi and Bengali. The grammatical structure of English, Hindi and Bengali are also different. English follows a “subject + verb + object” rule while Hindi and Bengali follow “subject + object + verb” structure. I typeset the poem in the Baloo typeface family which had all three scripts.

জঙ্গল,
পায়জামা পরে,
আমি ক্যান্ডি খাচ্ছি.

এক চিতা
আমাকে লুট করে,
আমার ক্যান্ডি খায়,
আমার পায়জামা পরে.

আমি নগ্ন হয়ে বাড়ি যাই,
আমার মা
আমাকে বোকা বলে.

**In the jungle,
wearing pajamas,
i eat candy.**

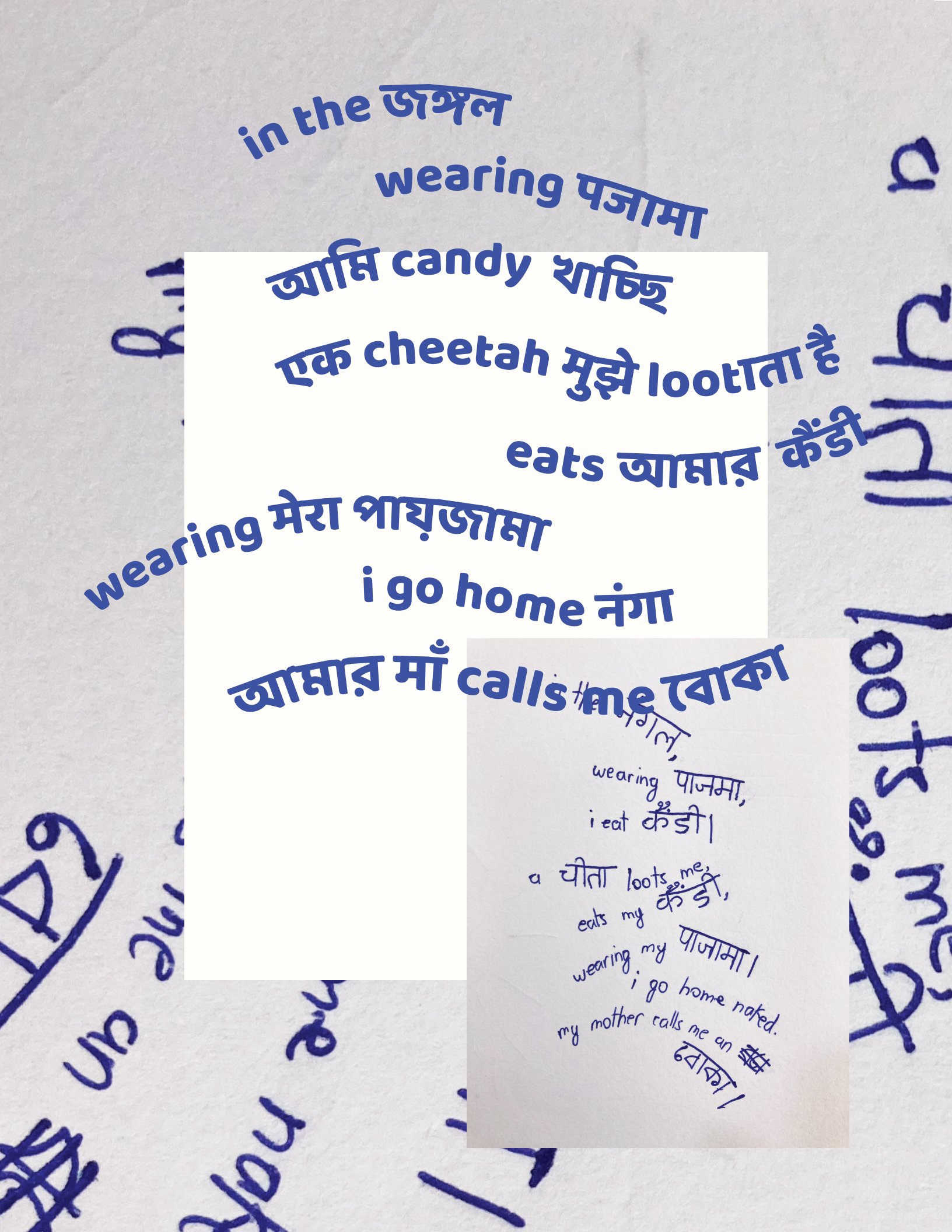
**A cheetah loots me,
eats my candy,
wearing my pajamas.**

**I go home naked,
my mother
calls me an idiot.**

জংল মেন্,
পজামা পহনকে,
মੈঁ কৈঁডী খা রাহা হুঁ.

এক চীতা মুড়ো লুটতা হৈ,
মেৰী কৈঁডী খাতা হৈ,
মেৰা পজামা পহনকে.

মৈঁ নগ্ন ঘর জাতা হুঁ,
মেৰী মাঁ মুড়ো বেবকুফ
বুলাতী হৈ.



Then I began mixing the scripts within the poem {Fig. 25}. Because the grammatical structure is different for English versus Hindi and Bengali, each sentence follows different rules. In some sentences, I choose the English grammatical structure and in others, I follow the Hindi/Bengali grammatical structure.

“We must really look around to realize ourselves... but an understanding of the self is most essential for the designer.”

- RK Joshi

As much as this is an exploration of multilingualism as a tool to express India visually, it is also an expression of the self and my diasporic identity. I can read and write this poem because of that identity. The resulting poem is an awkward interaction between the three languages.

Though the poem consists of shared words, those words are pronounced differently in each language creating breaks in the structure of the poem. The poem does not flow smoothly but I embrace this awkwardness. Diasporic identity has its clumsy moments. It's speaking broken Hindi and Bengali. It's when you can't find the words in one language, so you replace it with another language.

Fig 25. A Multi-lingual poem in Bengali, Hindi and English

The Idiot and the Jungle

As I explore these intersections between spoken languages, I narrowed my focus into experimenting with individual words. The linguistic relation between the Bengali 'boka' {বোকা} and Japanese 'baka' {ばか} was unexpected. They both mean idiot. There is speculation amongst linguists that baka {ばか: japanese hiragana script} could be a loanword from sanskrit moha {मोह | 慕何 | foolish} and mahallaka {महल्लक | 摩訶羅 | senile}. This explanation would make sense as to why the Bengali and Japanese word for idiot are similar as parts of Bengali derive from Sanskrit.

ばか
baka
বোকা
boka



Just as I mixed the scripts together with the Nike logo, I mixed the Bengali and Japanese together to create this hybrid way of reading. You would have to know both Bengali and Japanese in order to read this. If the sounds of these words are shared, could their visual form also be shared?

Fig 26. Mixing Bengali and Japanese
Script through loanwords

To further this notion of the visual hybrid, I mixed the letterforms of the Japanese and Bengali to create a Japanese Bengali hybrid script. There was no systematic process to create this visual hybrid. It was created intuitively. Now readers of either script can't read the letters. It's a Frankenstein method of creating letterforms. Taking different body parts and attaching them to each other in order to achieve some resemblance to a writing system.

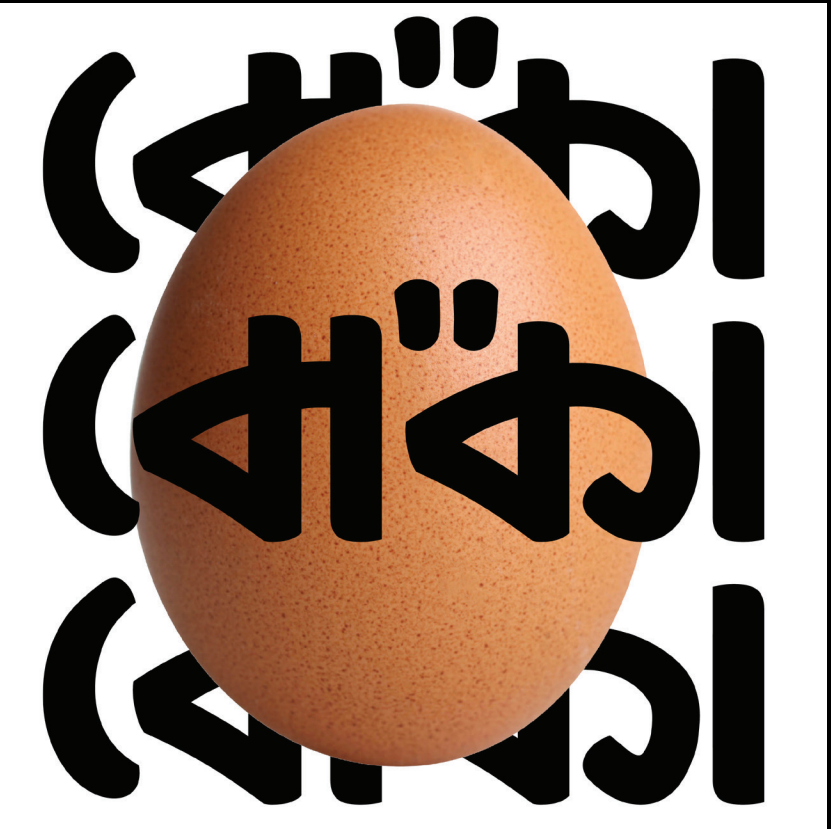
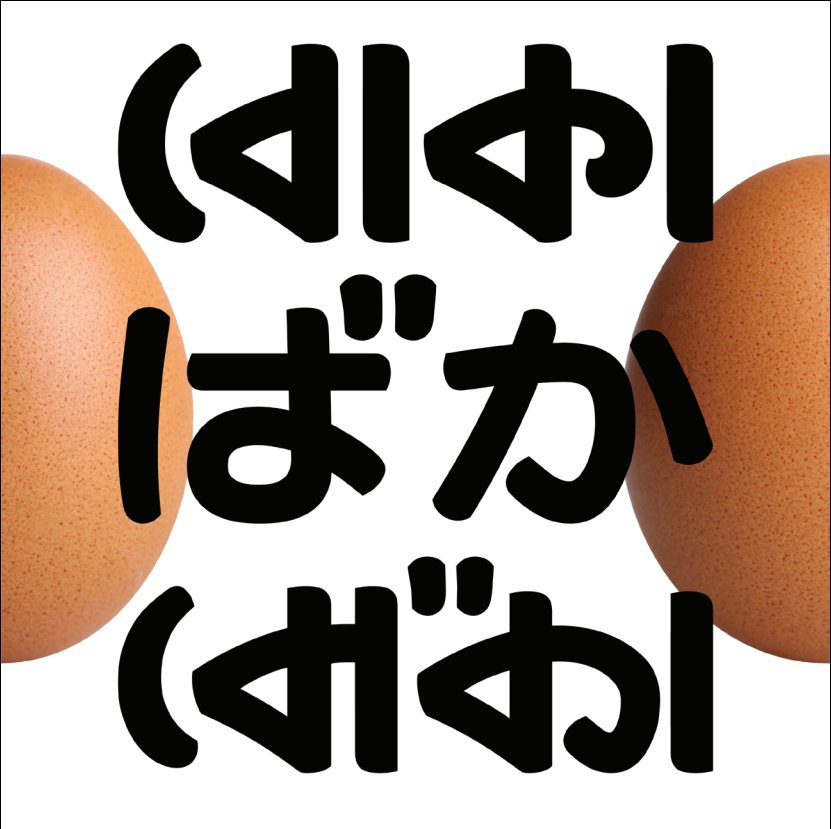


Fig 27. Bengali Japanese Hybrid Script



JUNGLE + जंगल

JUNGLE

I continued these experiments with the word, jungle, using the devanagari and latin script. These hybrid letterforms are not legible to readers of either script so why create them?

The written word is afforded a lot of power and the manipulation of the written word felt like playing god. Information is power and to be able to control information is to be powerful. If the information cannot be interpreted, then that information is hidden and acts as a code. It brings into question who gets to have access to this information and who doesn't.

Why would anyone need this visualization of code through invented scripts? How are they informed by or inform the culture at large? In what context would an invented coded script be needed in?

Fig 28. Devanagari Latin Hybrid through loanword 'Jungle'

Invented Systems of Writing derived from Other Systems

The idea of creating writing systems derived from one or more scripts is not new. There is precedent for invented writing systems throughout history and in contemporary times. An understanding of invented scripts and why they were created could provide insight into how an invented system of writing could be used and how it shaped and was shaped by its larger cultural context. The Nüshu script is the only writing system developed and used exclusively by women in history. Developed In the South-East region of Hunan Province (湖南省) China, Nüshu is based on Chinese Han characters.

In feudal China, women were not allowed to read or write Chinese, a privilege given to the imperial family, nobility, administration and academics, almost exclusively men. Once a woman is wed to a husband from another village, she would have to move to the husband’s family, which means

leaving her own family, friends and birthplace. Women needed to keep contact with their loved ones. Nüshu allowed farmland and mountain village women to not only communicate with each other across distances when they were not allowed to write or read, but also to develop their very own culture.

Women wrote songs, ballads, poems, autobiographies, and even embroidered charms for health and happiness. Nushu allowed women to create their own parallel world; a creative way to communicate with each other. They kept the script evolving through time, using it in many ways and ended up creating a culture of their own, alongside the culture of men. Nüshu has always been used openly in the villages. Men could see the script used by women around them without a secret but it never caught their attention. Nushu is a reflection of the social separation between men and women of the time. (Huang 2020)



Fig 29. has been removed due to copyright restrictions.

Fig 29. Noto Sans Nushu Traditional



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Fig 30. 'Satanic' Letter written by a nun in 17th Century Sicily

There are other instances in history where the use of an invented script was to express rebellious ideas. In 17th century Sicily, at the convent of Palma di Montechiaro, a young nun by the name of Sister Maria Crocifissa della Concezione claims to have been possessed by the devil. On Aug. 11, 1676, she was found on the floor of her cell, her face covered in ink, holding a note written in an incomprehensible mix of symbols and letters, according to historical records. Sister Maria apparently said the letter was dictated by the devil through her in an attempt to get her to turn away from God and toward evil.

The message, just 14 lines of jumbled, archaic letters, has for centuries defied every attempt at understanding its meaning. More than 300 years later, researchers from the Ludum Science Center partially decoded these letters. Rambling in nature and not entirely understandable, the letter, in addition to calling the Holy Trinity “dead weights,” goes on to say that “God thinks he can free mortals... The system works for no one... They found that the nun’s letter contained a mix of words from ancient alphabets such as Greek, Latin, Runic and Arabic. Sister Maria had an excellent command of those scripts which allowed her to invent the code. (Lorenzi 2017)

Scientists believed that the pressures of being a nun from a young age had overwhelmed Sister Maria, which pushed her towards becoming bipolar and possibly schizophrenic. Is this the work of the devil or mental illness or loneliness and frustration of a young woman in an orthodox environment, who knows? One can only speculate. This code of ancient scripts allowed Sister Maria to hide and simultaneously express blasphemous ideas that were considered heretical at the time.

Contemporary examples of invented script also do exist. Chinese contemporary artist, Xu Bing’s monumental installation “Book from the Sky” is a gallery with scrolls and books hand-printed with 4,000 “false” hand-carved Chinese characters. This four-volume treatise, produced over four years, was made with thousands of meaningless characters that look like Chinese.

The meticulous, exhaustive production process and the work’s format, arrayed like ancient Chinese classics, were such that audiences could not believe that these exquisite texts were completely illegible. The work simultaneously invites and denies the viewer’s desire to read the work. As Xu Bing has noted, the false characters “seem to upset intellectuals,” inspiring doubt in received systems of knowledge.(Xu Bing)

The work was first exhibited at Beijing’s National Art Museum of China in 1988, where it provoked a range of reactions. Many admired the work’s fine craftsmanship while others appreciated its calculated absurdity. Some searched in vain for at least one intelligible character and left angry, insulted by the inaccessibility of the text. Before long, the government condemned the work and shut down the exhibition, judging it to be subversive and mocking centuries of Chinese culture with art that appeared classical {referencing established traditions of bookbinding and calligraphy} but was actually meaningless. (Prasad 2021)

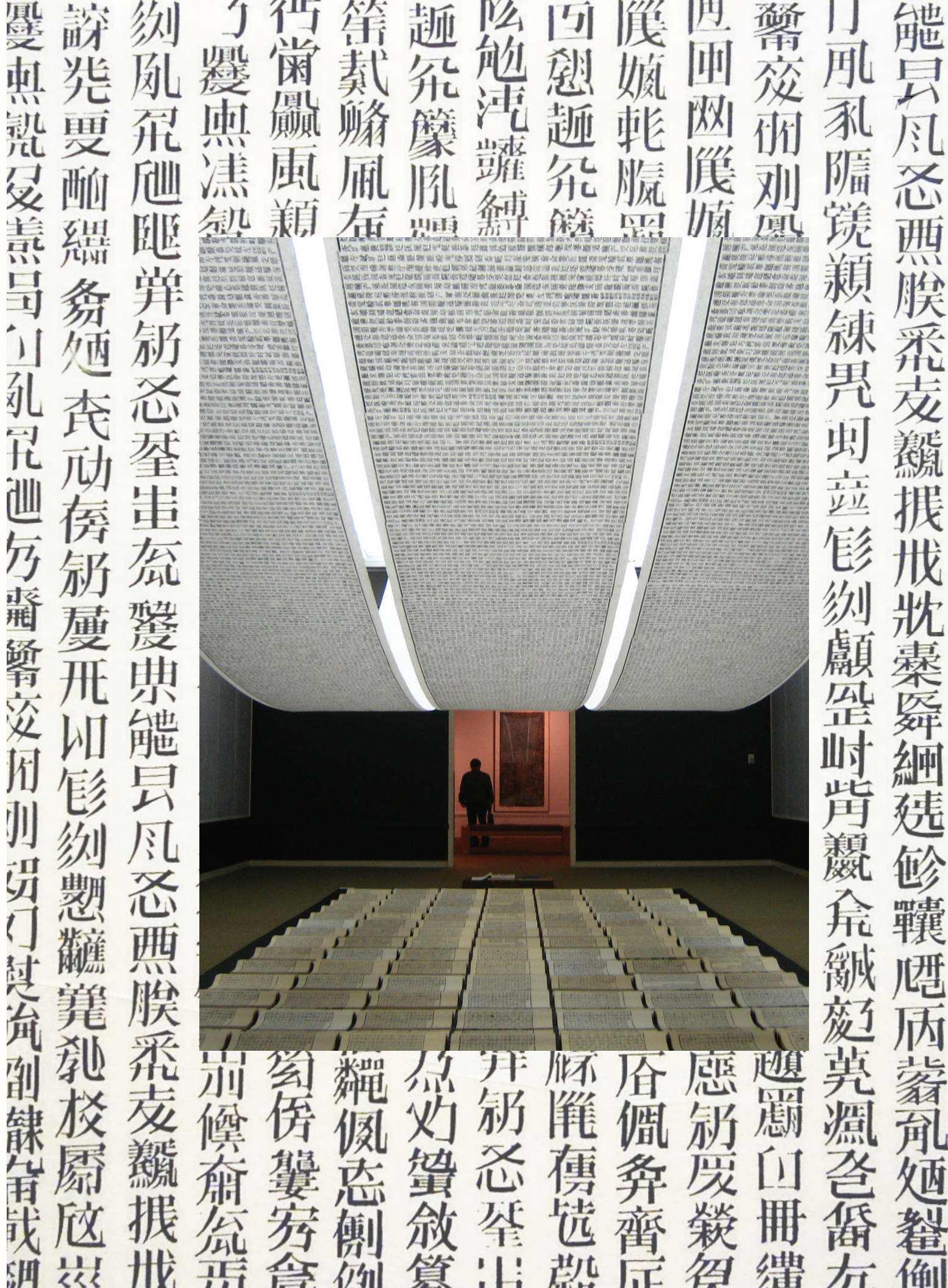


Fig 31. Xu Bing's 'Book from the Sky' exhibition



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In contrast, typeface designer Liron Lavi Turkenich’s Aravrit typeface seeks to invite readers to take part in connecting communities and make meaning through the legibility of hybrid letterforms. Aravrit is an experimental writing system presenting a set of hybrid letters merging Hebrew and Arabic. These scripts don’t exist in a void.

They live together, interlaced, in Israel’s urban environment: Hebrew, Arabic and English. Each script is affected by surrounding scripts, which in turn influence them back, a symbiotic relationship. In Israel, most signage, in particular official signs for roads and streets, feature text in three languages. In Aravrit, one can read any chosen language, without ignoring the other one, which is always present. Each letter is composed of Arabic on the upper half and Hebrew on the bottom half. (Turkenvich)

Fig 32. Aravrit - a Arabic and Hebrew hybrid typeface

Writing is a form of expression and as evidenced from earlier examples, the letterforms are also a form of expression. The content of the words weren't what expressed the thoughts and ideas behind the writing system but rather the writing system itself reveals them through the visual expression of their letterforms. The letterforms of these invented scripts depend largely on the context in which they exist and are derived from the existing writing systems of that context. What ideas do an invented writing system derived from Devanagari and Latin portray, especially a script that is illegible to readers of either script? In what context could they exist in?





The Case of Disha Ravi

At the time of this exploration, India's ideals of democracy were under threat {still is} from its current government. On 13 February, 2021, activist, Disha Ravi, was arrested for sharing a protest toolkit regarding the Farmers' Protest in India under the charges of sedition and criminal conspiracy. Sedition is a British colonial era law that states, "Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards, the government established by law in India, shall be punished with imprisonment which may extend to three years, to which a fine may be added; or, with fine."

Historically, this law has been used by British colonial rulers to suppress freedom fighters such as Mahatma Gandhi and Jawaharlal Nehru and is still in use to this day. Disha Ravi is only one of many activists that have been arrested under sedition laws. This is a concerning situation as it disregards the freedom of speech and expression written into the Constitution of India; a government that claims to be democratic.

How does one share information freely under oppressive structures that hinder one’s freedom of speech and expression? A Devanagari-Latin Hybrid could explore this question. Devanagari and Latin are the writing systems of the main languages used within the Indian government {Hindi and English}. Why not use their system against them? This invented hybrid script could act as a code; creating insider and outsider networks of communication. If they can’t read it, how can they arrest you for what you write?

This practice of entrenching code through visual communication is called surreptitious communication design (SCD), a term coined by Tad Hirsch. It is a framework for designing communication systems and campaigns that address contentious political contexts. SCD seeks to create messages that are meaningful for intended recipients, but illegible and/or inaccessible for adversaries. SCD borrows concepts from cryptography and information theory that considers opposition as a design factor in order to craft messages that are clear, effective, and compelling for a given audience but also contend with avoiding detection and comprehension by adversaries.

Designers must analyze adversaries’ capabilities and also must consider the risks faced by those who participate in communication. They must determine the likelihood that an adversary will intercept and understand the communication, and the likely outcomes for participants if they do. Hirsch, specifically focuses on visual communication strategies as a way to intentionally disrupt information flows rather than purely textual communications. My explorations on fused scripts relies on both visual and textual communication strategies in order to craft hidden messages. (Hirsch 2016)

These explorations of coded communication led me to practicing and learning about the history of textile crafts, particularly embroidery, and its potential in cryptography. Textile crafts have historically been stereotyped as “women’s work”. This work often uses patterns to encode meaning. Coded communication has the potential to be hidden through patterns under the marginalized position of “women’s work”.

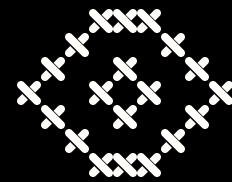
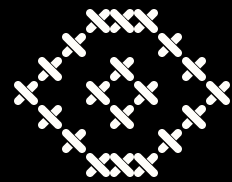
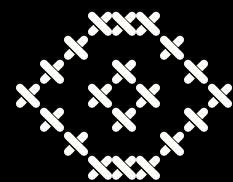
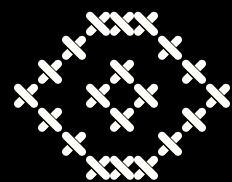
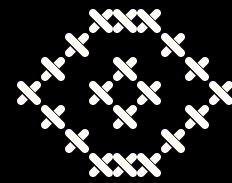
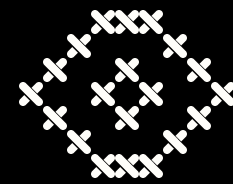
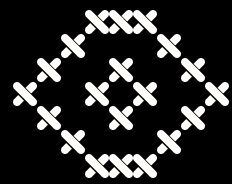


Fig 33. Cross Stitch Embroidery Eyes



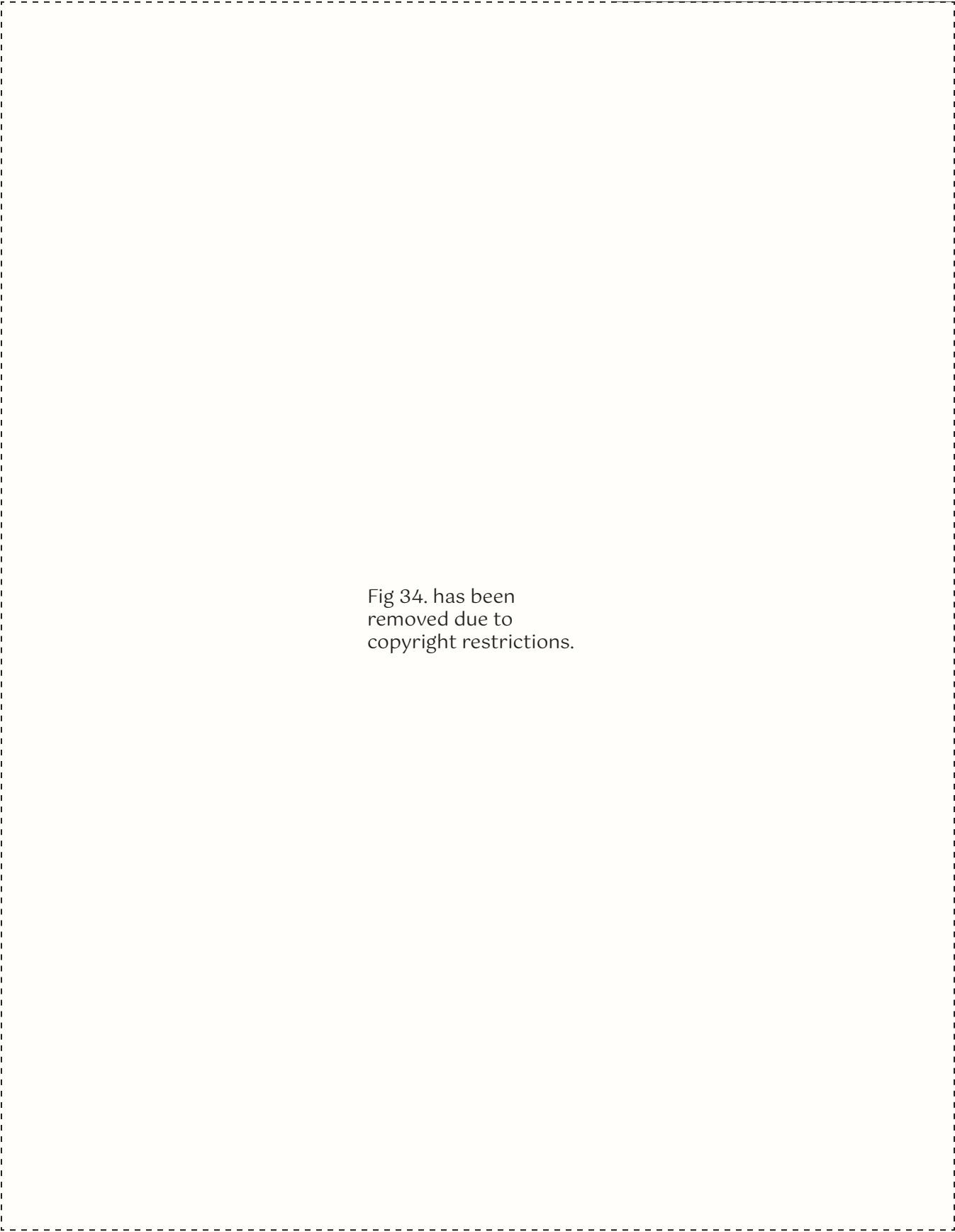


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Fig 34. A collage of cloth swatches of Kantha stitch types

Embroidery and Coded Communication

“Sewing is a visual language. It has a voice. It has been used by people to communicate something of themselves — their history, beliefs, prayers and protests. For some, it is the only means to tell of what matters to them: those who are imprisoned or censored; those who do not know how or are not allowed to write of their lives. For them needlework can carry their autobiographies and testimonies, registering their origin and fate. Using patterns as syntax, symbols and motifs as its vocabulary, the arrangement of both as its grammar, sewing is a graphic way to add information and meaning.”

- Clare Hunter

Parallel to explorations on linguistics and typography in India, I have also been exploring embroidery as a medium of storytelling and encoding stories. I was drawn to the practice by its versatility as a medium of storytelling and later, its potential as a steganographic medium {steganography: the practice of concealing a message within another message or a physical object} and how it could further aid in my explorations in crafting coded communication.

Crossing Borders

At the time, I was making my move from Mumbai, India to Jubail, Saudi Arabia to live with my parents. As I was dealing with the bureaucracy of crossing borders in the middle of a pandemic, I explored my personal and ancestral relationship with borders. As a person who has moved from country to country their entire life, my relationship with borders was often bureaucratic in nature. Passports. Visas. Stamps. Security checks. Fingerprints. Face scans. Papers. More Papers. As I dived deeper, my personal relationship delved into my ancestral relationship with borders.

In 1947, British India was divided into India and Pakistan; a period of history known as Partition. The partition involved the division of two provinces, Bengal and Punjab based on religion. Hindus and Muslims. The idea was for Hindus and Sikhs to go to the Indian side of the border and Muslims to the Pakistan side. These borders of religious divide were designed by a British lawyer

by the name of Sir Cyril Radcliffe. He created that border in 5 weeks. Partition was a violent era that led to the displacement of 10-12 million people and with several hundred thousands to 2 million lives assumed to be lost. Partition affects people to this day with tense political/border relations between India and Pakistan.

My great grandparents and their children (my grandparents) were a few of the 10-12 millions that were forced to move from their original lands in Bangladesh (formerly East Pakistan) to India due to tensions between Hindus and Muslims. Unlike me, they have no records of their border histories. What’s left of them is the memories and stories of them told by future generations. But as I talked to my parents about my great grandparents, they couldn’t tell me much. They have very faded memories of my great grandparents. Generation after generation, these stories were fading away.



Fig 35. has been removed due to copyright restrictions.

Fig 35. Benediction on a Battlefield
by Krishen Khanna



Fig 36. India Bangladesh border
stitched in Kantha

“Kantha, making whole again that
which was fragmented or broken.”

- Craft Museum, New Delhi

As an attempt to record this history, I embroidered the India/ Bangladesh border using my father's old handkerchief in the Kantha style. Kantha is a form of embroidery that is practiced by the rural women of Bengal from both India and Bangladesh. Kantha refers both to the style of the running stitch and the finished cloth. Kantha means rags. The women recycled the well used cloth that turned to rags and gave it new life through the stitch. Fabrics were layered together and the stitch would cover the entire cloth to provide strength. The stitching could be handed down through generations, with grandmother, mother and daughter working on the same Kantha.

Kantha seemed a fitting medium for this story. It is generational. It encodes memories. It repairs what is torn apart. There's layers to it. Yet, as I was stitching the border, I couldn't help but feel that I was reinforcing the colonial perspective of the very border my ancestors fled from. This was not my story to tell. Most of the people from the Partition generation aren't alive but their stories have been passed down through generations as memory. People like my aunts and parents who have had personal relationships with my great grandparents.

“Kanthas are repositories of memories of particular makers, givers, recipients, and owners.”

- Wandering Silk

How do I make space for generational memory keeping? How do I not involve myself in the telling of this story that is not mine to tell? What mediums can be utilized to make that space for the loved ones of my great grandparents to tell that story?

Writing through sewing could be a powerful way to document these histories and narratives. In 1830, Elizabeth Parker sewed a sampler recounting the abuse she suffered, the ‘cruel usage’ of the master of the house, and her subsequent suicide attempt. The first words of her sampler are “As I cannot write...” as if to suggest that the shape of a stitch does not carry the same rhetorical weight as an ink drawn letter. In stitching her story Parker is able to materialize her experience into a physical form. If she cannot speak her trauma aloud then her stitching will speak for her. (Emery 2020)



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Fig 37. Elizabeth Parker's Cross stitch embroidery, 1830

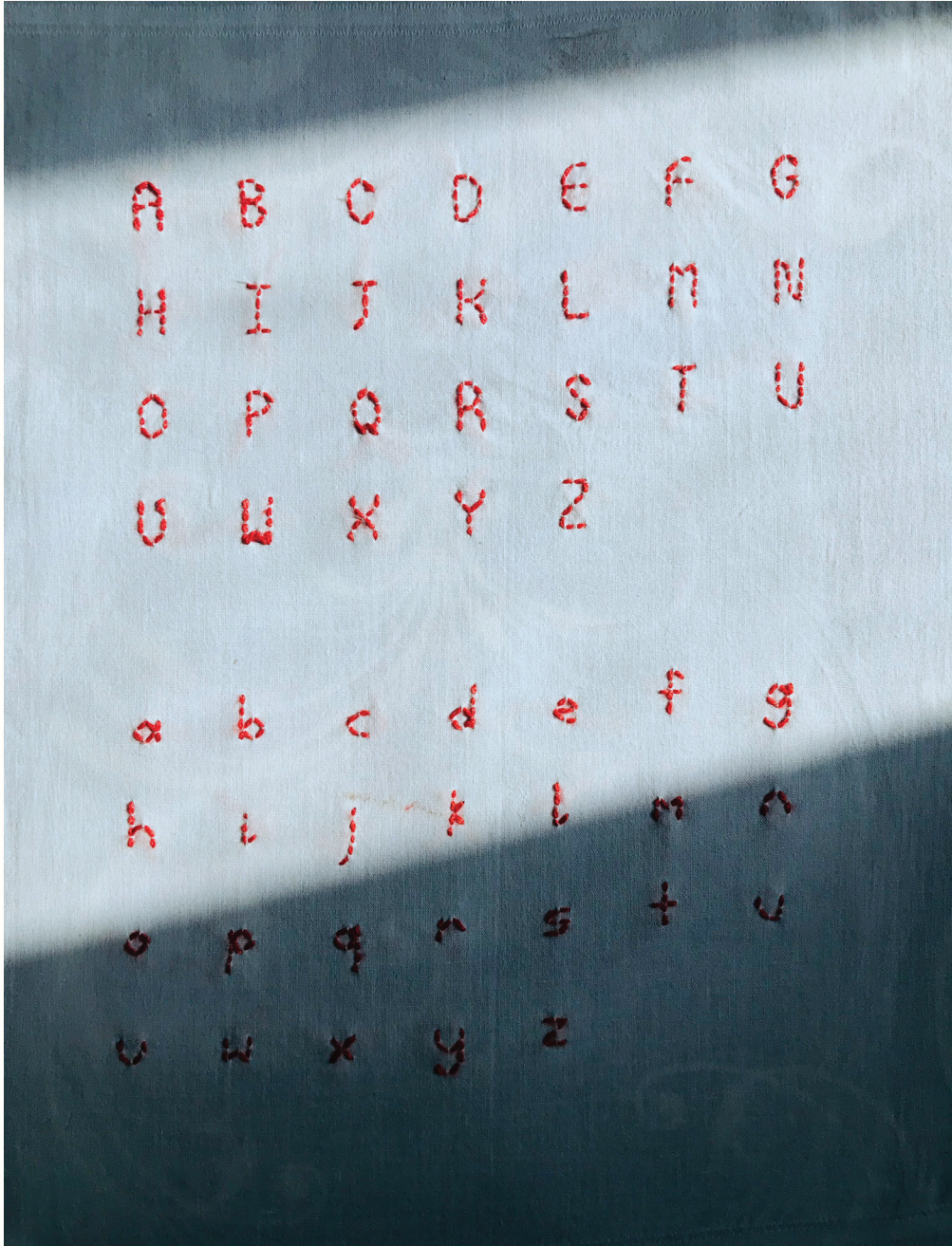


Fig 38. Typeface stitched in Kantha

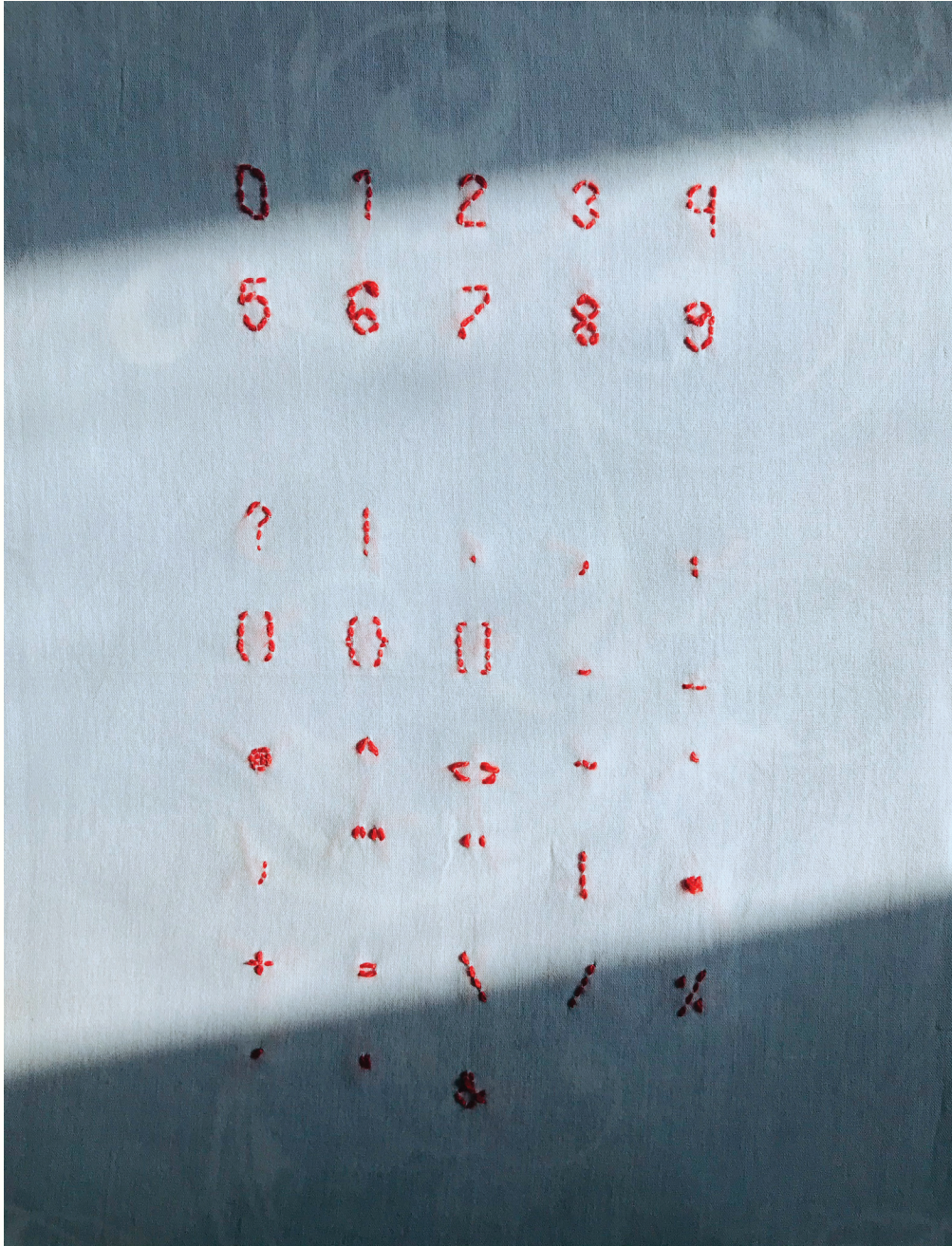
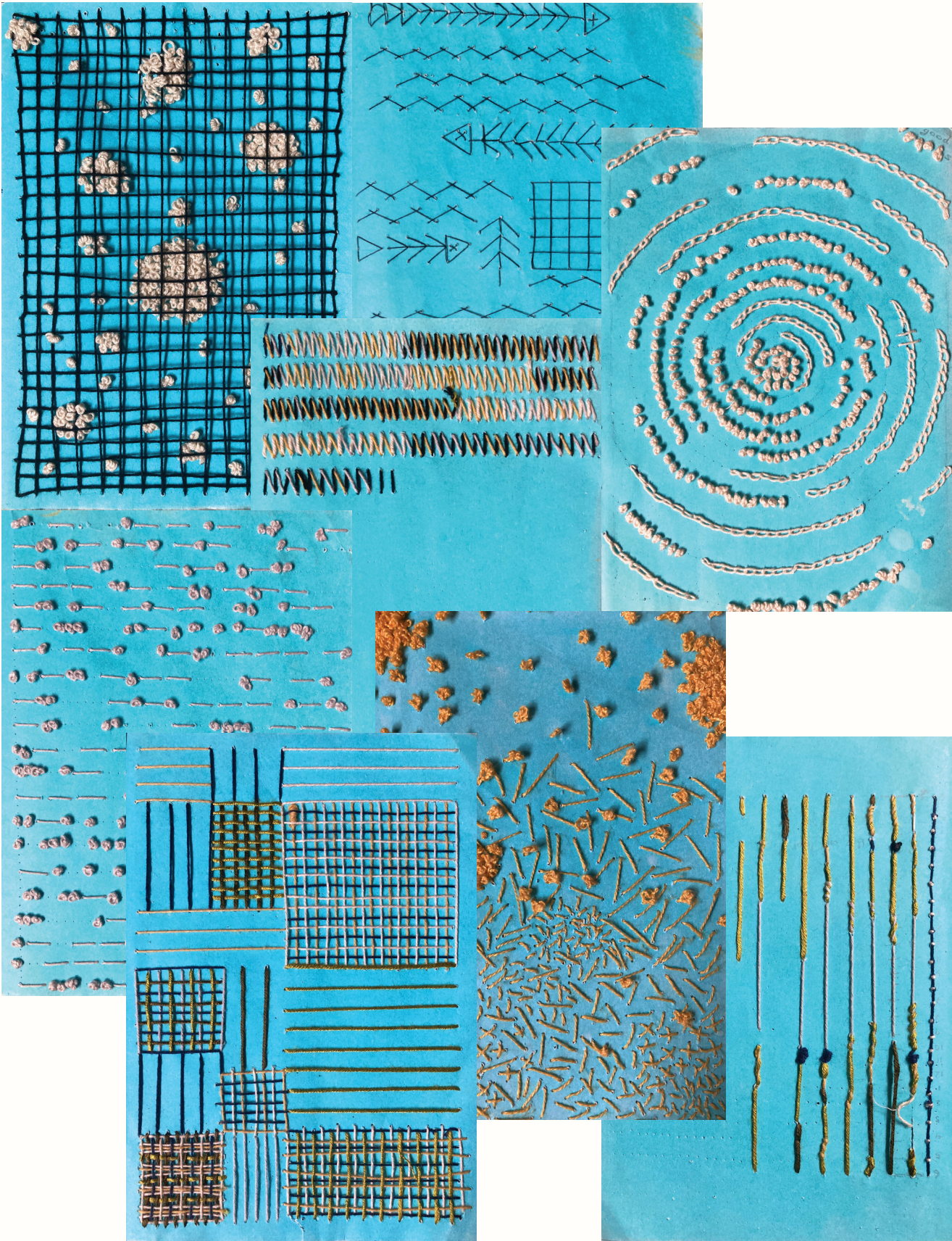


Fig 39. Typeface stitched in Kantha

Fig 40. Kantha typeface vector



In the absence of any records of my ancestors and their journey, sewing could give voice to those who knew their stories; surviving generations such as my parents and my aunts. I created and embroidered a typeface in kantha as a medium through which they could tell those stories. This would allow for the stories of my ancestor to not only be told but also be materialized. This was the beginning of my journey towards learning embroidery, its histories and its potential in my practice.



Embroidered Journal

Historically, embroidery was considered “women’s work” and was therefore “... characterized as mindless, decorative and delicate... devoid of significant content”. Embroidery employs the use of patterns and that is one of the reasons it is often dismissed as well. The interpretation, adaptation and variation of the pattern is an important part of the activity (Parker 1984). Could the historic dismissal of women’s work and the employment of patterns hide coded communications?

There is potential for embroidery to be utilized as a steganographic medium. Unlike knitting and crochet, embroidery is typically figurative and regularly incorporates text. It also has a long history as women’s work. In many cultures, this type of needlecraft has also long been used as a form of communication. (Kuchera 2018)

During the Victorian period, the Language of Flowers employed floral motifs to express sentiments, messages and meanings stitched by middle and upper class women. For example, the lily of the valley meant the “return of happiness” which potentially symbolized the happiness granted by the returning “of an absent friend”. More often than not, the motifs symbolized Victorian feminine virtues. Water lilies imply “purity of heart”. Field lilacs represent “humility”.



Fig 42. Women in Berlin knitting for soldiers

Though embroidery has historically been a narrative and symbolic medium, historical and literary sources suggest the possible application of other fiber and textile arts for steganography which provide precedent for the potential for embroidery as a steganographic medium. During World War II, the Office of Censorship in Britain banned knitting patterns from being mailed abroad to prevent any possible coded messages. There is one known example of coded knitting from the period: "The Belgian resistance recruited old women whose windows overlooked railway yards to note the trains in their knitting. Basic stuff: purl one for this type of train, drop one for another type". (Kuchera 2018)

Throughout the summer, I practiced embroidery to become familiar with the motions of the needle and thread, learning stitch techniques, recording personal thoughts and feelings into stitch imagery. I bound a book that would become a journal where I expressed my thoughts and ideas through sewing.

Embroidery is usually done on cloth but I chose to practice on paper. It was an intuitive decision as I was more familiar with paper than cloth. Paper is not as forgiving as cloth when it comes to mistakes in stitching. If a stitch goes wrong, the paper rips. This forced me to be more careful and deliberate with my stitches and thus helped me learn stitch techniques with more precision.

When I first started out embroidering in the journal, I was abstract in my imagery as I was choosing to focus more on the techniques rather than the content. My first piece, "A Sunny Day", employed french knots and straight stitches to create an abstract pattern to convey a bright summer day.



Fig 43. 'A Sunny Day' embroidery

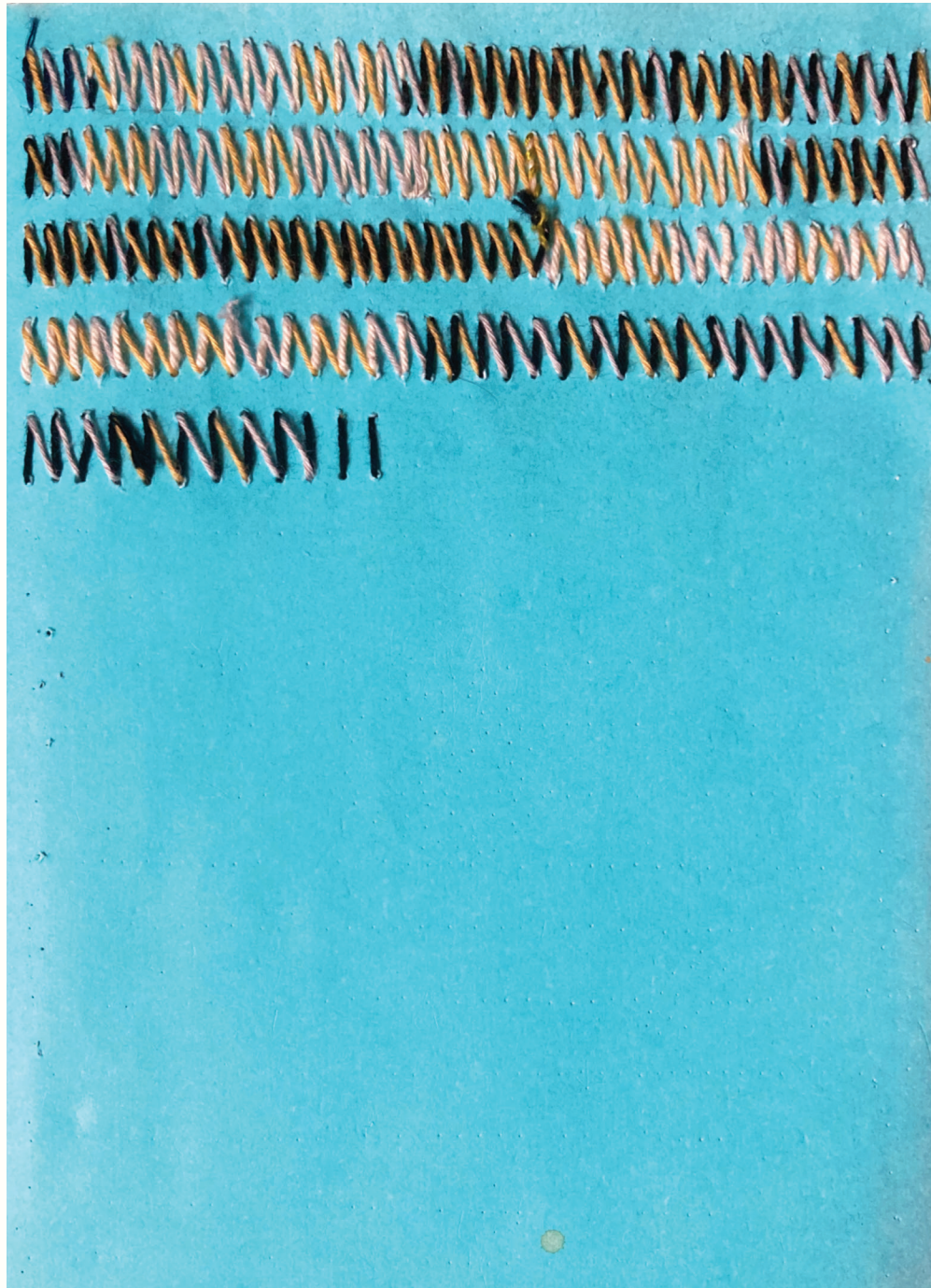


Fig 44. 'Weather Data' embroidery

As I started to become familiar with the practice, I moved away from the abstract to create more systematic patterns through data visualization. Data visualization has elements of cryptography as it involves encoding and decoding information but the key to decoding the visual is out in the open. Plus, it also involves patterns like embroidery.

I started by visualizing the weather each day since I arrived in Vancouver . The straight stitch represents a day. If the color of the straight stitch changes from white to black and vice versa, the month has changed. The diagonal stitch represents the weather for each day. Yellow stitches for sunny days. Gray stitches for rain or cloudy days.

At this point, I was beginning to see how inconspicuous embroidered patterns appear. These patterns could belong on any everyday item. A shirt. A mask. A blanket. If a medium could be stitched, these patterns could appear anywhere. Because they're so inconspicuous, no one would suspect that there is information hiding within these stitches.

Later, I explored how these embroidery and cryptography align. Like data visualization, cryptography utilizes a set of symbols and visuals called ciphers that one must decode in order to understand the hidden information. Unlike data visualization, the key to decoding these ciphers is not out in the open. This is where one gets to have more control in who gets the key, who gets access to this information, creating an insider outsider network of communication.

I sewed my {very sad} thoughts into morse code, employing a running stitch and french knot to create dots and dashes. Morse code is not as inconspicuous of a cipher since it is a recognizable code as it exists in popular culture through music and film. Once a code can be deciphered or at least recognized, its function as a code is obsolete. Even if one uses embroidery to hide the code into everyday items, the recognition would render the hiding ineffective.

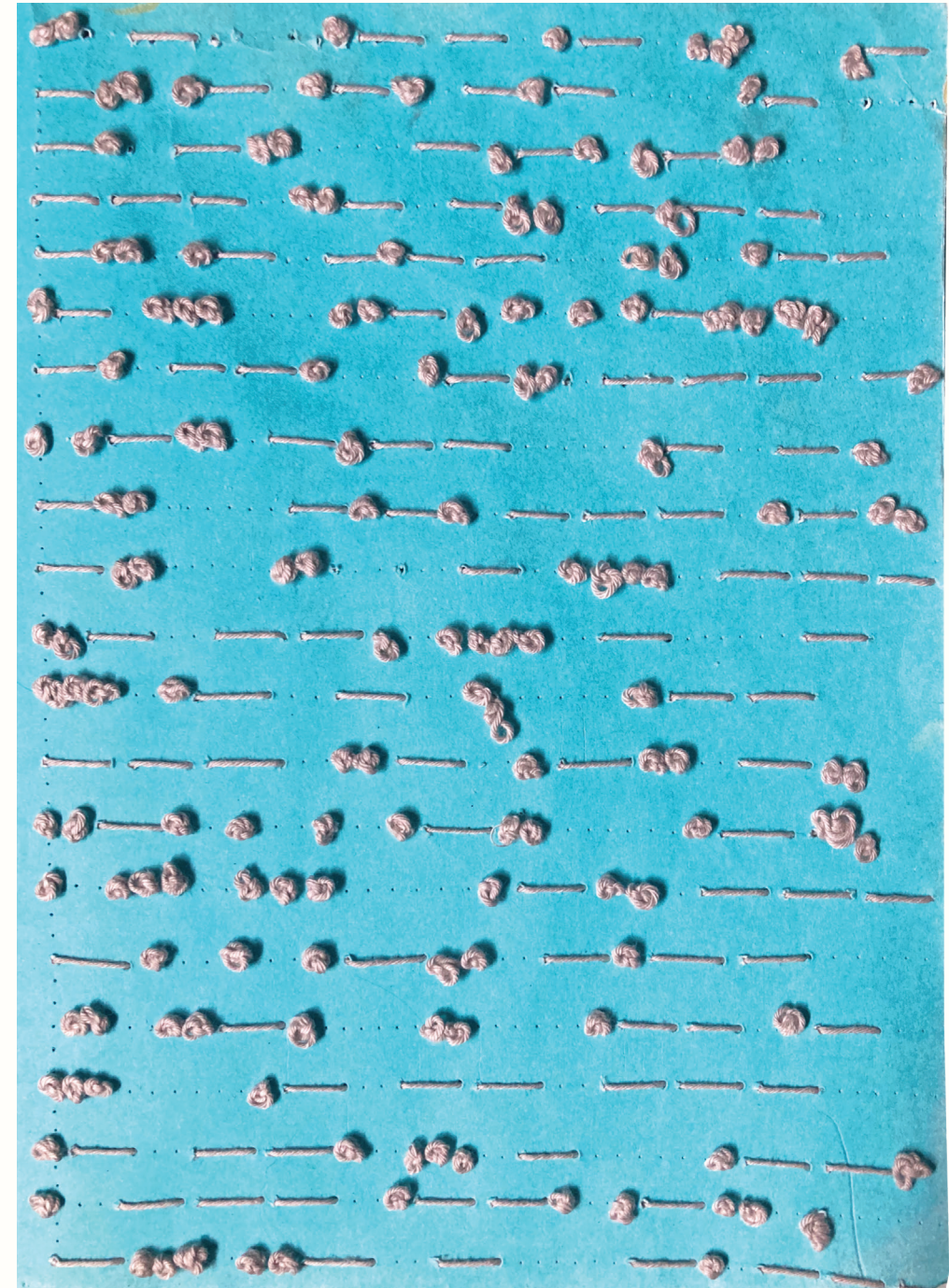


Fig 45. 'Morse Code' embroidery

I decided to try and create my own cipher to further experiment with systematically coded embroidered patterns. As I was navigating life in Vancouver and being a stranger in this land I newly arrived, I was grasping at things familiar to me. Whenever my family and I have moved to a new country, I distinctly remember our first meal almost always being rice with boiled potatoes, fresh green chillies, and ghee. Rice is one of the first meals I had when I quarantined in Vancouver.

Rice is important to me and presents milestones in my life. In Bengali Hindu culture, we celebrate the first time a baby eats rice in a ceremony called Annaprashana or Mukhe Bhaat. The child’s maternal uncle or maternal grandfather feeds them rice. Elders give blessings by placing rice seeds {dhaan ধান} on the baby’s head.

The ceremony is followed by a game where objects are placed in front of the child and whatever they pick will be a prominent highlight in their future. Soil for property. Books for Learning. Pen for wisdom. Coins for wealth. My father must have really wanted me to work with computers since he placed all of his I.T. textbooks in front of me.

Rice is familiar and it is my comfort. So I decided to make a cipher surrounding a proverb on rice.

Fig 46. Dhaan (Rice seeds)

अगर सयोंद कथ आसि, होद
बतु छूनु बोज़नय यिवान।

agar s'od kath a:si, hod bati
chuni bo:znay yiva:n.

Fig 47. Rice grain pattern

When one speaks soft words,
even plain rice tastes good.

This Kashmiri proverb conveys a lot of the comfort and care I associate with rice. How do I translate this into a cipher? Ciphers replace individual letters and encode them into a symbol. The symbols could be substituting one alphabet with another, using or mixing different writing systems or even creating your own symbols. Ciphers generally have the look of a writing system. I deviated from that visual and employed embroidery patterns instead.



Fig 48. 'Ricepher' embroidery

I first assigned each letter a number, indicating the number of stitches to sew. A=1, B=2, C=3 etc. If it's an even number, I would use a chain stitch. If it's an odd number, I would use a french knot. If you want to write the letter 'C', you would have to stitch 3 french knots. If you want to stitch the letter 'H', you would have to stitch 8 chain stitches.

The french knot and chain stitch combination is used to mimic the texture of rice grain. The code is read in a spiral; starting from the middle and spiraling outwards. I wanted to use this circular pattern of reading to mimic a bowl of rice.

If not given the hidden context behind the stitching, this piece looks like a pattern that could be stitched into any everyday item and remain conspicuous. How do I employ this use of systemically stitched patterns along with my hybrid script explorations? Scripts are a system of writing. Ciphers are systems of encryption. Patterns are a system of repeated symbols. How can all these systems work together? What could be created if all these systems work together and what does that look like?



Fig 49. Shubho Nabobarsho Graphic

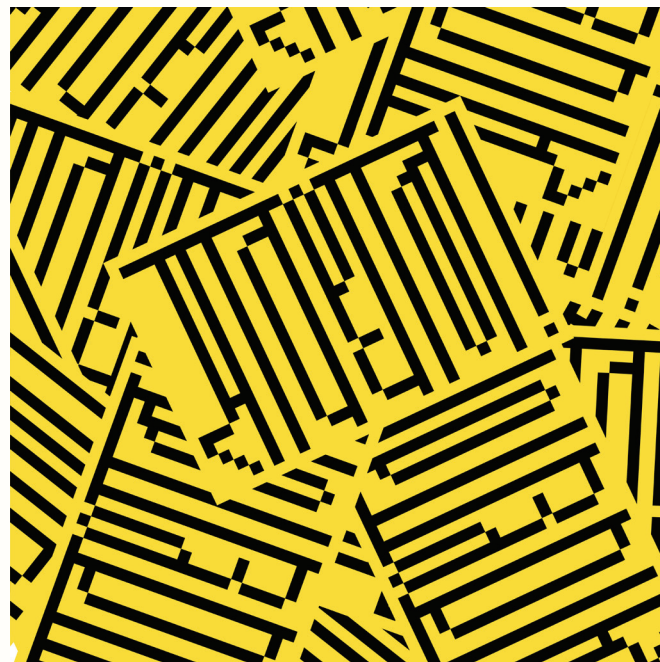


Fig 50. Savdhan! {Caution!} in
devanagari pixel typography

Indic Scripts are my Friends

My earlier explorations on typography and writing systems really highlighted my lack of knowledge in this field of type design, especially with Indic scripts. When I fused scripts together, I wasn't understanding the structure of the letterforms and how they might fit together. I was doing it intuitively not systematically because I didn't understand how the typography of each script worked on its own and with each other.

Along with my embroidery journaling, I designed Bengali typography compositions to complement those embroidery pieces. I chose to design in Bengali script because I couldn't read it and wanted to be more familiar with it. A part of my culture becomes inaccessible as I cannot read what is written. Designing in Bengali would also allow me to become more familiar with the other northern Indic scripts such as Devanagari script as they are similar in their foundation.

Bengali- Assamese Script

The Bengali-Assamese script {academically known as the Eastern Nagari} wasn't created to write a certain language, but it was the main script in the eastern regions of Medieval India. After the medieval period, Pali succeeded Sanskrit as the new written language in the region. The vernacular dialects of Pali eventually evolved into Bengali, Assamese and other related languages.

There is no standardized terminology for the elements of Bengali-Assamese script. Bengali-Assamese script is characterized by sinuous letterforms and flourishes that speak of its calligraphic origins. The letterforms are connected by a line known as the matrarekha (headline) which acts as a center of gravity for not only the letterforms but the diacritics marks (matras) as well. Matras are used to indicate the sound of a letter.



Fig 51. Dhaka based type designer Jacob Thomas' work in progress research on the anatomy of the bengali script

Bengali is both familiar and foreign to me as I have been surrounded by it my whole life but I couldn't read it. I started with the familiar. My name, মেঘনা {Meghna}, means one who lives in the clouds. I wanted to express billowy clouds through the letterforms of মেঘনা.

Bengali letterforms have circles and curves that lend well to shaping puffy clouds. I opted to remove the মাত্রারখো {matrarekha: headline} from the letters. Though technically incorrect, removing the মাত্রারখো {matrarekha} is often seen in display typeforms.

I go on to create typography that compliments my embroidery pieces. As I familiarized myself with embroidery, I also familiarized myself with Bengali letterforms. This typographic experimentation aided me to get more comfortable designing for scripts I am unfamiliar with.

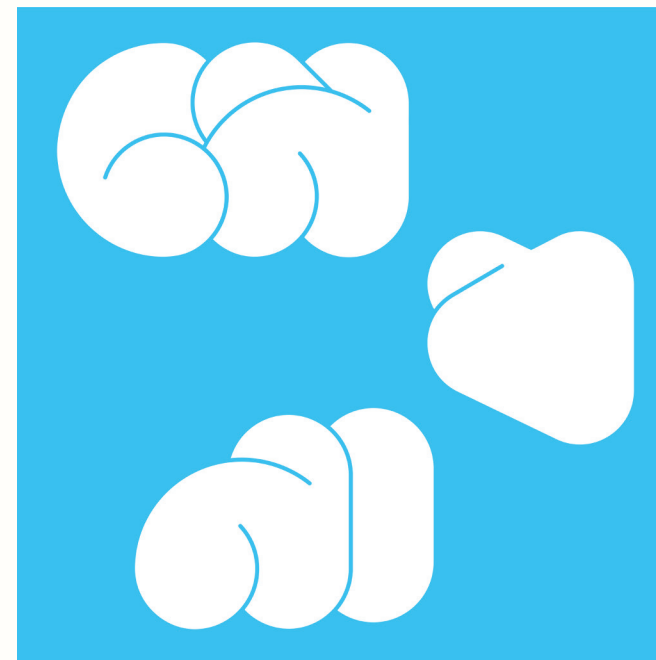
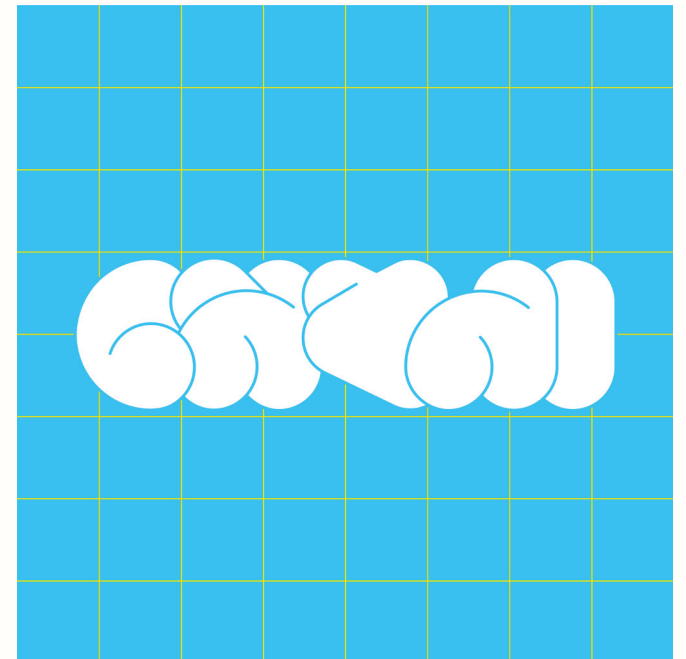
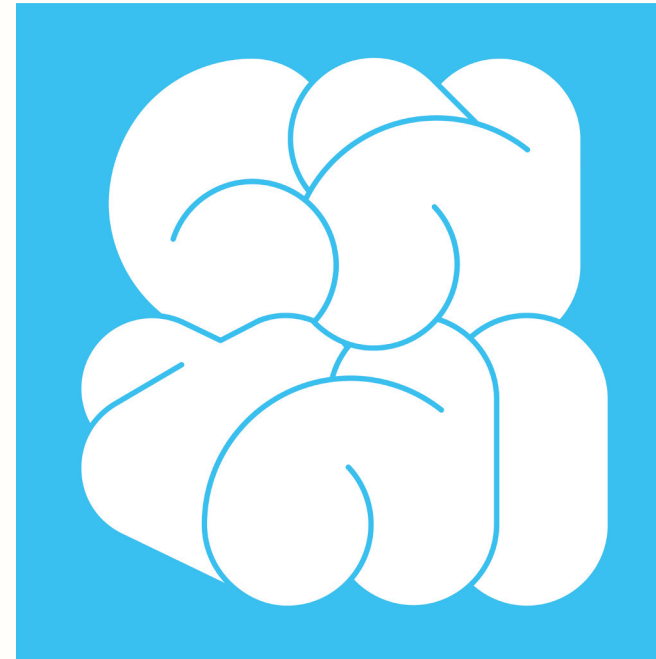


Fig 52. 'Meghna' letterforms in Bengali typography

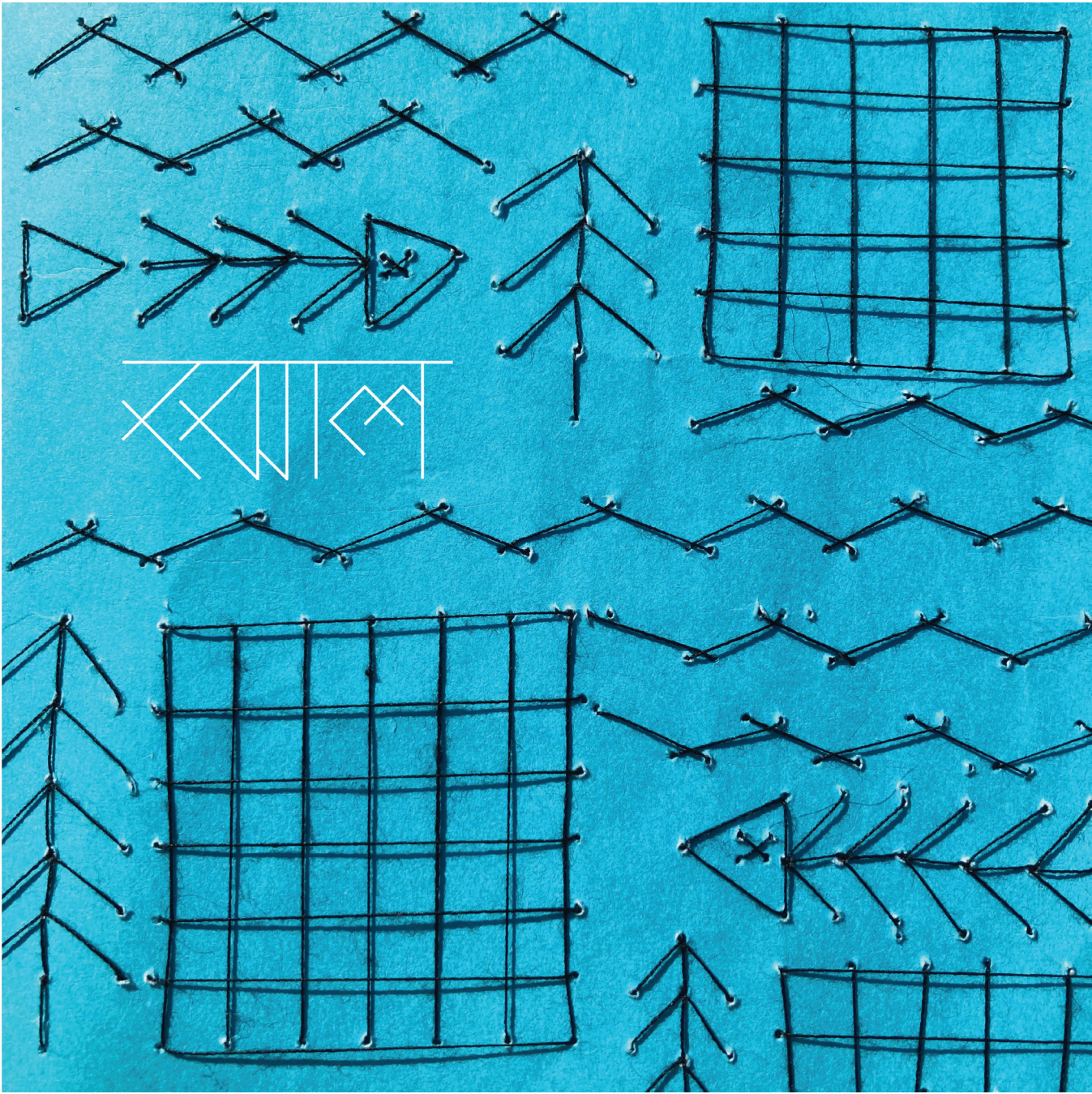
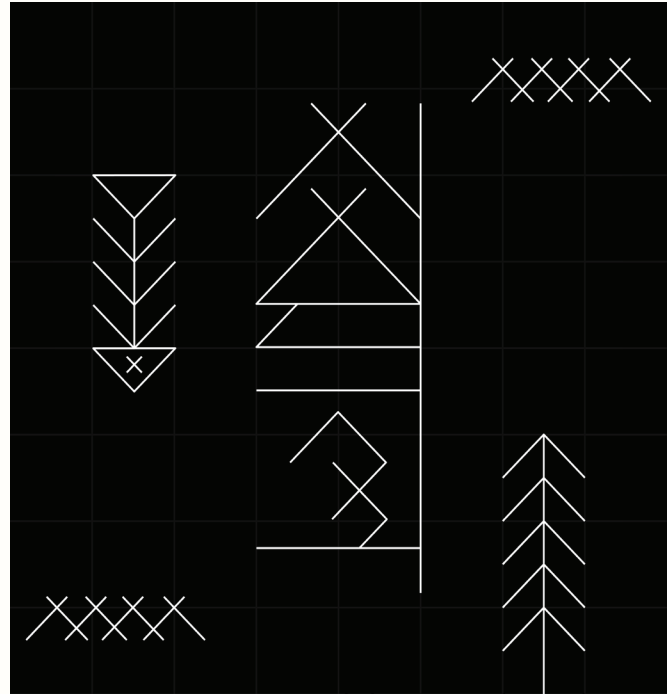
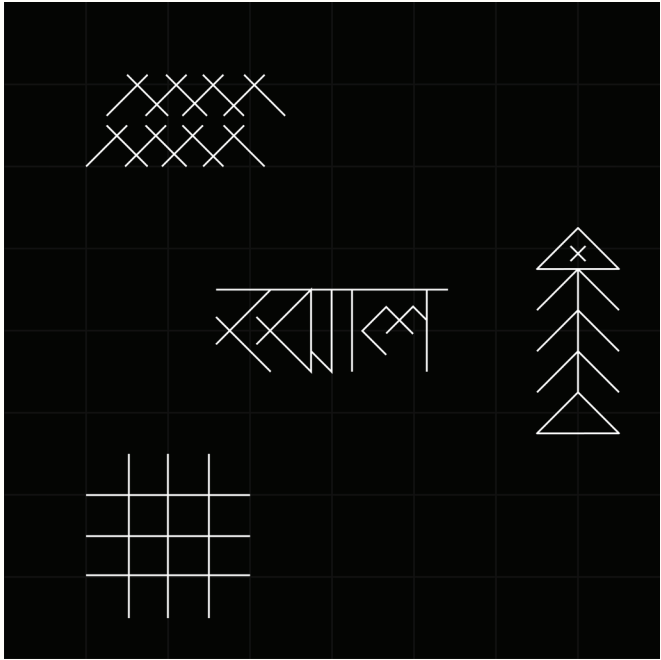


Fig 53. 'Jhol' (stew) letterforms in Bengali typography

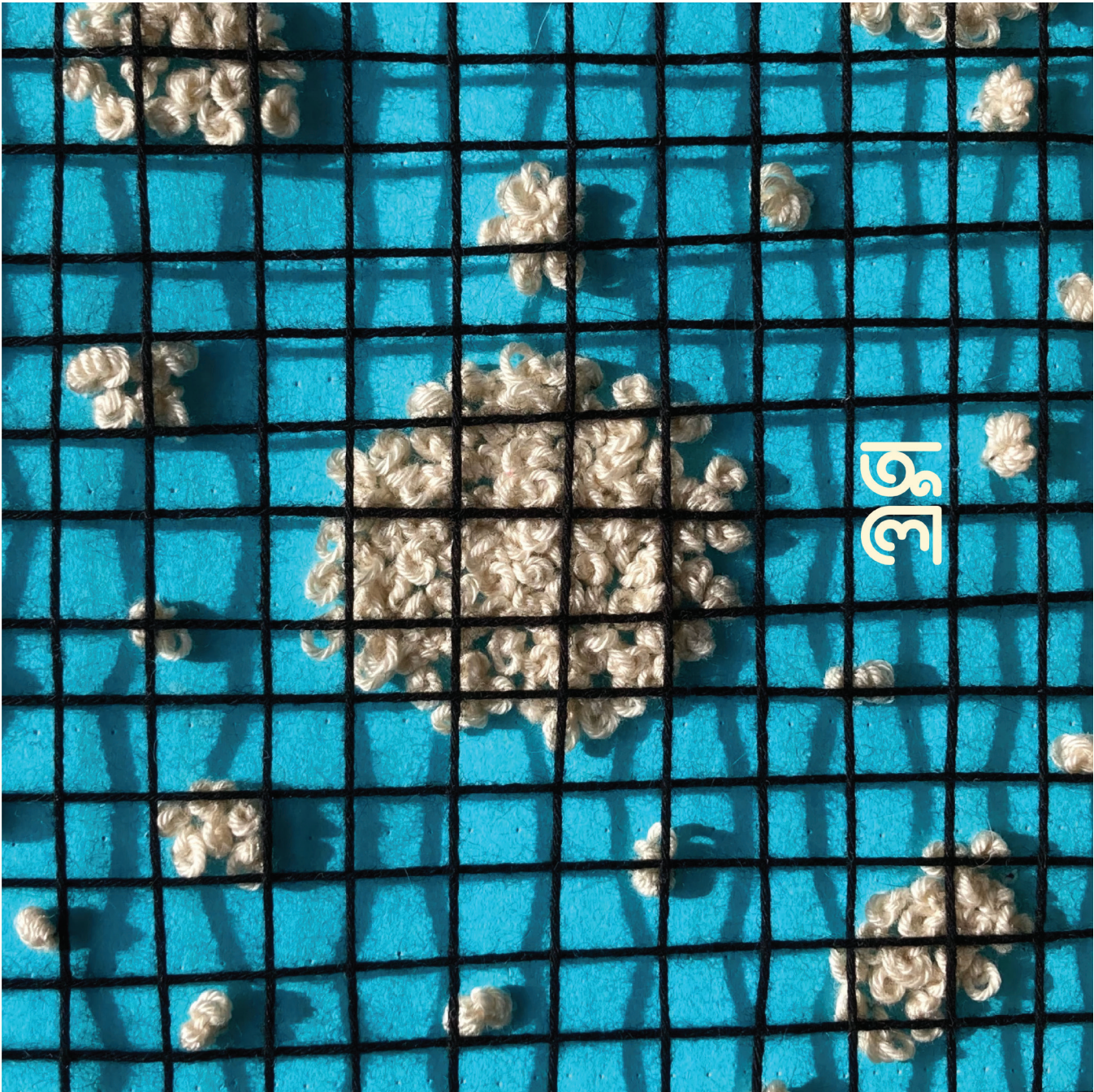


Fig 54. 'Tulo' (cotton) letterforms in Bengali typography



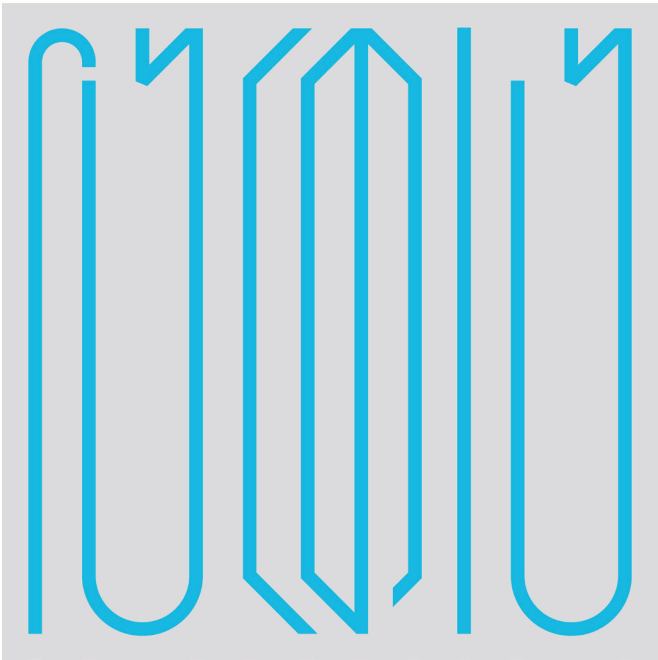
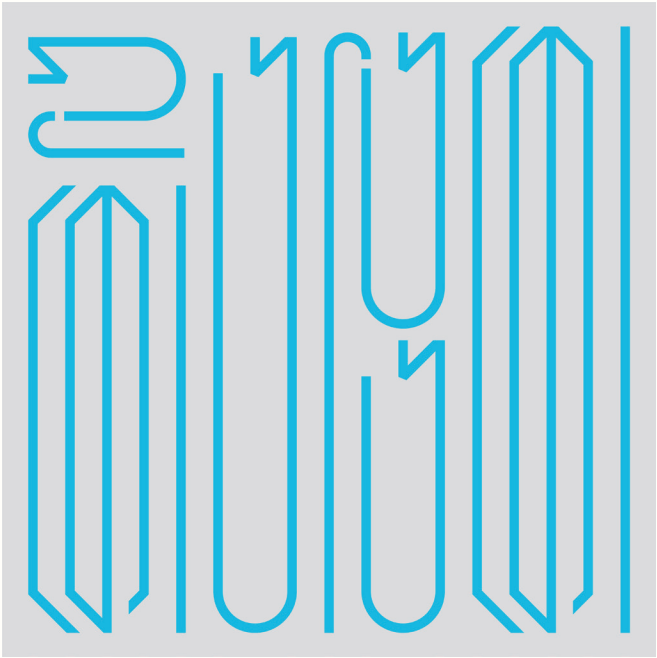


Fig 55. 'Decode' letterforms in Bengali typography

Looking back at this exploration, I decided I wanted to further push the idea of a devanagari-latin hybrid script that acts as a code and create a hybrid writing system. When I was creating this piece, I wasn't truly understanding how the devanagari and latin might work together. I was exploring it intuitively not systematically. I didn't know how the devanagari and latin might compliment each other through the fused script as I had little to no understanding of the typographic rules of each script, especially devanagari. In order to approach this systematically, we must understand how each script works and how they are similar and different from each other.

Fig 56. 'Jungle' in a Latin and
Devanagari hybrid letterforms





Fig 57. Shisyalekha, a 5th-century Sanskrit literary work of the Buddhist grammarian and poet Candragomin

The Structure of Devanagari

Devanagari is the writing system for numerous languages of South Asia. Large character sets, moving parts and complex shapes define the anatomy of the script. As an initiate to Devanagari type design, it felt like a monumental task. As Pooja Saxena notes, Devanagari script can feel intimidating to someone new to it. The lack of common terms for the anatomy of its letters and their metrics only makes this problem worse.

The issue of terminology is also faced by those who are native or fluent: How do I describe to someone a part of a letter if we don't have a shared vocabulary? It is not as if no terminology exists, but it hasn't gained the same currency as its Latin counterpart. There have been notable attempts to formalize the structure of the Devanagari script.

Throug her diagram, Pooja Saxena attempts to ive formal terminology on the anatomy of Devanagari type. Several Latin anatomy terms such as axis, contrast, counter, and stem are also used for Devanagari. Others like loop or knot are more specific to the script.

Fig 58. has been removed due to copyright restrictions.

Fig 58. Pooja Saxena's diagram on the structure of Devanagari

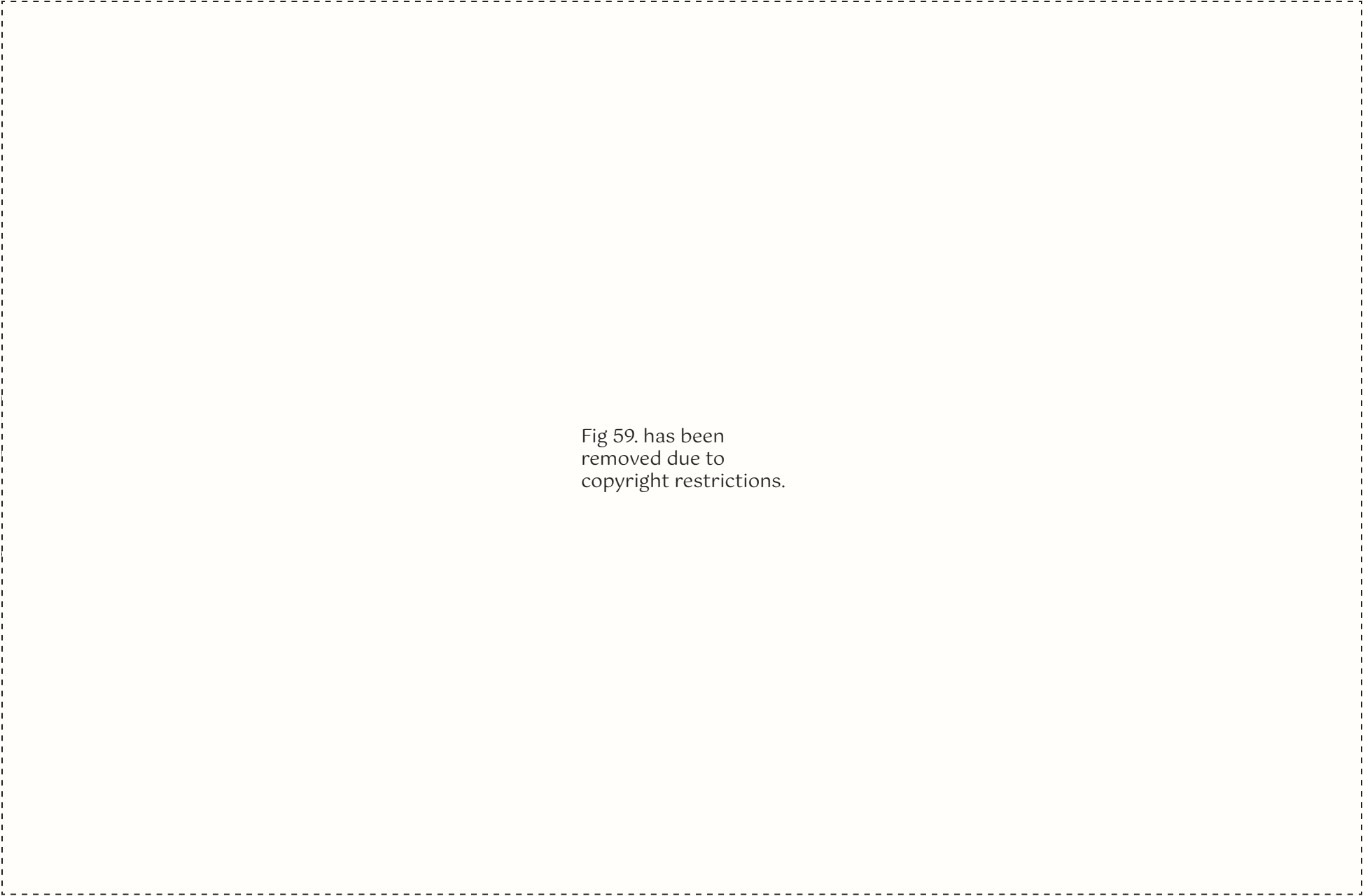


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Fig 59. Mukund V. Gokale's explanation on the structure of Devanagari

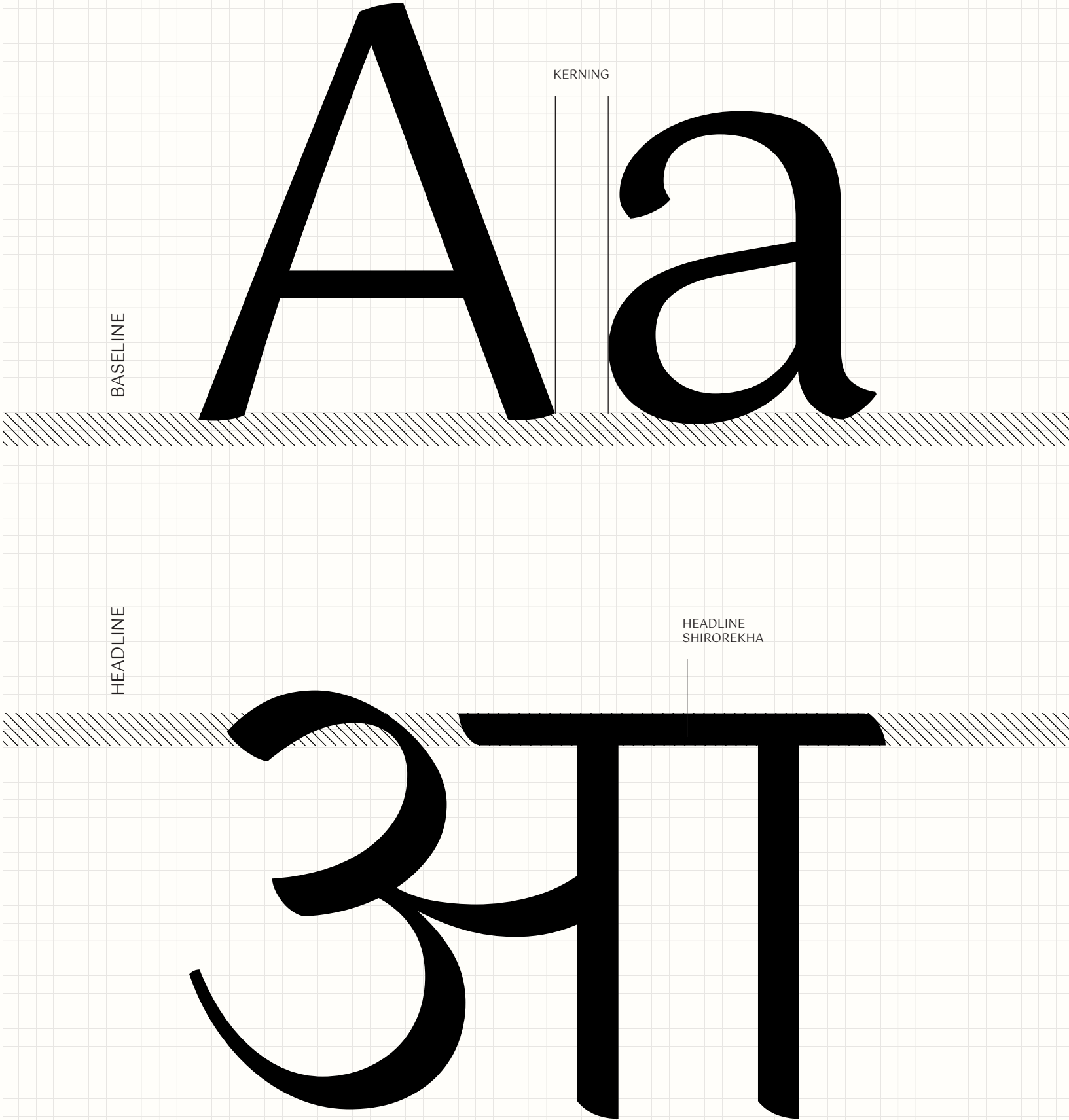
Mukund V. Gokale proposed an interesting attempt to explain the structure of Devanagari type through the human body. He roughly used the human body — in conjunction with the thickness of a pen stroke — as a reference to define the vertical metrics of Devanagari letterforms. The vertical metrics he defined were urdhvarekha (upward or top line), shirokekha (head line), skandharekha (shoulder line), nabhirekha (navel line), zaturekha (thigh line), padrekha (foot line) and talrekha (bottom line).

What one must remember is that in any scheme of Devanagari vertical metrics, unlike Latin, there is not and cannot be a prescriptive model that tells us exactly where a part of every letter must come in contact with a given metrics line, the way the Latin's x-height, caps height, ascender, or descender do. It varies from design to design. One must see the metrics, barring headline, and baseline as gradations in space that can be used to describe letterforms and their overall proportions, rather than as strict guidelines in which letterforms and their anatomy must forcibly fit. (Saxena 2018)

Differences between Latin and Devanagari

Though Latin and Devanagari are adopted by many languages of the world and can vary depending on the language, I will talk about these scripts through the lens of their basic English and Hindi character set respectively. Latin script has a system of UPPER and lowercase letters which devanagari does not have. Latin's center of gravity is to its baseline while devanagari's gravity is to its headline {shirorekha} so devanagari hangs while latin stands. In devanagari, letters are connected to form words by a line called the shirorekha while latin letters form words through its kerning {the spacing between individual letters/characters}.

Fig 60. Form differences between Latin and Devanagari



a e i o u

HINDI VOWELS

अ आ इ ई उ ऊ ऋ
{a} {aa} {e} {ee} {u} {uu} {ri}
ए ऐ ओ औ अं अः
{ai} {aii} {o} {ou} {ang} {aha}

VOWEL MATRAS ON LETTER द

दा दि दी दु दू दृ
{da} {di} {dee} {du} {doo} {dri}
दे दै दो दौ दं दः
{dai} {daii} {do} {dou} {dan} {daha}

Both Latin and Devanagari have vowel sounds but the way they are written are different. Latin uses letters to represent vowel sounds a,e,i,o,u. Devanagari uses both letters and diacritics to represent vowel sounds. The vowels sounds are represented by diacritic marks, called Matras, which are attached to letters to indicate the sound of that letter.

Similarities between Latin and Devanagari

Both Latin and Devanagari are read left to right. Many of the phonetics between Latin and Devanagari are similar. When you type devanagari on a QWERTY keyboard, the devanagari letters are placed on whichever latin letter is most phonetically similar with a few exceptions.

With these understandings in mind, I set out to create a hybrid writing system that fused devanagari and latin letterforms. I also wanted to implement what I learnt from my embroidery and cryptography practice and allow it to shape the hybrid letterforms.



Fig 62. Macbook Devanagari keyboard viewer

Creating a Hybrid Writing System

As I began work on this Devanagari Latin hybrid script I set specific goals for the writing system. It had to achieve three things:

It had to use a mix of both Devanagari and Latin letterforms to create a single fused letterform. This hybrid script is an expression of Indian/ Indian diasporic identity. We must use scripts that are familiar to that context in order to achieve that expression.

It has to be able to be used by people who type in Latin and Devanagari. This hybrid writing system is a tool for expression for those who know these scripts so as a tool, it needs to be functional. Hence, I planned to make a typeface for the script so it could be easily distributed.

It had to make sure it cannot be read by readers of either script. The hybrid script is a critique of the languages associated with the writing systems that they are derived from. Hindi and English perpetuate inequalities that are part of a larger system. The written word is afforded a lot of power and to create one's own writing system could be used to claim that power.

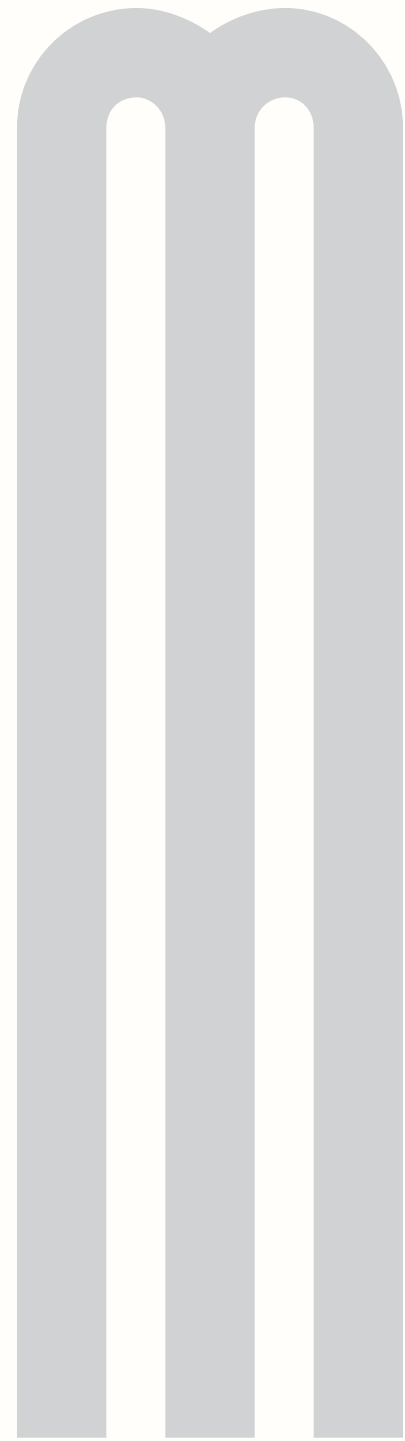
There were two factors that had to be considered before designing the fused script. How was I going to decide which devanagari letterforms mix with which latin letterforms? And how was I going to fuse those letterforms?

Aa Bb Cc Dd Ee
Ff Gg Hh Ii Jj
Kk Ll Mm Nn
Oo Pp Qq Rr Ss
Tt Uu Vv Ww
Xx Yy Zz

Before I fused the scripts, I created them separately so I have a typeface that supports Devanagari and Latin.

Fig 64. Latinagari English and Hindi separate character sets

अ आ इ ई उ ऊ ऋ
ए ऐ ओ औ अं अः क ख
ग घ ङ च छ ज झ ञ ट
ठ ड ढ ण त थ द ध न
प फ ब भ म य र ल व
श ष स ह ळ क्ष ज्ञ



Then I fused those devanagari and latin typeface letterforms by layering them over each other and extending, shortening or removing the parts that distracted from the legibility of the fused typeface letterform which aided in making the script seem like both Latin and Devanagari but also neither.

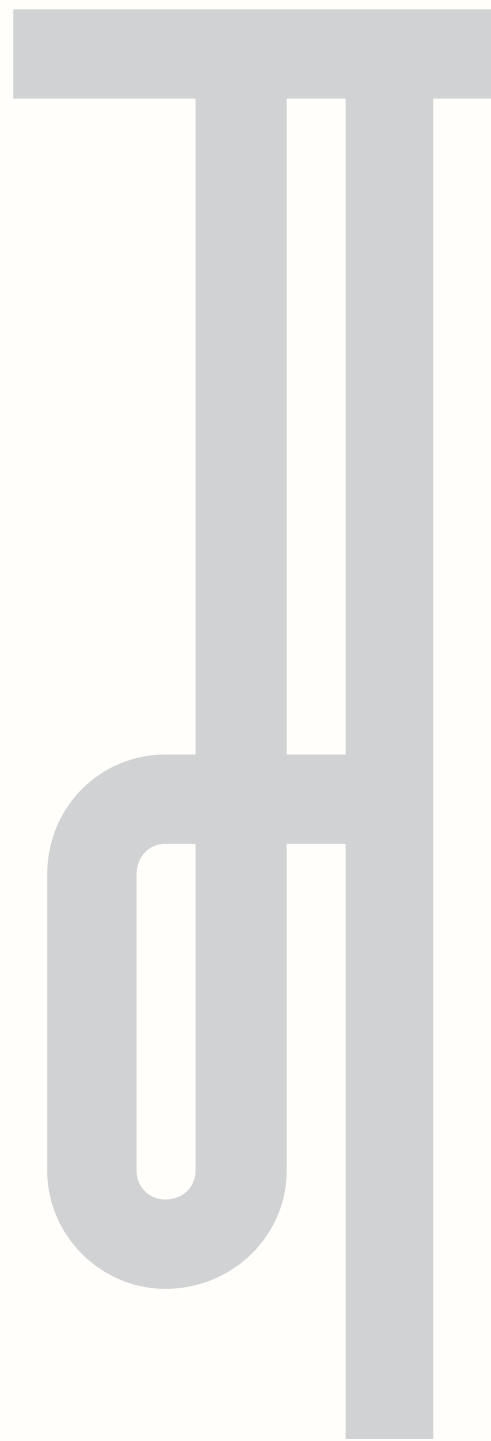


Fig 65. Example of how Latinagari characters were formed



I deliberately made the letterforms tall and linear as this stretches their forms to a point of distortion and allows the script to act as a pattern. This goes back to my embroidery practice as patterns allow information to remain inconspicuous. Making it tall and linear also makes it easy to stitch the script into an embroidery pattern.

I fused all the phonetically similar letters together. There were some more considerations I had discovered as I was making.

Fig 66. 'Nap' written in Latinagari

Devanagari has this system of “softer” vs “stronger” versions of the same sound group. For example:

क {ka} is soft.
ख [kha] is hard.

SOFTER SOUND GROUP



अ इ उ
ए ओ क
ग घ ङ
ट ठ ड
ण ढ

Fig 67. Hindi 'softer' and 'harder' sound groups characters

आ ई ऊ
आ औ ऋ
ष ष स
र ऌ श
भ थ

How I chose to resolve that was to have the Latin upper case letters fuse with the stronger sounds even though they are not as phonetically similar but the capital could visually indicate a “stronger” sound. The softer sounds fused with the lowercase letters.



Fig 68. Hindi 'softer' and 'harder' sound groups characters

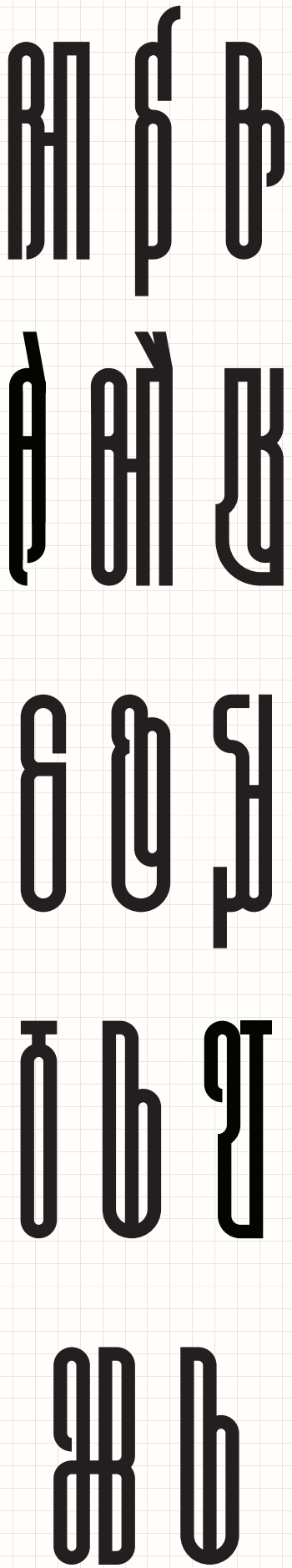


SOFTER SOUND GROUP



Fig 69. Hindi Latinagari 'softer' and 'harder' sound characters

HARDER SOUND GROUP



अ ब c द ढ
क ग ह ङ ञ
त थ द ध न
अ इ ए ओ
ऋ ॠ ऌ ॡ
क्ष ण श

ENGLISH
LOWER CASE

Fig 70. English Latinagari upper and lower case character sets

भा ञ ट ड ढ
क ग ह ङ ञ
त थ द ध न
अ इ ए ओ
ऋ ॠ ऌ ॡ
क्ष ण श

ENGLISH
UPPER CASE

Fig 71. Hindi Latinagari character set

अ आ इ ई उ ऊ ऋ ॠ
ऌ ॡ ऋ ॠ अं अः ऋ ॠ
ए ऐ ओ औ अं अः ऋ ॠ
इ ई उ ऊ अं अः ऋ ॠ
अ आ इ ई उ ऊ अं अः ऋ ॠ
अ आ इ ई उ ऊ अं अः ऋ ॠ
अ आ इ ई उ ऊ अं अः ऋ ॠ

and thus
Latinagari
was born.

Latinagari as a mode of expression

“To manipulate the written word is to transform the very essence of culture...Any doctoring of the written word results in transformation at the core of a person’s thinking... My approach is filled with reverence, yet mixed with mockery; as I tease {the written word}, I also hold it above the altar.”

- Xu Bing

Originally, Latinagari was supposed to act as a mode of hidden coded communication; a tool to share information freely under oppressive structures that hinder one’s freedom of speech and expression. Now, it has evolved from its original intent. Though inspired by cryptographic methods, it doesn’t neatly fit within the realm of cryptographic design practices. There are four main strategies to surreptitious communication design: coding, cloaking, obfuscation and ephemerality.

Coding involves converting the content of messages from one symbolic system to another, in order to convey a secret meaning. Cloaking manipulates communication channels to make messages harder to detect. Obfuscation is deliberately making messages difficult to detect and interpret by adversaries. Ephemerality is the continual innovation of communications techniques that undermine established surveillance regimes and be ready to abandon them once the opposition catches on (Hirsch 2016).

Latinagari may be coded but it isn’t ephemeral. Its code is static in nature. It goes beyond code and it exists as a mode of expression for parts of India and beyond. It is a script but it is a script that subverts the concept of a script. It is a writing system that cannot be read which renders whatever text written by it meaningless. It performs the act of a writing system but in the end, it is an act and the letterforms, the costume. Unless one has access to the font, reading Latinagari would be an act of breaking its code. Here, I present three projects in which I use Latinagari to communicate notions of personal identity, social politics and history.

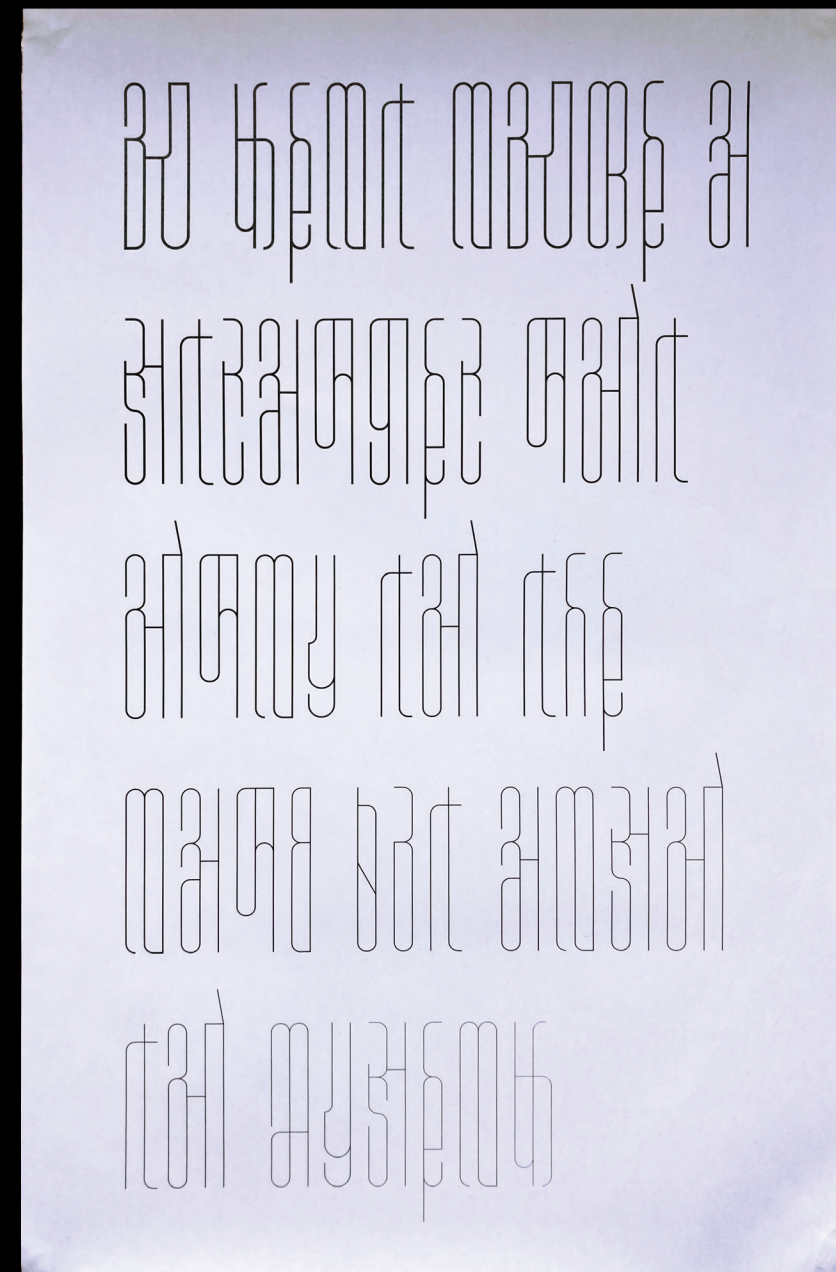
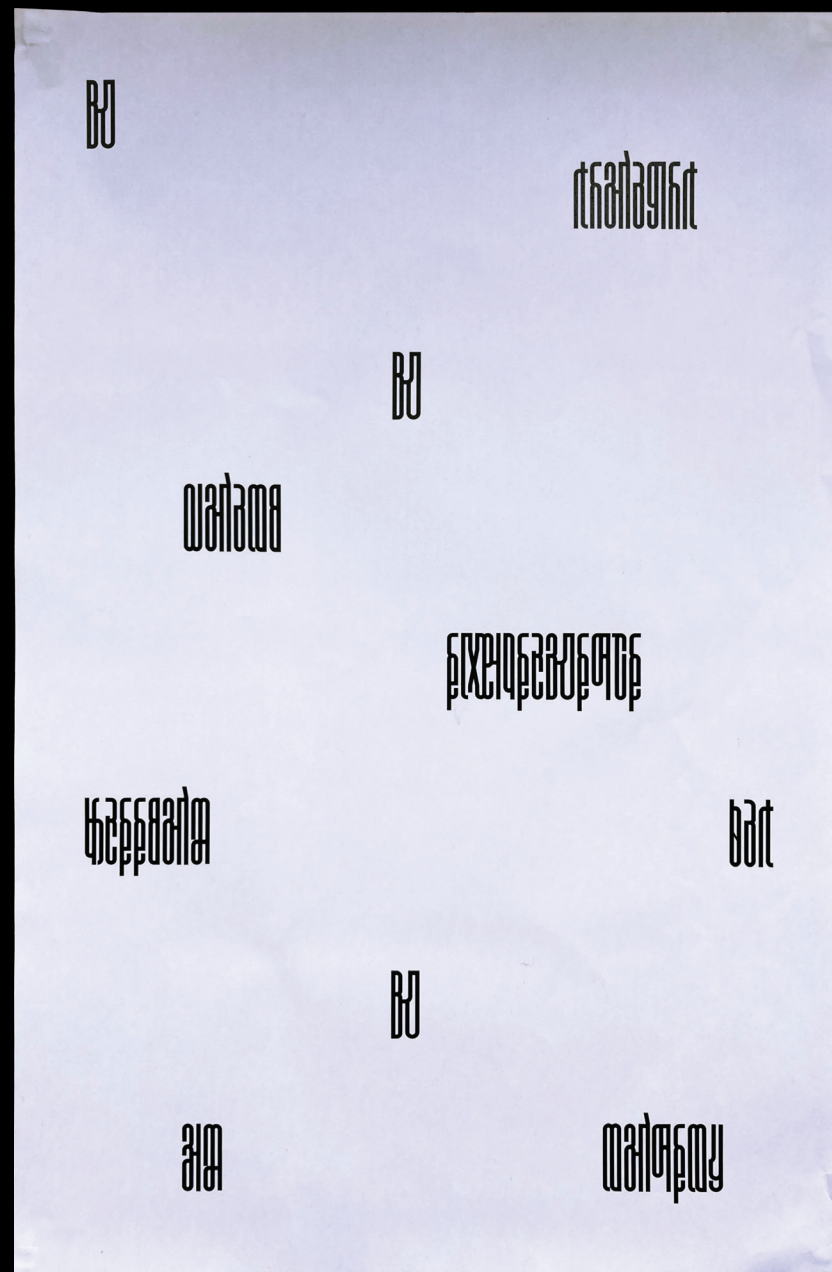


Fig 75. Freedom and loneliness:
inkjet black and white print

Fig 76. Lonely in Latinagari: inkjet
black and white print

Fig 77. Stranger to myself: inkjet
black and white print

Stranger at the Bank
बैंक में एक अजनबी

"A stranger approached me at the bank asking me if I could fill their form. They couldn't read english and that is when I realized we may be on the same soil but we live in two different nations."

This poster details the time I went to a bank in India and a stranger approached me to fill in their bank forms full of private information as they could not read in English. The background of the poster is a bank form that I distorted and over it, I wrote the story in Latinagari. Latinagari is made of Devanagari and Latin. It's important to understand the contexts surrounding both those scripts and its languages in the Indian context. Devanagari developed within the region. Latin was adopted due to colonialism and popularized through globalization. Latin is used to write in English in India. English is considered a marker of wealth, education and class and the systems such as the bank perpetuate this notion, leaving behind a majority of the population. These systems determine your access to information and in this case, one's privacy.

Fig 78. Stranger at the Bank story poster prints



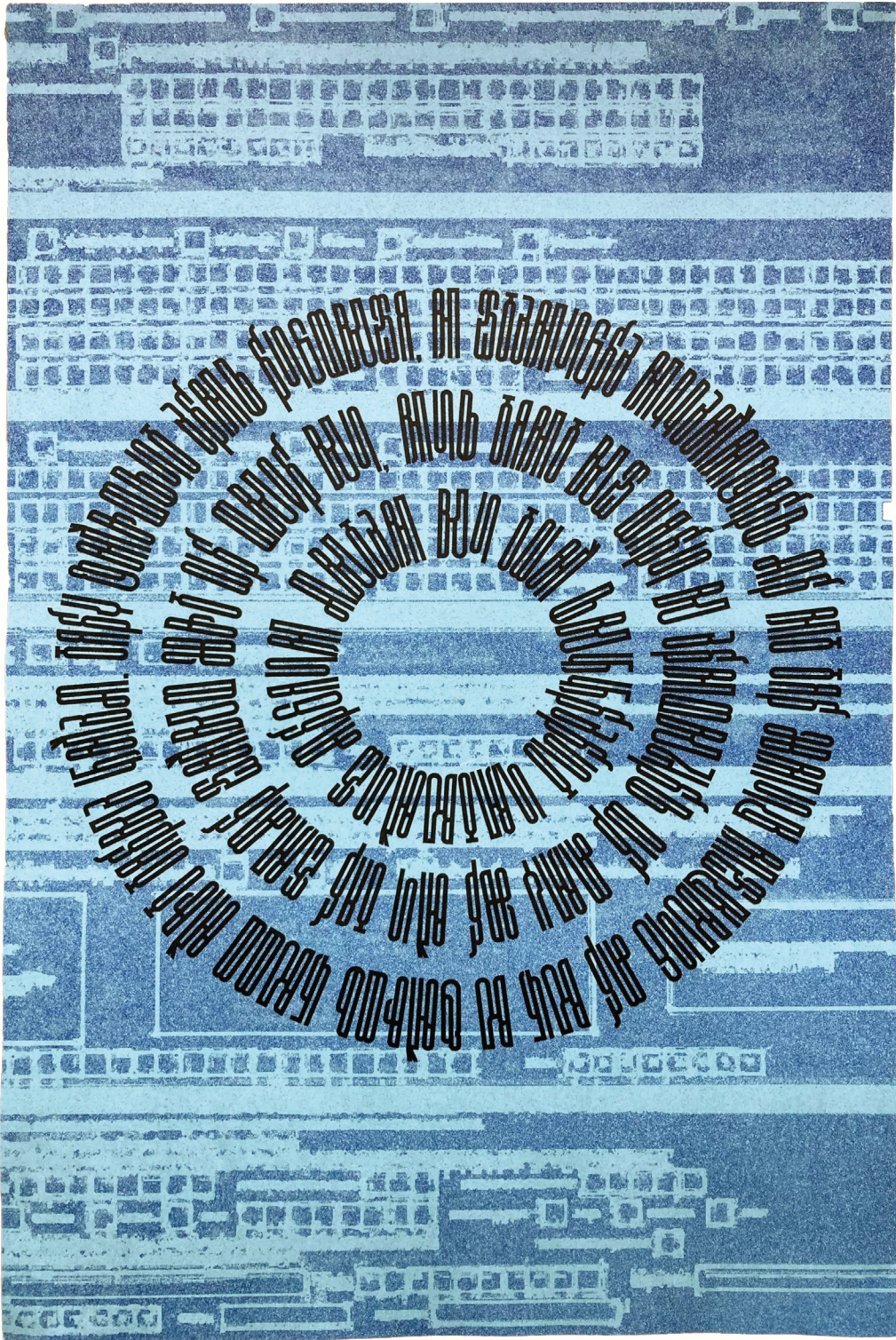


Fig 79. Stranger at the Bank story:
Risograph print

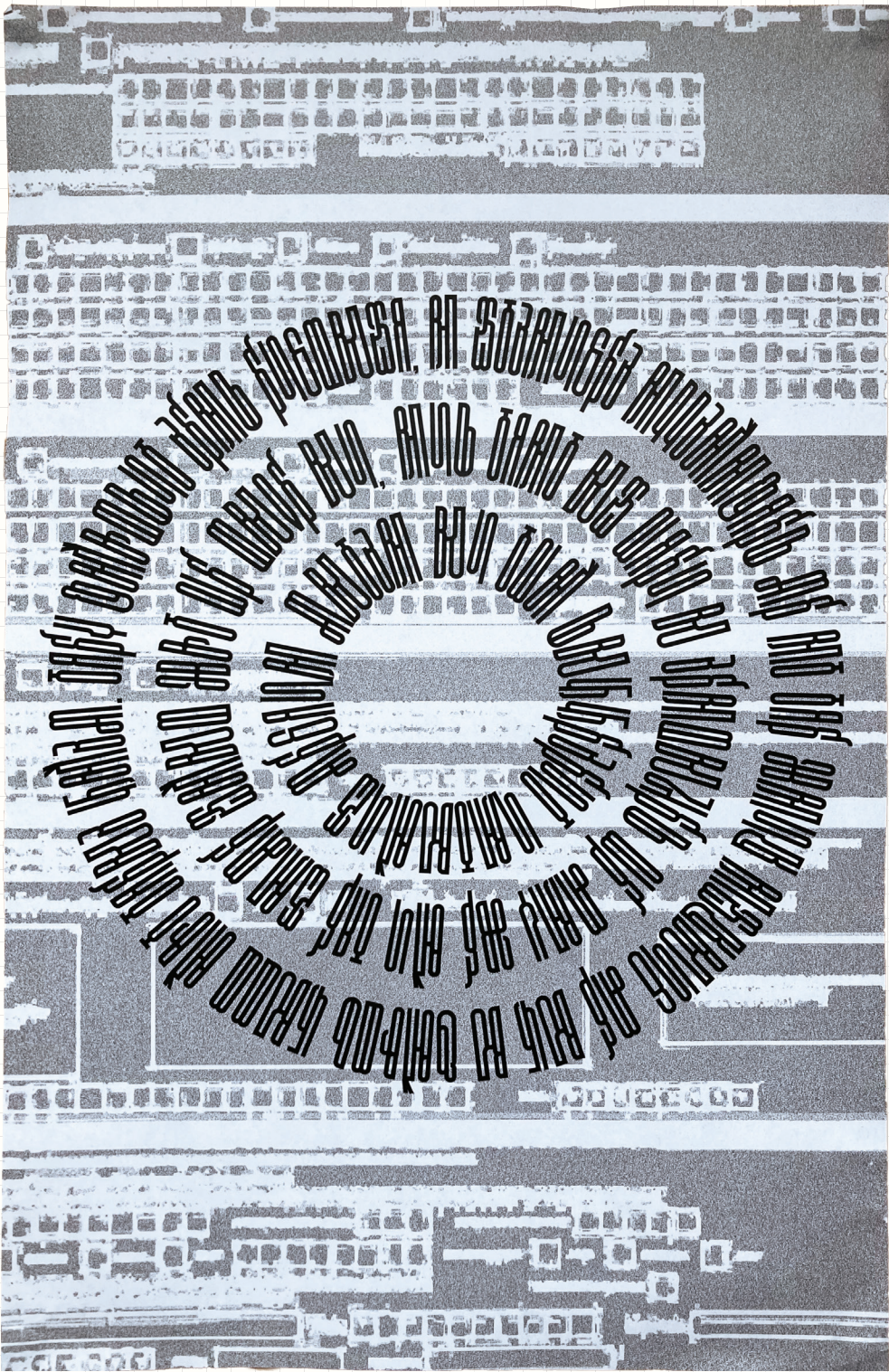


Fig 80. Stranger at the Bank story:
Inkjet black and white print

Fig 84. 'Chaय' in Latinagari
embroidered on cloth

Fig 85. Doodh chai (milk tea) recipe embroidered on cloth

Conclusion

What started out as an introspection on my own relationship to language and its effects on how I design evolved into a journey through typography, cryptography and embroidery. Latinagari is a summation of that journey. It is both a reverence and corruption of the very languages and scripts it derives itself from. It is a reverence of the oral fluidity that exists between Hindi and English in India; a space where the binary between language is broken. It subverts the classist and colonial history of English in India. It condemns the current Hindu nationalistic ideologies forced upon Hindi. There is potential for future explorations on the socio-political context of Hindi and English through the lens of Latinagari.

It asks us who controls information? Who gets access? How do you control that access? The written word has power. Through the distortion of its form to the point of indistinguishability, it both creates and destroys that power. Nobody can read and write it. As the creator, I grant access to who can read and write it. This ambiguous method of communication derives from principles of cryptography. Hiding the recognizable under the unrecognizable through its code. The distortion of the letterforms of Hindi and English allow it to become a pattern, further hiding the information,

rendering it inconspicuous. This use of pattern comes from the history of embroidery and its marginalized position as “women’s work” and historically, has often been dismissed. Embroidery often employs the use of patterns which have encoded meaning by the embroiderer. Patterns are inconspicuous as they have to be understood, interpreted and decoded. The position of women’s work, and the use of patterns along with the distortion of letterforms creates layers of hidden and encoded information. It is a materialization of personal and diasporic identity. It’s to be an insider and outsider to the cultures you exist in. The world often asks us to choose one or the other but Latinagari makes space for an in-between worldview.

Latinagari is nowhere near complete. Expanding the character sets to go beyond Hindi and English letters to be more representative of the wide variety of languages using the Latin and Devanagari script is in its future. This expansion would allow for a diverse variety of expressions. Once completed, it would be interesting to see how different communities and individuals would express themselves through Latinagari. Latinagari goes beyond myself and it should be granted the space to evolve through others as script does.

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Appendix

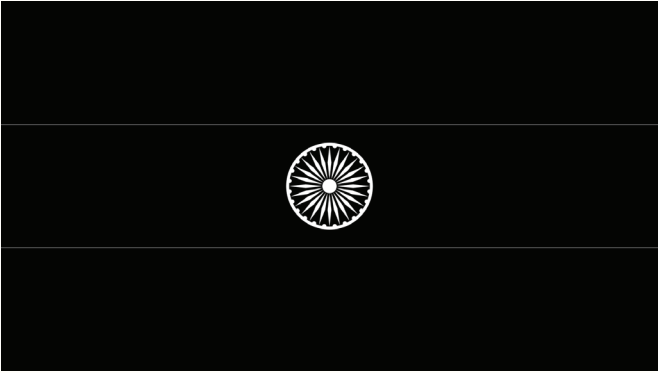
- Fig 0. Self Potrait
- Fig 1. Mumbai Local Train Ticket
- Fig 2. Pixel Indus Script
- Fig 3. Evolution of Indian Scripts
- Fig 4. Indian State Borders
- Fig 5. First Language by region
- Fig 6. Indian Language Groups
- Fig 7. Indic versus Helvetica
- Fig 8. A collage of signages from Worli, Mumbai
- Fig 9. Vijay Provisions Store Signage and Vector Replication
- Fig 10. Handpainted signage of Hargun House building
- Fig 11. Handpainted signage of City Bakery in Worli
- Fig 12. Handpainted signage on truck
- Fig 13. Handpainted Political Mural in Latin
- Fig 14. Handpainted Political Mural in Devanagari
- Fig 15. Handpainted Political Mural in Bengali in Kolkata, India
- Fig 16. Public Transport Organization Metal Sign
- Fig 17. Seaside Public Safety Informational Board
- Fig 18. Sign outside of a store of a suitcase brand
- Fig 19. McDonald's Sign in Latin and Devanagari in a mall
- Fig 20. Fedex logo in Arabic on a white van
- Fig 21. Logo with Arabic and Latin integrated on storefront
- Fig 22. Nike Logo in Latin and Devanagari
- Fig 23. Nike Logo in Latin and Devanagari Hybrid
- Fig 24. Scan of RK Joshi’s ‘Tree’ - Multilingual Concrete Poem from the book, Dekho by Codesign, Mumbai
- Fig 25. A Multi-lingual poem in Bengali, Hindi and English
- Fig 26. Mixing Bengali and Japanese Script through loanwords
- Fig 27. Bengali Japanese Hybrid Script
- Fig 28. Devanagari Latin Hybrid through loanword 'Jungle'
- Fig 29. Noto Sans Nushu Traditional
- Fig 30. 'Satanic' Letter written by a nun in 17th Century Sicily
- Fig 31. Xu Bing's 'Book from the Sky' exhibition
- Fig 32. Aravrit - a Arabic and Hebrew hybrid typeface
- Fig 33. Cross Stitch Embroidery Eyes
- Fig 34. A collage of cloth swatches of Kantha stitch types
- Fig 35. Benediction on a Battlefield by Krishen Khanna
- Fig 36. India Bangladesh border stitched in Kantha
- Fig 37. Elizabeth Parker's Cross stitch embroidery, 1830
- Fig 38. Typeface stitched in Kantha

- Fig 39. Typeface stitched in Kantha
- Fig 40. Kantha typeface vector
- Fig 41. Embroidered Journal Pages
- Fig 42. Women in Berlin knitting for soldiers
- Fig 43. 'A Sunny Day' embroidery
- Fig 44. 'Weather Data' embroidery
- Fig 45. 'Morse Code' embroidery
- Fig 46. Dhaan (Rice seeds)
- Fig 47. Rice grain pattern
- Fig 48. 'Ricepher' embroidery
- Fig 49. Shubho Nabobarsho Graphic
- Fig 50. Savdhan! {Caution!} in devanagari pixel typography
- Fig 51. Dhaka based type designer Jacob Thomas’ work in progress research on the anatomy of the bengali script
- Fig 52. 'Meghna' letterforms in Bengali typography
- Fig 53. 'Jhol' (stew) letterforms in Bengali typography
- Fig 54. 'Tulo' (cotton) letterforms in Bengali typography
- Fig 55. 'Decode' letterforms in Bengali typography
- Fig 56. 'Jungle' in a Latin and Devanagari hybid letterforms
- Fig 57. Shisyalekha, a 5th-century Sanskrit literary work of the Buddhist grammarian and poet Candragomin
- Fig 58. Pooja Saxena's diagram on the structure of Devanagari
- Fig 59. Mukund V. Gokale's explanation on the structure of Devanagari
- Fig 60. Form differences between Latin and Devanagari
- Fig 61. Latin and Devanagari vowel structures
- Fig 62. Latin and Devanagari vowel structures
- Fig 63. Plus sign and multiplication sign set in gotu typeface
- Fig 64. Latinagari English and Hindi separate character sets
- Fig 65. Example of how Latinagari characters were formed
- Fig 66. 'Nap' written in Latinagari
- Fig 67. Hindi 'softer' and 'harder' sound groups characters
- Fig 68. Hindi 'softer' and 'harder' sound groups characters
- Fig 69. Hindi Latinagari 'softer' and 'harder' sound characters
- Fig 70. English Latinagari upper and lower case character sets
- Fig 71. Hindi Latinagari character set
- Fig 72. Loneliness and freedom
- Fig 73. Lonely
- Fig 74. Stranger to myself
- Fig 75. Freedom and Loneliness: inkjet black and white print
- Fig 76. Lonely in Latinagari: inkjet black and white print
- Fig 77. Stranger to myself: inkjet black and white print
- Fig 78. Fig 78. Stranger at the Bank story poster prints
- Fig 79. Fig 79. Stranger at the Bank story: Risograph print
- Fig 80. Fig 80. Stranger at the Bank story: Inkjet black and white print
- Fig 81. Fig 81. Doodh Chai (milk tea) recipe
- Fig 82. 'Chaय़' written in Latinagari
- Fig 83. Fig 83. Doodh chai (milk tea) recipe written in Latinagari
- Fig 84. 'Chaय़' in Latinagari embroidered on cloth
- Fig 85. Doodh chai (milk tea) recipe embroidered on cloth

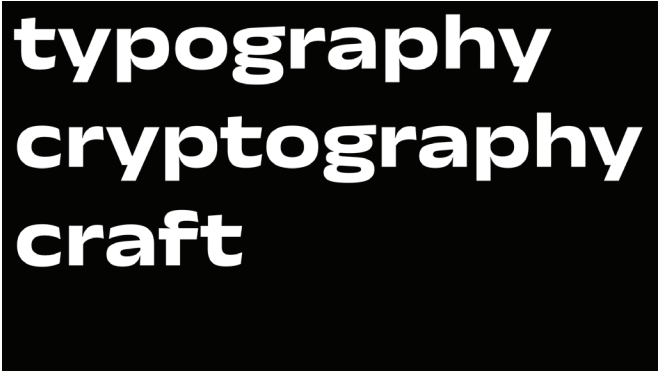
Thesis
Presentation



Hello, my name is Meghna Mitra and today we will be going through the journey of my thesis, Breaking Binaries,



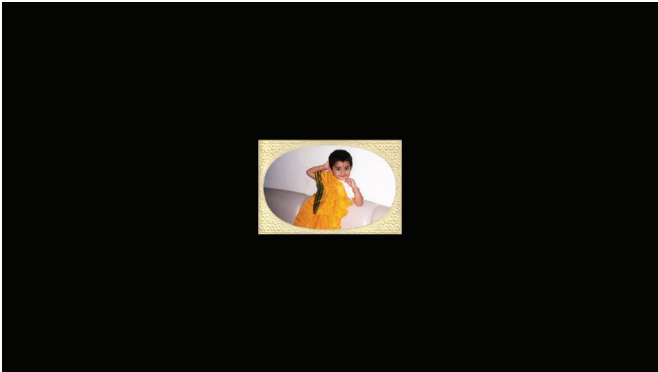
an exploration of orality in India



through typography, cryptography and craft.



This exploration began in the middle of the pandemic in Mumbai India. My relationship to India has always felt odd. For the first 18 years of my life, I never lived there. It has always been in the background of my life. It's my passport, it's the place my parents came from. It's where I go to visit my relatives every few years.



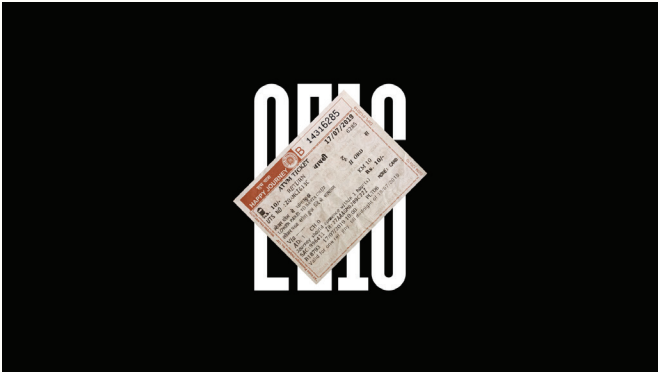
Essentially, I was participating in the culture of a place I have never lived in.



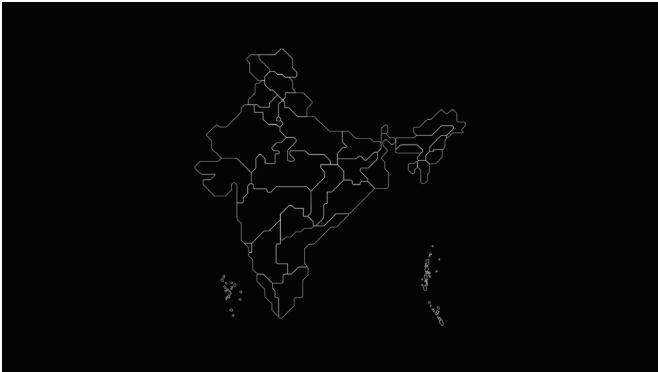
and I was participating in this culture in the spaces of other cultures in the countries I was born and raised in.



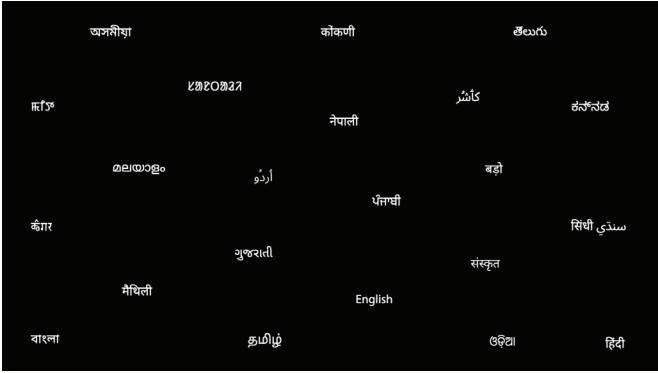
As a result of this upbringing, I can speak Bengali, Hindi and English.



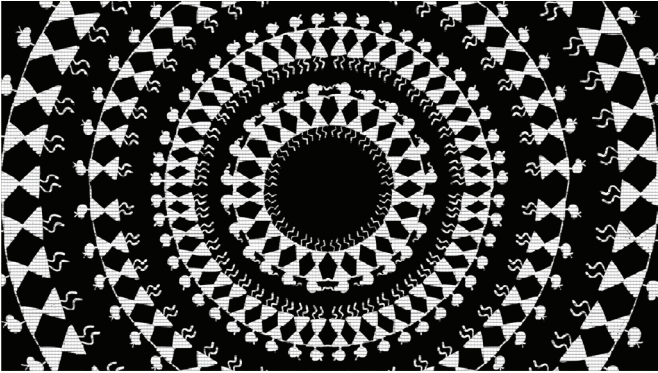
In 2016, I moved to Mumbai, India to pursue my design education and career



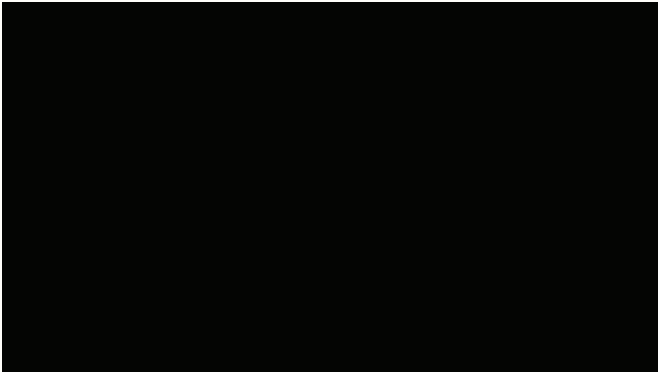
and suddenly, this country that was in the background of my life came to the forefront



India, as a community, is diverse in its histories, its cultures, its belief systems, its people, and its perspectives and in a way, that is reflected through its languages.



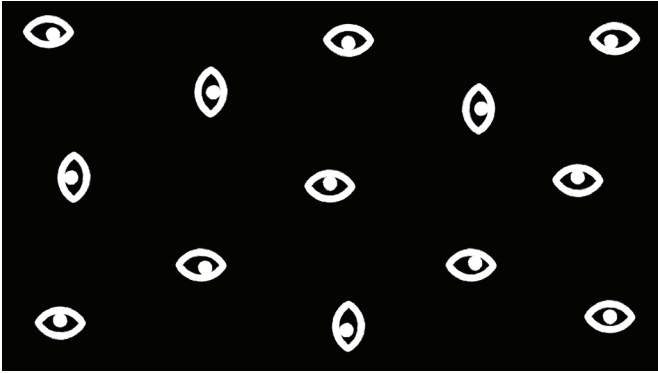
It is a place of complexities and dichotomies. It's a world of many worlds



but that wasn't necessarily being reflected in my design education which applied Western modes of knowledge to design.



November Studio best described it as a Bahaus Swiss Modernism Helvetica is the Best corporate work is everything design education and truly, there is nothing wrong with this type of design. Though we must understand that in India, this type of design is being removed from its original context and being applied to a completely different context with the expectation that the audience would conform to it. It's only one perspective



when there is a multitude of perspectives on design to be explored in a place like India and its diaspora and this was the premise in which I began my thesis.



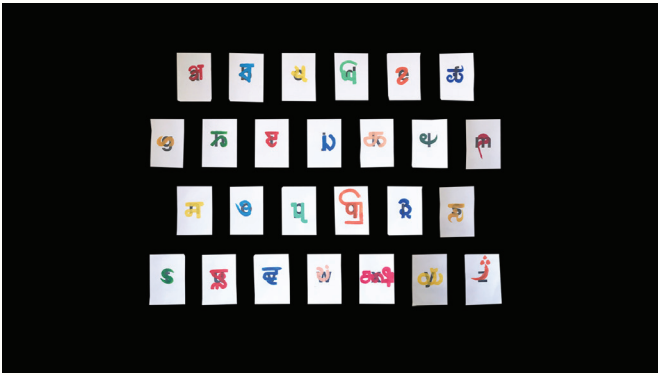
Before talking about my first making, I want to add some context to how English works in India. About 20% of the population of India can speak English



but only 4% can speak it fluently. English in India is a marker of social status, high education, wealth, class and caste. Many important communications are done in English. Newspapers. Bank forms. Marriage certificates etc. are communicated in English. What that means is



the 4% has the ability to determine, control and oppress the majority 96% simply by knowing English and I am a part of the 4%. All of my work was in English and catered to that 4%. My work is elitist and not inclusive.



One of my first explorations was a critique of myself, the system of English in India, and my design education. I printed out the ENGLISH alphabet in Helvetica and superimposed it with 13 Indian scripts. It was a reminder that these languages exist and they are read, written and spoken and they are a part of India's design context. This was the first step to shaping my practice, to learn and unlearn and to keep in mind the pluriversity of perspectives in India.



If what I create is elitist design, then what is non-elitist design? We really have to look outside of the modes of design education and corporate culture that I was operating in and take to the streets. I photographed the signage around my neighbourhood of Worli, Mumbai and categorized them at 4 different levels.

local political government corporate

The local, political, government and corporate. I did that because I wanted to understand how the different levels lead to different treatments towards typography and language. What were the signs communicating? Were there any hierarchies being presented through their typography?



What I found is at the local, political and government level, there is no evident hierarchies between the local language and english through their typography. At the political level, the local language is often favored but otherwise English and the local language were treated equally.



It's when we get to the corporate level that a clear hierarchy is presented favoring the English sign with local language off to the corner typeset in a default font.



This is in such contrast to when I was living in Saudi Arabia and the local language, Arabic, was given consideration. Though the Arabic version can often be hastily designed as evidenced by that FedEx logo.

मराठी हिंदी English



It got me to thinking how we could give the same consideration towards the local language in the context of India, specifically Mumbai, where the major local languages are Marathi, Hindi and English which use devanagari and latin script. What would a Devanagari Nike logo look like?

So I set out to do just that. Designing this really highlighted the fact that I don't know how to design in Devanagari and I was just trying my best to conform to the Latin logo. I was also dissatisfied with the binary between the Hindi and English when that is not reflective of how spoken language works in a place like Mumbai where Hindi mixes with English and vice versa.



So just like the spoken language, the logos also mixed and this allwed for a variety of expressions in which one would have to know both the languages. I understood this was not necessarily functional but it became an expression of hybrid spoken language.

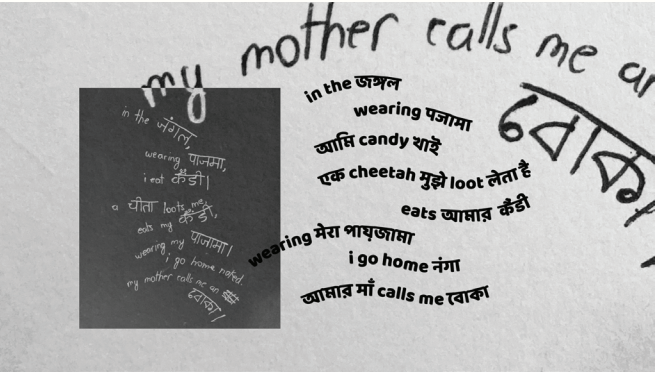
loanwords

ENGLISH	HINDI	BENGALI	ARABIC	JAPANESE	Farsi
idiot		বোকা boka		ばか baka	
jungle	जंगल jangal	জঙ্গল jangala			
relax	आराम aaram	আরাম aram			آرام aram
pajama	पजामा pajama	পায়জামা payajama	بيجاما bijama	パジャマ pajama	
loot	लूट loot	লুট loot			
candy	कैंडी kaindee	কান্দি kandee		キャンディー kyandi	
cheetah	चील cheeta	চিল chita		チーター chita	

This led to another exploration of spoken language through loanwords which are words that languages share. I looked at six languages and the shared words between them. They were some interesting connections, some surprising and some not but what was I going to do with this?



I decided to create a poem using loanwords between Bengali, Hindi and English.



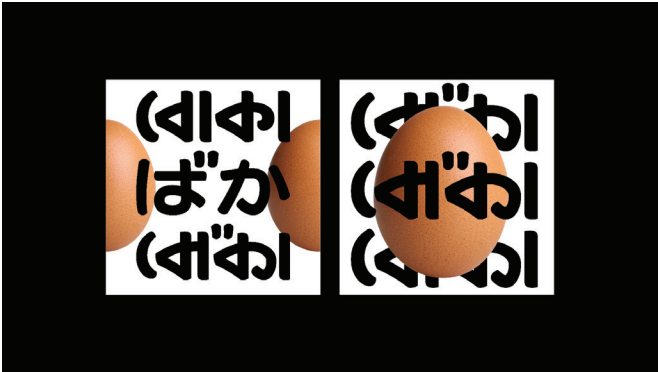
Then I mixed the scripts together within one poem to create this awkward interaction between the languages. I don't speak like this but it is a reflection of my diasporic Bengali Indian identity in all its awkwardness.



After the poem, I chose to focus on specific words. There was interesting connection between the Japanese 'baka' and the Bengali 'boka' which both mean idiot.



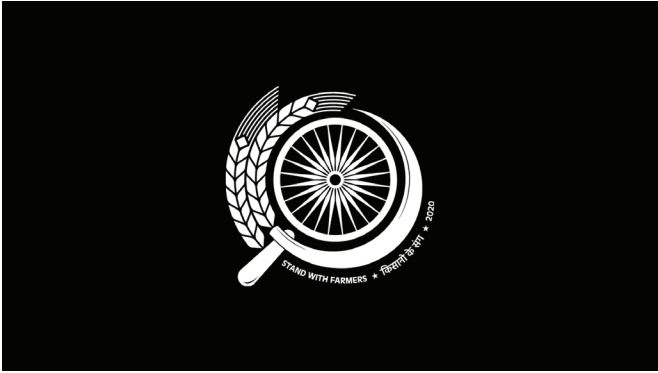
I once again mixed the scripts together between the words.



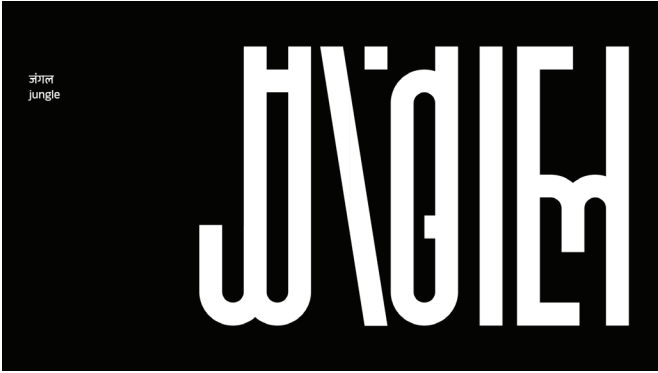
but then I started mixing the letterforms together to create a Bengali-Japanese hybrid letterforms



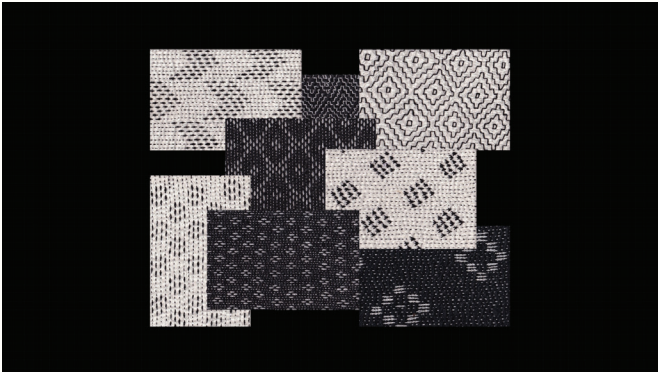
and I did the same to the Hindi and English 'jungle' and I didn't really understand why I would create something that can't be read.



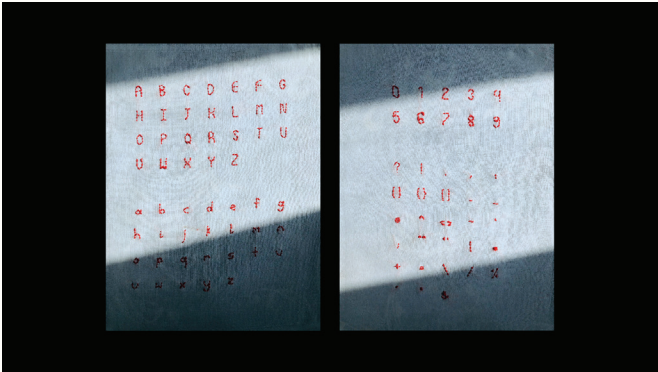
At the time, the Farmer's Protests were happening in India and an activist, Disha Ravi, was arrested for sharing a protest toolkit. How does one share information freely under oppressive structures that hinder one's freedom of speech and expression?



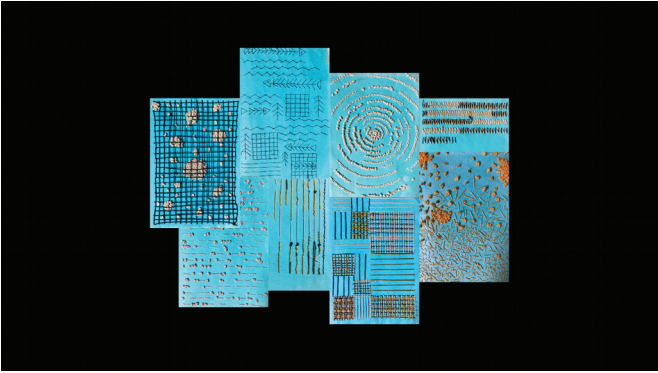
A Devanagari-Latin hybrid could explore that. Devanagari and Latin are the writing systems of the languages used within the Indian government, Hindi and English. Why not use it against them This hybrid script could acts as a code; creating insideroutsider networks of communication. If they can't read it, how could they arrest you for it?



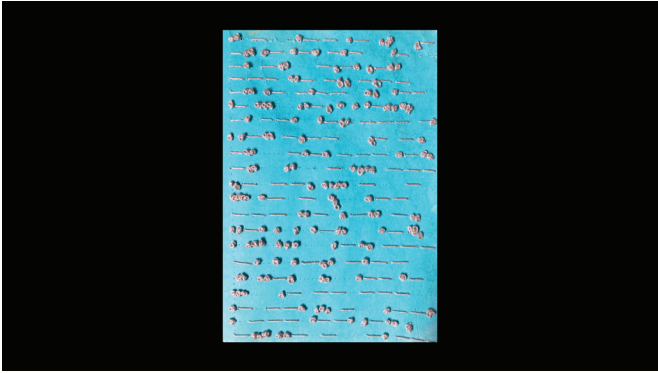
This exploration of coded communication led me to practicing and learning about the history of textile crafts, specifically embroidery, and its potential in cryptography. Textile crafts have historically been stereotyped "women's work". This work often uses patterns to encode meaning and has the potential to hide coded communication through those patterns under the marginalized staus of women's work.



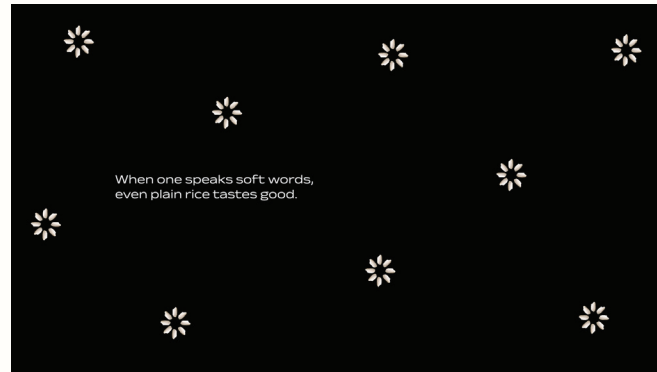
Initially, I was drawn to the drawn to practice by its versatility as a medium of storytelling as I was investigating my personal and ancestral relationship to borders and border histories. My ancestors were forced to move from present day Bangladesh to present day India during the violent era of Partition when the British Raj split into India and Pakistan. I embroidered a typeface as a medium for current generations of my family to pass on this story to future generations so these stories don't fade away.



It was later that worked with embroidery and coded communication. In order to practice embroidery, particularly in relation to coded communication, I created an embroidered journal.



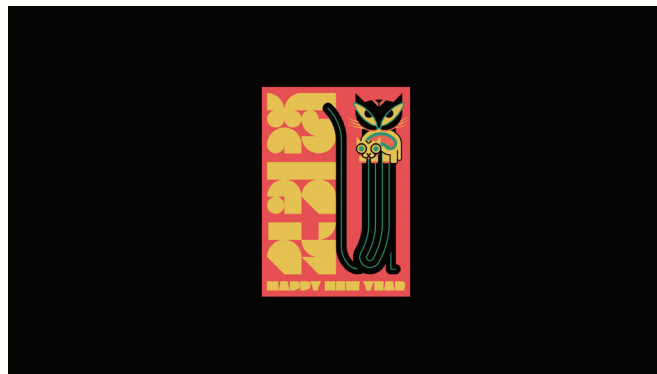
One of my journal entries was to embroider my thoughts into morse code but since morse code is such a recognizable pattern as it exists in popular culture, it defeats the purpose of a coded pattern.



so I decided to create my own coded embroidery pattern of this Kashmiri proverb about rice that is source of comfort and familiarity in my life.



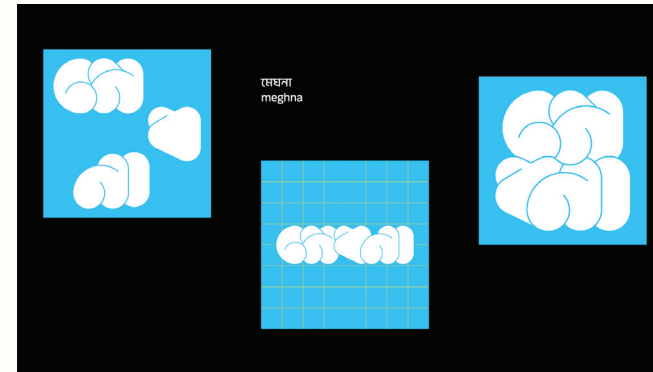
so I decided to create my own coded embroidery pattern of this Kashmiri proverb about rice which is a source of comfort and familiarity in my life. I chose these particular stitches in a circular pattern to mimic a bowl of rice. This piece looks inconspicuous as it looks like a pattern that could be stitched into any everyday item. I really wanted this to work with my explorations of coded script but I really needed to understand how scripts, particularly Indic scripts worked.



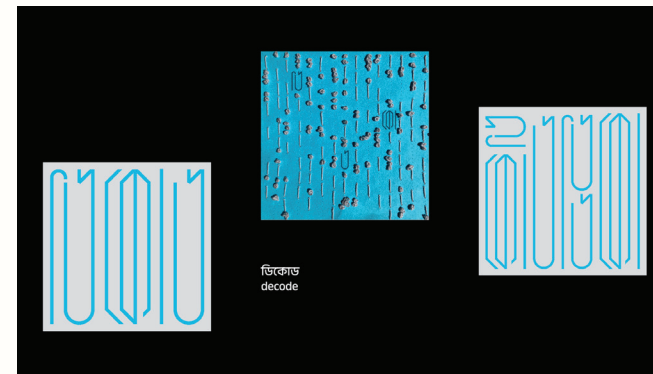
My earlier explorations of typography and writing systems really highlighted my lack of knowledge in this field.



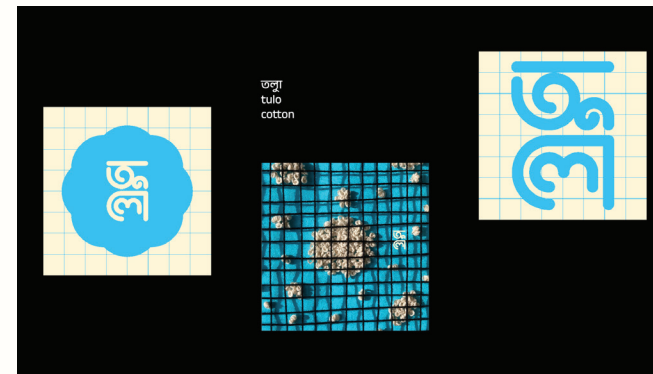
I decided to tackle this through Bengali typography which I cannot read or write so this presented a kind of challenge in and of itself. Designing in Bengali would also allow me to become more familiar with other scripts such as Devanagari as they are similar in their foundation.



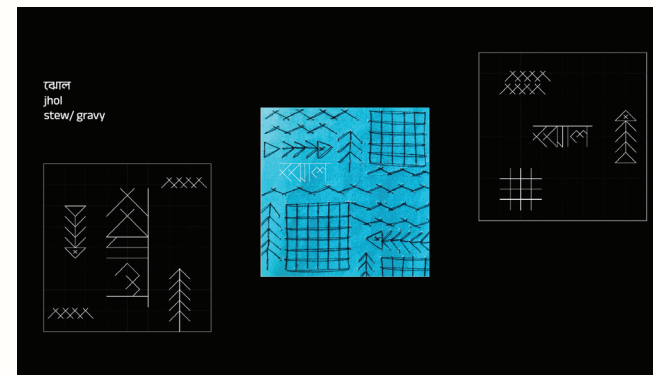
I first started out with my name, Meghna, which means someone lives in the clouds and I wanted the form to reflect the meaning.



I continued to practice this with other Bengali words with typography that complimented my embroidery. This exploration allowed me to get in touch with my Bengali identity.

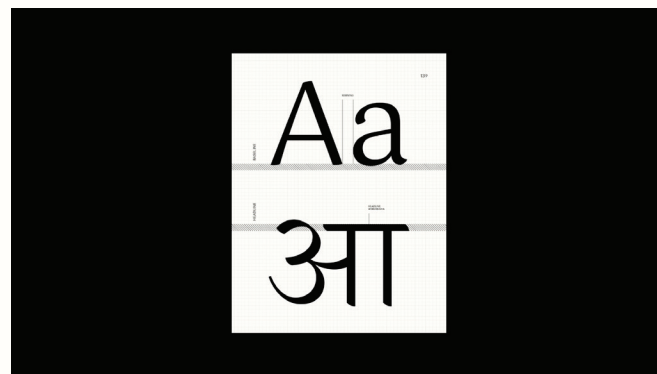


This exploration allowed me to get in touch with my Bengali identity.

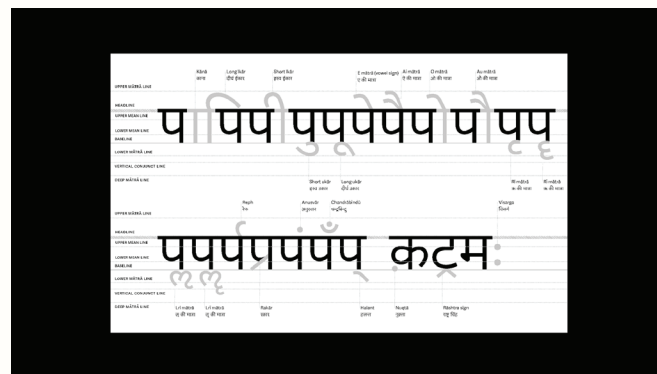




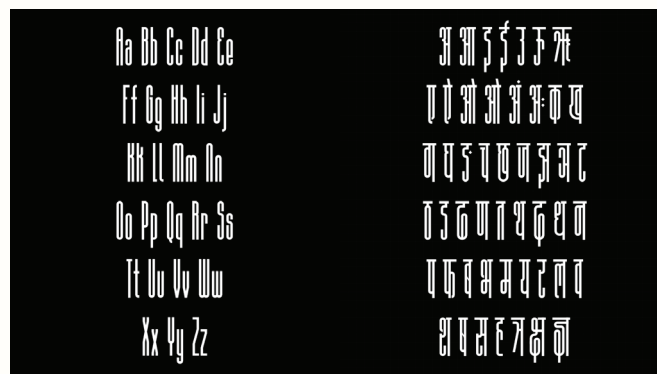
As I get more comfortable with Indic scripts, I go back to the coded script and try to explore this Devanagari-Latin hybrid more systematically.



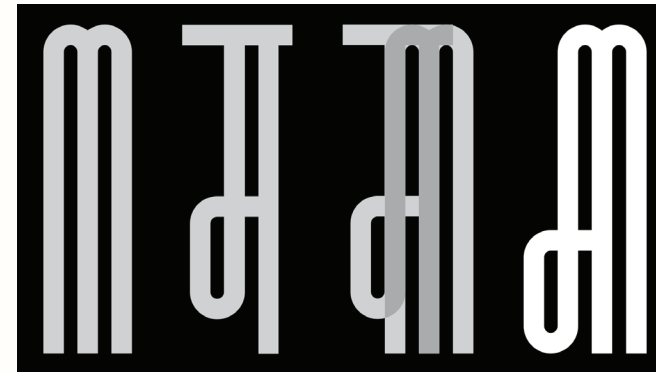
This required understanding of the similarities and differences between the two scripts



and understanding the nuances of the Devanagari script in particular.



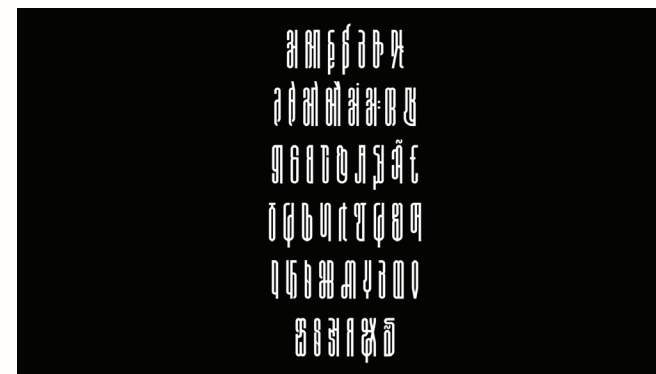
First, I created the English and Hindi character sets separately.



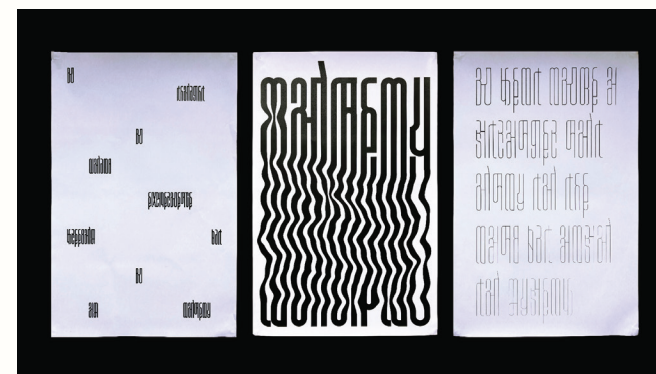
and then combined them to create a completely new letterform that was both scripts but also neither. I intentionally made it tall and monolinear as it makes it easier to stitch and turn into an embroidery pattern.



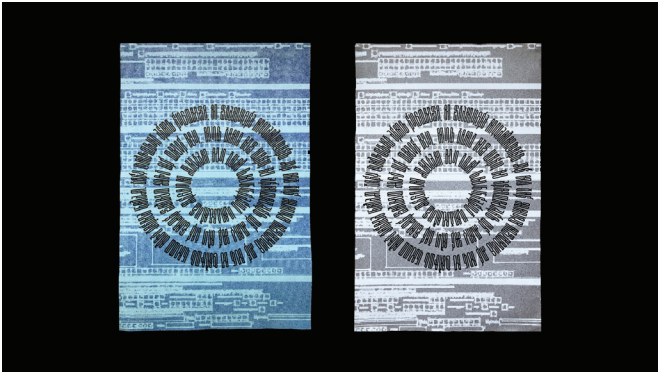
This coded script is a culmination of my typography, cryptography and embroidery practice. It's not only a code; it's a writing system that is both a corruption and reverence of the scripts it's derived from.



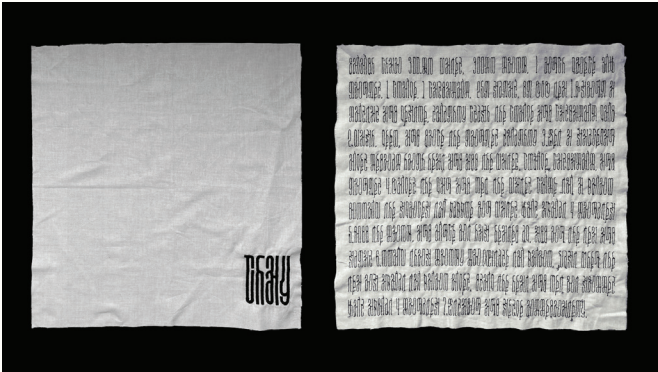
It's a writing system that cannot be read which renders the text meaningless. It is only when I allow access to the script that you could read it and there's power in that.



Through this invented writing system, I explore notions of personal identity. I created a series of posters talking about my move to Vancouver and the uncertainty and loneliness of that time. It allowed me to express my feelings without exposing the vulnerabilities.



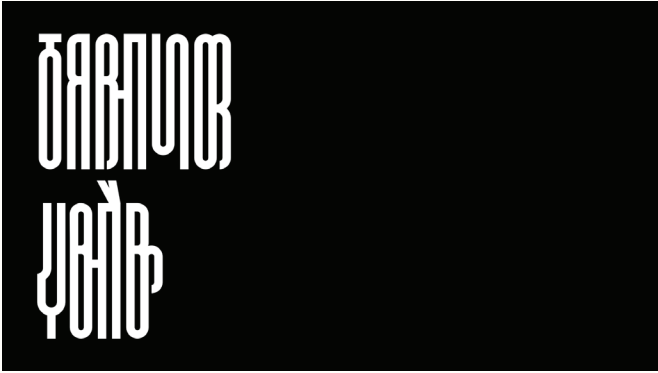
These risograph prints explored the socio-politics of language in India through an experience I had at a bank in India when a stranger approached me asking me to fill out their bank forms as they didn't know English.



Lastly, I embroidered a tea towel with a chai recipe as a way to express how India takes remnants of its colonial past, like tea production, and makes it their own.



What's next? Latinagari is nowhere near complete. Expanding the character sets to more than Hindi and English letters is in its future to allow for a variety of expressions. Once completed, it would be interesting to see how different communities and people express themselves through.



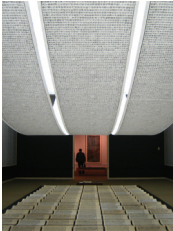



As for the future of my practice, in the past, my work has been accused of and complimented as being "too clean". I always cringed when I heard that as I interpreted that as my work to be sterile and removed from myself, from others and the world when I really just want to be a part of it.




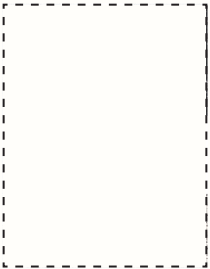
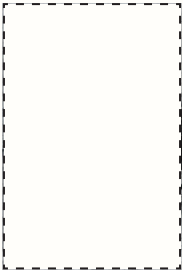

And that means bringing in my identities and the pluriversality of perspectives into my work; learning and unlearning. All of this is messy and this thesis is a start. I want to create a beautiful mess. Thank you!





Attributions

	<p>Fig 19. McDonald's Sign in Latin and Devanagari in a mall</p> <p>Attribution 2.0 Generic (CC BY 2.0: Fair Use Rights) Photograph taken by Sean Ellis Changes: Filter added to the photo https://www.flickr.com/photos/s_w_ellis/3941497289</p>
	<p>Fig 20. Fedex logo in Arabic on a white van</p> <p>Attribution-NonCommercial 2.0 Generic (CC BY-NC 2.0: Fair Use Rights for Non-Commercial Purposes) Photograph taken by Ikhlusal Amal Changes: Filter added to the photo https://www.flickr.com/photos/ikhlusalamal/3580432954/</p>
	<p>Fig 21. Logo with Arabic and Latin integrated on storefront</p> <p>Attribution-N/A Photograph taken by N/A http://moroccanladies.com/beauty-news/faces-new-name-wojooh-27903</p>
	<p>Fig 29. Noto Sans Nushu Traditional</p> <p>Attribution-N/A Created by Liu Zhao Studio Changes: Black and white filter added to the images https://www.dandad.org/awards/professional/2021/234982/noto-traditional-nushu/</p>



	<p>Fig 30. 'Satanic' Letter written by a nun in 17th Century Sicily</p> <p>Attribution-N/A Photograph taken by Daniele Abate Changes: Background color removed https://www.livescience.com/60442-possessed-nun-letter-deciphered.html</p>
	<p>Fig 31. Xu Bing's 'Book from the Sky' exhibition</p> <p>Attribution-NonCommercial-ShareAlike 2.0 Generic (CC BY-NC-SA 2.0) Photograph taken by Steven Tucker, Smart History https://www.flickr.com/photos/profzucker/16789722816</p>
	<p>Fig 31. Xu Bing's 'Book from the Sky' exhibition</p> <p>Attribution-Attribution-NonCommercial-NoDerivs 2.0 Generic (CC BY-NC-ND 2.0) Photograph taken by The Kozy Shack https://www.flickr.com/photos/peebot/2044848133/in/photostream/</p>
	<p>Fig 32. Aravrit - a Arabic and Hebrew hybrid typeface</p> <p>Attribution-N/A Created by Liron Lavi Turkenich Changes: Background color removed https://israelentreleslignes.com/sujets/aravrit/</p>

Attributions

	<div><div><div> shiva_n_ · Following</div><div><div> shiva_n_ Farmers Over Fascists · Text + No Text versions, feel free to use, remix, share: no credit required. 78w</div></div></div><div>Stand with Farmers Graphic</div><div>Free Use with no credits needed</div><div>Created by Shiva Nellaperumal</div><div>https://www.instagram.com/p/CFI9HL6BFdw/</div></div>
	<div>Fig 34. A collage of cloth swatches of Kantha stitch types</div> <div>License-N/A</div> <div>Photographs from the collection of Crafts Museum New Delhi</div> <div>https://artsandculture.google.com/search/asset/?p=crafts-museum-delhi&em=m050z53&hl=en</div>
	<div>Fig 35. Benediction on a Battlefield by Krishen Khanna</div> <div>License-N/A</div> <div>Painting by Krishen Khanna</div> <div>https://www.saffronart.com/fixed/itemdetails.aspx?iid=58350&eid=4004</div>
	<div>Fig 37. Elizabeth Parker's Cross stitch embroidery, 1830</div> <div>License-N/A</div> <div>Photograph from the collection of Victoria & Albert Museum, London</div> <div>Changes: Black background removed</div> <div>https://www.vam.ac.uk/articles/embroidery-a-history-of-needlework-samplers</div>

	<div>Fig 42. Women in Berlin knitting for soldiers</div> <div>No known copyright restrictions: https://www.loc.gov/rr/print/res/274_bain.html</div> <div>Photograph from the collection of Library of Congress, Prints & Photographs Division, [reproduction number, e.g., LC-B2-1234]</div> <div>https://www.loc.gov/item/2014698377/</div>
	<div>Fig 57. Shisyalekha, a 5th-century Sanskrit literary work of the Buddhist grammarian and poet Candragomin</div> <div>Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)</div> <div>Photograph by Ms Sarah Welch // Changes: Black background removed</div> <div>https://commons.wikimedia.org/wiki/File:11th-century_Shisyalekha_palm_leaf_mauscript,_5th-century_CE_Buddhist_epistolary_text_by_Candragomin,_Devanagari_script,_Nepal_talapatra.jpg</div>
	<div>Fig 58. Pooja Saxena's diagram on the structure of Devanagari</div> <div>License-N/A</div> <div>Created by Pooja Saxena</div> <div>Changes: Black and white filter</div> <div>Image retrived from pdf from the link below</div> <div>https://www.type-together.com/devanagari-type-anatomy</div> <div>Files</div> <div>Download a pdf including both images: Devanagari Type Anatomy</div>
	<div>Fig 59. Mukund V. Gokale's explanation on the structure of Devanagari</div> <div>License-N/A</div> <div>Image by Vaibhav Singh retrieved from the link below</div> <div>https://www.type-together.com/devanagari-type-anatomy</div>

Attributions

	<p>Fig 46. Dhaan (Rice seeds)</p> <p>Attribution-NonCommercial-ShareAlike 2.0 Generic (CC BY-NC-SA 2.0)</p> <p>Photography by IRRI Photos</p> <p>Changes: background removed</p> <p>https://www.flickr.com/photos/ricephotos/4270475500</p>
	<p>Fig 47. Rice grain pattern</p> <p>CC0 1.0 Universal (CC0 1.0) Public Domain Dedication</p> <p>Photograph by Yarzayeni</p> <p>Changes: background removed</p> <p>https://commons.wikimedia.org/wiki/File:Single_grain_of_rice.png</p>

Attributions

<p>“... anything seen on the street is usually termed “vernacular design” and is generally considered “low”—things like street posters, pamphlets, political signs and murals, and even local magazines that aren’t in English. Something designed with software in a big office for a corporate client is considered “high” design—as it was designed. The vernacular stuff was just made. See the difference?”</p> <p>- November Studio</p>	<p>Excerpt from interview with November Studio conducted by Somnath Bhatt:</p> <p>https://walkerart.org/magazine/pluralism-indian-design-november-shiva-nallaperumal-juhi-vishnani</p>
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<p>“We must really look around to realize ourselves... but an understanding of the self is most essential for the designer.”</p> <p>- RK Joshi</p>	<p>Excerpt from interview with RK Joshi:</p> <p>http://designindia.net/thoughts/people/teachers/prof_r_k_joshi</p>
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Attributions

<p>“Sewing is a visual language. It has a voice. It has been used by people to communicate something of themselves — their history, beliefs, prayers and protests. For some, it is the only means to tell of what matters to them: those who are imprisoned or censored; those who do not know how or are not allowed to write of their lives. For them needlework can carry their autobiographies and testimonies, registering their origin and fate. Using patterns as syntax, symbols and motifs as its vocabulary, the arrangement of both as its grammar, sewing is a graphic way to add information and meaning.”</p> <p>- Clare Hunter</p>	<p>Excerpt from book, Threads of Life,A History of the World Through the Eye of a Needle, Chapter 16: Voice.</p>
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<p>“Kantha, making whole again that which was fragmented or broken.”</p> <p>- Craft Museum, New Delhi</p>	<p>Quote from:</p> <p>https://www.wanderingsilk.org/kantha-history-and-meaning</p>
<p>“Kanthas are repositories of memories of particular makers, givers, recipients, and owners.”</p> <p>- Wandering Silk</p>	<p>Quote from:</p> <p>https://www.wanderingsilk.org/kantha-history-and-meaning</p>

Attributions

<p>“To manipulate the written word is to transform the very essence of culture... Any doctoring of the written word results in transformation at the core of a person’s thinking... My approach is filled with reverence, yet mixed with mockery; as I tease {the written word}, I also hold it above the altar.”</p> <p>- Xu Bing</p>	<p>Quote from</p> <p>https://blantonmuseum.org/exhibition/xu-bing-book-from-the-sky/</p>
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