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## Finding Patterns and Rhythms in Tamil

Giving Tamil its Space- How Inter and Intra-character spacing has a significant effect on script grammar

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### **Abstract:**

Designing type is an ancient craft, one that has endowed language with a durable form; a craft that required the ardour of a sculptor coupled with the nuance of a jeweller. Most importantly it involved a careful excavation of form. Type, on either lead or wood, was carved out by chipping away the counters. The form wasn't simply defined unto itself, rather it was by the space that surrounded it. It was a designers active interest in designing legible forms, and carving out delicately beautiful counters. Moreover, type then was a rendezvous of two minds- the designer himself, and his punch cutter; while the designer envisioned form, his punch cutter built the perfect space to house the letter in. Overtime, with the advent of personal computing, type-design turned into a personal process, with the designer replacing punch cutter with himself. The designer, who once only focused on designing the black, could directly draw the form on screen. Now, this isn't to suggest that counters weren't paid attention to, or that the spacing was relegated

to obscurity. The designer does consider spacing, but it is a subconscious process, one that eventually follows the sketching of the form. (Spacing here, doesn't refer to spacing in the typographic sense, in the inter character sense; rather it describes the space that helps articulate the forms, the counters, the space above, below and, of course, the one in between letterforms.)

Spacing, however essential, is the last part of what could be construed as very linear (amateur) design process. But the interplay of spaces, both within and without the letterform are quite essential to the design of the form itself. The process, rather than being linear, is quite a reiterative 'agile' process. With changes to spaces being made on account of the form and changes to the form being made according to the spaces.

While one does see a block of text as a space teeming with letterforms, one often fails to notice it to be the intricate weave of complex counter forms. It is only when one realises the latter, does one begin to notice not just what is being designed, but also what it inadvertently designed as well- spaces.

The Tamil script, known to be the oldest living script, has a lush writing history.

Udaykumar's thesis<sup>1</sup> has enough evidence to suggest the radical yet distinct evolution of letterforms due to the surface on which and the tools with which Tamil has been written. Whether calligraphed or handwritten, every script follows subconscious rules of space division. The human hand strives for what we all do, a rhythmic movement. Overtime as a script evolves passing through various surfaces, mediums and tools; through that a collective a conscience, an underlying visual grammar appears. The white spaces that engulf each letterform along with its myriad counters and relative widths of letters, each contribute to grammar of each script. While some may attribute either circumstance or personal style to the spacing in any script, there is an undeniable logic that pervades it as well.

The logic here isn't imposed, merely observed and noted.

***Key words: Spacing, Rhythm, Patterns, Mathematics, EkTamil***

EkTamil was designed to be a part of the robust Ek Multiscript family. A readable and legible font family that works well on screen as well as on print, Ek was designed to be a

neutral typeface that aims to put content first. But what makes EkMukta, especially EkDevanagari exquisite, is the process followed while designing the font.

There is an unmistakable reverence to the natural script grammar of the Devanagari script, the Devanagari-ness of Devanagari. While Ek does follow a particular visual grammar, with its open apertures, humanist terminals and characteristic joineries, these features are subliminally reflected across each script without ever being too imposing. And herein lies the difficulty in a multiscript type-design project. The visual grammar that prevails in the first script to be designed, in this case the Devanagari and Latin, merely serve as guidelines. There are no identical copies of morphological features across scripts. The overarching aim of most multiscript type-design projects is to enable the type-setting of multiple scripts in a single book, sometimes a single page or a line even! And to do so with the multiple number fonts designed by various designers can sometimes be a painstaking process which usually does result in a typographically discordant page. Hence, having a uniform color(or some call it the grey) in the page across scripts becomes the specific aim of the design process. Nevertheless, overemphasising the grey influences relative character widths in fonts which may result in a distortion in the legibility of the script.

So how does one design a companion script for an existing typeface? The first step for any designer would be to understand

1. the script grammar of the script
2. the visual grammar of the typeface

Designing a font is similar to constructing a new world, with elements from the scripts and the physics from the typeface. And the world can only be as real and as plausible if there is harmony between its elements and their function.

## 1. Patterns and Rhythms

Every script can be categorised as an amalgamation of patterns and rhythms, Patterns of forms and Rhythms of space. The definition of each being: *A pattern is merely a repetition, whereas Rhythm is the same repetition with variation*<sup>2</sup>

A search for patterns begins right at the start. Being a beginner to the script the first step is to acquaint oneself with the script by writing it over and over again. Please do not mistake this as calligraphy; in this paper, there is a very conscious attempt not to do so.

Calligraphy (beautiful writing) is an endeavour in creating aesthetic letterforms through personal expression. But it is impossible to define parameters, albeit personal ones, without knowing the script at all. On the first encounter one can't expect to render each form to its beautiful best! Handwriting letter forms helps in two distinct ways:

- 1) Helping one acquaint with scripts and its workings
- 2) making one's own interpretation of each form.

Every form written or drawn is an interpretation of another. Usually cursive writing relies on convenience with a very natural stroke direction, instinctive in nature, whereas the formal calligraphy of a form strives to construct shape in a controlled environment in an aesthetic way. While the latter might help in setting beautiful lines of text, the former helps in understanding patterns, deriving root letters. Deriving root letters is a deeply subjective experience. There are a myriad number of ways one may group the characters of a script- number strokes, width, features, but the most popular one is by form. Even within the formwise grouping of letterforms, each individual may group letters differently based on their own interpretations of the script.

Here is a periodic table of Root Letters for the Tamil script in Figure 1.

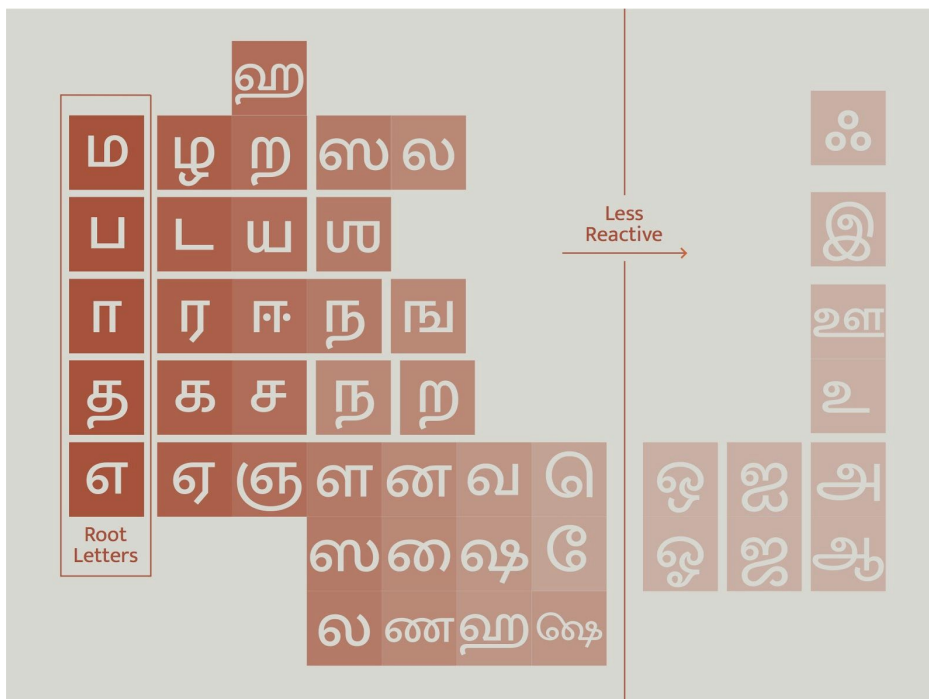


Figure.1 The Tamil Periodic Table

Deriving root letters is akin to searching for basic visual patterns, repeated forms, similar forms and familiar forms. This helps in creating a first rough sketch of the typeface. But each letter while writing follows a certain set of guidelines, arbitrary, yet rigid ones that help elucidate these patterns. While writing Tamil, a conscious decision was taken to fix the Pa height, eye level, and descender and ascender heights as well. Every letter, however complex conformed to this grid. But designing type, especially a body-text type certain changes needed to be made. The form on the screen is devoid of miscellaneous distractions such as irregular inflow, paper texture, line quality etc. A form can be better judged, with a crisp outline and a stark contrast. In such a sanitised environment, the 'grid' gives way.

Moreover, each test print demands to be read critically and dispassionately as the surface on which type is designed(screen) is different from the surface on which type is seen/read(paper). The act of simply reading text, whether sensible or gibberish, is an act of discerning and understanding rhythm. For a native speaker/writer, this might not be necessary, as the hand is habituated to a certain rhythm already. But for a non native writer, there is an additional effort that goes into understanding the 'flow' of each script. This rhythm is characterised by the space around each letterform and can only be felt if one empathises with the script and its readers.

## 2. Intracharacter Spacing

Tamil is characterised by its very 'creamy' texture with characters largely varying in widths. While some characters may be a careful amalgamation of various other character components, Tamil also possess components that vary in widths as well. *(The difference between a character and a component here is that a glyph is a composed of components and that each component is a unique shape)* While spaces in each letter are quite judiciously and equally distributed, certain letter forms are unusually wide and hollow for example the Pa(ⱸ) and the Tta(ⱸ). Moreover, when such letters combine with matras, they create copious amounts of inter character spaces. These hollow spaces can be called as *wells/lakes*. Tamil when set in text in Newspapers can not only be characterised by their large number of rivers but also the innumerable number of wells/lakes- spaces on the page where white spaces simply coagulate. The character that collude to form such white spaces are in Figure 2.

யெபஉஆடஅஃப்ய்பியிஜுபயுஷுஸுஹு  
ஸாகுக் கூநுபுமுயூருளுமுவுஷுஸு  
ஹுஸாகுக் பூவமீருநீ

Figure.2 Characters that may tend to form anomalous spaces

These characters, when set along with others are responsible for all the wells/lakes in the scripts texture. Fortunately(or unfortunately) not all these characters(the Uukarams and the Grantha Letters) feature regularly in a block of text. Nevertheless, the white space is a distinctive feature of Tamil. *(Also note, the spaces taken in to consideration in this paper are simply those that fall within the 'Pa- Height')*

Simply for the sake of argument, these anomalous spaces will not be considered while analysing the rhythm of script. Moreover the Rhythm of the script does not depend upon anomalies, rather on similarities. The counters, in any script provide the script with a rhythm. These counters, the areas, they occupy are quite similar, but the forms they take are diverse. But how does one observe the rhythm in a script? Tamil newspapers and other print Ephemera may seem to be inundated with wells and lakes, but if one ignores these minor exceptions it isn't hard to notice how the repetition of the gate space(the space between the stems of the letter Ra(ர)) all across the script as emphasised in the newspaper textures(in Figure.3) and the characters designed in EkTamil is well(Figure.4)



Figure.3 Texture in Newspapers

# ஙறமனரநயஸளாணஹஸ

Figure.4 The characters in the Ra(r)-Rhythm

## 2.1 The obvious Ikarams

Tamil text in Newspapers tend to be quite generously spaced, but it is interesting to note how the Ikarams stay quite close to the body of the character. The space between Ikarams, quite logically must be the space between two verticals. Yet in the case of most existing newspaper typefaces, that isn't the case. This may also be due to the justification settings for the particular block of text; whatever the case, the Ikaram akhand forms do fall out of rhythm.

னா|னா|னி|ா|ஸா|ஸி|ா|பா|பி|ா|ஜா|ஜி|ா|  
 னா|மா|மி|ா|றா|றி|ா|லா|லி|ா|ஸா|ஸி|ா|  
 னா|நா|நி|ா|தா|தி|ா|ஞா|ஞி|ா|ஷா|ஷி|ா|

Figure.5 The gate space mimics itself in the space between the character and the vertical bar, which in turn resonates with the space between the character its ikaram

## 2.2 Designing Ukarams

The space each tail of the Ukarams tends to create often feels as if it has been left to chance. Perceiving and designing such a space can be quite tricky. While our eyes may be adept at discerning distances, its seems to be quite inept at understanding areas. Designing Ukarams is matter of the latter. The ‘area’ between the base letter and its tail have been designed to be equal to that of the gate. If these were designed to suit curve-curve spaces or even vertical-vertical spaces across the font, the intra-character rhythm would seem to oscillate profusely. By keeping the area required in mind, each letter finds enough room to breathe while maintaining the distinct legibility of the matras themselves. However certain exceptions do exist, Mu(மு) and the Lllu(ழு); even these are designed to match each other, thus spatially orphaning no letter out.

னா|ஞா|ளா|ா|ஞா|ணா|ா|னா|னா|னா|னா|  
 னா|மா|யா|ா|மு|ா|மு|ா|றா|ா|றா|ா|நா|ா|நா|ா|நா|ா|  
 னா|கா|ா|கு|ா|கு|ா|

Figure.6 The well aerated Ukarams

## 2.3 The Ma(ம) Debacle

Modulated typefaces in newspapers have the Ma designed as wide character with each counter, open and closed quite well endowed. But upon much consideration (and



reconsideration) the open counter in the Ma in EkTamil did sport a similar counter as the Ra. The closed counter space was made synonymous with the second counter of the Rra(ṛṛ). This did condense the form, but did synchronise it with the rest as well. Moreover, upon a closer look at handpainted letterforms, there is seems to be a possibility of each counter of the Ma visually resembling and falling within the purview of the Ra rhythm as illustrated in Figure.6

#### **2.4 The Va(ṵ) Dilemma**

The Va in newspapers and existing regular print typefaces are widened with a huge circular counter along with another wider second open counter. Of all the characters with an eye, the Va stood out like a sore thumb. To correct this, the circular counter was condensed. The wide second counter on the Va betrays logic. Logically, the space here should be synonymous with the space between a curve and vertical through out the font, plus or minus, considering the optical correction. This too was corrected eventually.

While most of these correction were made by logical apprehensions, a key evidence for these very optical corrections can be found in Tamil Street Painted Signage across Chennai. The instinctive hand painted letterforms do follow a certain rhythm as noted before. The intra-character spacing does challenge the norms currently being followed by newspapers fonts as illustrated in Figure.7



Figure.7 Note the difference in widths between Tamil that is designed for print and one that is instinctively written with a humanist left canted brush.

The lettering, done by an artisan of considerable skill, does employ Gate space as a measure of space across the signage. So much so that the Va(வ), Ma(ம), La(ல) and even other characters with a distinct eye seem compressed to fit into a regimented rhythm. Some signage artists also paint Tamil signage by first drawing all the verticals in a word and then connecting them in intricate ways to reveal letters. This, they feel is a better practical judge of rhythm and space.

## 2.5 Eyeing Tamil

Another distinct feature of Tamil, are the eyes. 120 characters in Tamil possess an eye and it is interesting to see how their size increases as they fall to the baseline. For the sake of uniformity, the Eye level in Tamil is considered to be the height of the eye in the vowel E(ஏ) since characters with an eye above. Coincidentally, the bowl of the letter Ta(த) also corresponds to the Eye Level.

What is more interesting is the interplay of counterspaces here. The window on the Ka(க) occupies nearly the same space as the eye on the Vowel E(ஏ). Upon further dissection of counter forms, the space within the bowls are nearly equivalent to the that within the lacrymal loops on characters such as the Nna(ந்) and Nna(ண்).



Figure.8 The characters and their interrelated spaces

The counter spaces in characters with the eye are quite synonymous as well which helps them achieve a uniform grey despite their varying complexities



Figure.9 The synonymy in the spaces that enclose the eye

## 3. Inter-character Spacing

While the space within letters is important to craft while designing a particular letterform, the spaces between letterforms is, if not more, just as important in designing an aesthetic and functional typeface. This process in type design is characterised by the

setting of bearings of each glyph on any font editing software. In Latin type design it is customary to begin by spacing the lower case n and o. This helps decide the space between verticals, curves and a vertical and curve as well. All other letters tend to conform to the same or a minor variation of this very spacing. So how does one space Tamil. Should Tamil also conform to the same vertical and curve space? Designing EkTamil helped carry out certain experiments with inter character spacing across Tamil. Tamil could've followed the exact same process as Latin were it not for the Beaks in Tamil. The beak (*called Mukka in Tamil*) is a distinct feature of Tamil. It is the horizontal protrusion to the left of characters such as Ra(ர), Ta(த) and Lla(ல). The presence of the beak causes extra space to be collected beyond the stem of the character and impedes it from being tightly spaced with others. In order to compensate for this uneven spacing the spacing across the font was increased to match the gate width. The idea behind this was to create a perfect rhythm with gate spaces all across the font. But loose spacing (which is akin to a plethora of fonts) creates an unruly amount of space between verticals making the character spaces and word spaces all too ambiguous to differentiate clearly. A loose spacing also made the reading all too slow and directly contradicted the visual grammar of the EkMukta Suite.

Since beaks could not be shortened or eliminated (as some contemporary typefaces do) they were spaced in accordance with the gate width. Hence the inter character spacing is an amalgamation of spaces between Verticals, Curves, verticals and curves, and verticals and curves with the Beaks. For convenience the characters are spaced first with a vertical Bar. This decision is not at all arbitrary. The reason is because the vertical bar is a recurring element in the script and the spaces between each character and the vertical bar resound with the characters as well.

।அ।அ।ஆ।அ।உ।உ।ஓ।ஓ।ஔ।ஐ।ஐ।எ।எ।ள।  
।ஊ।ஸ।ல।வ।வ।ன।க।ண।ரு।ரு।இ।இ।  
।நு।நு।நீ।மீ।வ்ரு।ஷ்ரு।ழ்ரு।ணை।ணை।லை।லை।  
।பூ।ச।க।த।ற।ந।ம।ழ।ஹ।ஷ்ரு।க்ரு।க்ரு।  
।க்ரு।க்ரு।க்ரு।க்ரு।க்ரு।க்ரு।க்ரு।க்ரு।க்ரு।க்ரு।

Figure.10 The best way to set bearings across glyphs is to first space them to the vertical bar

While designing or modifying characters, they are then always separated by the MatraAa(ஃ).

Since the gate width is present within characters as well as in between them designing in tandem with spacing helps in preserving this overall rhythm. Certain signage painters do regulate this space below the beak with the brush by starting the much closer to the stem and turning the brush right below the beak with the brush held at canted angle as seen in Figure.11



Figure.11 Space Manipulation by Signage Painters. Notice how remarkably an even grey in Tamil can be achieved, contrary to popular newspaper fonts.

#### 4. Script Grammar

Observing the ingenious techniques used by Signage painters across Chennai and Pudducherry, it is quite difficult to determine how and why digital interpretations of the same forms came to be. Upon my visit to Tamil Nadu, I was overwhelmed by the number Hand painted signages spread across the city. While digital signboards were in plenty, handpainted signages were just as popular. One can only surmise the difficulty in understanding Tamil Typographic Pop Culture, hence understanding the script grammar in its current form.

What is Script Grammar? Is the script grammar to be judged by what the audience is exposed to in a certain medium? Should typefaces conform to existing typefaces? Or can they be based on the grammar found in humane arts of calligraphy and street lettering as well? Is there something to glean from this waning craft? Shouldn't they be based on the instinctive flow of the hand? Are there patterns to be found in various personal interpretation of letterforms found in signages? Is the grammar proposed by the existing fonts a dawn of new era?

Which brings me to a very naive notion of Authenticity? What is an authentic Tamil font? Script Grammar, on the outset does concern itself with the authenticity but it is indeed quite difficult to define it. When it comes to Latin Typography can the type cut by Garamond and its proportions be considered to be authentic?. If so, are the fonts from any other typography era any less authentic or true? After much deliberation script grammar can be defined as **an amalgamation of the internal and inter character proportions according typographic history, current trends, popular consensus and an unimpeded legibility and comfortable readability at multiple sizes.**

## 5. Conclusions

Upon a keener observation and understanding, the spaces in Tamil can be classified as  
First Degree - Base Spaces- The distance between verticals, a curve and a vertical, and a curve and a curve

Second Degree - Gate Spaces - The intra-character rhythm of the script in characters such as the ones in the image above

Third Degree - Eye Spaces - The spaces characters that possess an Eye on the baseline

Fourth Degree - Anomalous Spaces - This includes the plethora wells and lakes scattered all over the Tamil typographic landscape

There are many such observations to be made in this script and logically cracking open a script can certainly help in not just designing letterforms but also in questioning them, and furthering a discussion on the effect of the subconscious rhythm the human hand has on the script. Such connections help define parameters that can later be used to manipulate a large group of letter forms with relative ease (*parametric font design*)

Also, note that all of these observations have been made only in retrospect. Although deciding this rhythm may simply sound like a perfectly mathematical affair that involves calculating areas and spaces. This assumption belies two important things; the rationale of optics and the poetry of logic themselves. Identifying patterns such as these not only help in defining parameters, but they also help in setting up a rough sketch to work with. Certain scripts appear too foreign to completely empathise with and this lack of knowledge mustn't deter amateur type designers from exploring more about a script they like. These are simply typographic guidelines that could enable amateurs to design better and sensitive designs, and enable professionals to focus on what is really important, the

visual craft of type design. After all as Tobias Frere Jones aptly puts it- *Type Design is constant strife between logic and optics*<sup>3</sup>. The objective of the paper is to merely elucidate the former, leaving enough time for the latter.

There can still be arguments that might question the objective of the findings, the authenticity of letterforms themselves. The purpose of the paper isn't to state what is right or wrong. The guidelines suggested and their typographic repercussions are far greater than what my personal position may be regarding the beauty of Tamil type. The sole aim of the paper is simply to foster a critical thinking among my contemporaries before taking up the design of typeface of any script. Each script is a unique world of its own, and in the case of non-natives, the physics of this world is unbeknownst to us. And if one cannot learn the language of this world, the least one can do is critically understand its position. In return, one can be a worthy translator, the punch cutter to the many local artisans that inhabit this world. The job of an indic type designer, especially one that does not know a language, thus, is to simply build a space for a letter to live in.

## Acknowledgements

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