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## ALPHABET 2.0

PAGE 25

**4.** AND IF... , 1980. «And if you should come to inherit your homeland: Do not approach it as an enemy, but come to the inhabitants in the spirit of peace. Not by malice, by transgression nor by animosity will you build the homeland of your forefathers, but by the love of mercy, by righteousness and faith. And you will love the inhabitants of the land for they are your brothers of your own flesh, and you will not disregard them...»

**5.** TRUTH SHALL SPRING OUT OF EARTH, 1985. Source of text: Psalms, 85:12. Source of image: The emblem of the Jewish printer Menasseh Ben Israel, Amsterdam 1635. The text can be read both vertically and horizontally.

**6.** ARC DE TRIOMPHE, 2002. Personal statement on Israel's occupation of the Palestinian territories, published on the occasion of Israel's Independence day, during the Israel Defence Forces (IDF) operation in the West Bank (April, 2002).

PAGE 26

**7.** DESIGN & SOCIETY, 1988. In June 1988, at the height of the Intifada, a conference on the theme «Design and society» was organized by the Israel Museum, Jerusalem. In response to the frilly pink poster produced for the occasion, I introduced Design and Society, using a photograph of a Palestinian woman whose house had been blockaded as punishment for throwing stones. The concrete blocks bear the IDF insignia as well as the stamp of approval of the Israeli Bureau of Standards. This poster served as my representation in this conference which totally disregarded the fact that one kilometre away from the museum another society was struggling to be formed. Photograph: Derech Ha-Nitzotz.

**8.** MOTHER, 1987. Photograph: Jim Hollander, Reuters.

**9.** 1245 SOLDIERS ALREADY LEFT LEBANON, ON UNILATERAL WITHDRAWAL, 1998. Poster calling upon IDF to leave Lebanon. One year later The IDF withdrew from Lebanon. Photograph: AP.

**10.** SHANA TOVA (HAPPY NEW YEAR), 1987. Poster in the series «The Seven Species». The petrol bomb is filled with olive oil. The poster was produced in September 1987 as a greeting poster for the Jewish New Year (Rosh Hashanah). December 1987 marked the outbreak of the Palestinian Uprising – the Intifada. Photograph: Oded Klein.

PAGE 27

**11.** 30 YEARS OF OCCUPATION, 1997. Poster commemorating the 30th anniversary of Israel's occupation of the Palestinian territories. The image is a familiar photograph of General Dayan, General Rabin and General Narkis entering the old city of Jerusalem (June, 1967).

PAGE 28

**12.** HAPPY NEW FEAR, 1995. Poster for the Jewish New Year (Rosh Hashanah). The poster was produced in September 1995 as an expression of the manifestations of violence in Israeli society. On Saturday, the night of November 4, 1995, Prime Minister Yitzhak Rabin was assassinated by Yigal Amir who fired three gun shots into his back. Photograph: Oded Klein.

**13.** PROCLAMATION OF INDEPENDENCE, 1998. Posters from the series «Declaration of Independence».

PAGE 29

**14.** 35 YEARS OF OCCUPATION, 2002. Personal Statement, commemorating the 35th anniversary of Israel's Occupation of the West Bank. Based on a famous photograph of General Dayan and General Rabin entering the walls of Jerusalem during the Six Days War (1967).

**15.** CHILDHOOD IS NOT CHILD'S PLAY, 1998. Poster for an exhibition. Deutsch Plakat Museum, Essen, Germany.

**16.** HAPPY NEW YEAR, 1990. 1990 was the year of a great immigration wave from CIS (former Soviet Union). Hundreds of thousands of new immigrants arrived in Israel. To me, the suitcase image, symbol of the wandering Jew, seemed to accurately represent the year's event. Photograph: Oded Klein.

**17.** UNITED COLORS OF NETANYAHU, 1998. Personal statement on Benjamin Netanyahu Israel's Ex Prime Minister. Bronze Medal Warsaw International Poster Biennial, 2000. Silver Medal Lathi International Poster Biennial 2001. Photograph: David Karp (AP).

LEGIBILITY

*A theoretical and scientific proposal for breaking typography free of its shackles and improving its functionality by substantially altering today's basic alphabetic structures in order to increase readability.*

PABLO COSGAYA AND JORGE DE BUEN UNNA:

*Brant Papazian is not a person likely to go unnoticed, except when you cross him in the street. Personally he is quite unremarkable; nevertheless in the anonymous world of the Internet his personality metamorphoses and he charges into the fora like a bull in a china shop, with ideas that at first glance often seem out of all reason and yet deep down are well thought out.*

*He states what we already know yet through laziness do not take full advantage of: that the alphabet is a common birthright of mankind, that deserves and needs change to optimize its performance. He gives his proposals solid and ethical backing, and presents us with a scientific and critical standpoint which we are not in the habit of confronting.*

*The point is not whether we agree or disagree with Brant, but of learning more about his, at times, strange, at others exotic, and always enriching, way of thinking. The point is learning to question our unhealthy habit of accepting things simply at face value. Who would dream of thinking that letters, which have served us so well for thousands of years, could be perfected with a few brushstrokes?*

*Brant's thinking is disturbing because it subverts the state of things in typographic design. His proposals are impertinent, amusing, unprejudiced and energetic. The study of his work demands taking sides and preparing for debate.*

*The following article is an abridged version of his prior paper «Improving the tool». The original text, four times as long, forms part of a collective work with a very suggestive title: Graphic Design and Reading: Explorations of an Uneasy Relationship, edited by Gunnar Swanson and published by Allworth Press in 2000 [more information available at [http://gunnarswanson.com/GDandR/GDandR\\_Book.html](http://gunnarswanson.com/GDandR/GDandR_Book.html)]. This book was not our first encounter with Brant's fascinating views, but it was where we discovered an arsenal of arguments reflecting his discerning insight, mental clarity and sagacity. Ever since, we have felt the urgent need to make these thoughts available to the readers of tipoGráfica, and our friend Brant Papazian generously and kindly agreed to summarize his excellent article especially for this issue.*

*The Latin alphabet is enjoying increasing prominence across the globe. It possesses a level of abstraction that facilitates cultural migration, and its compositional simplicity and small symbol-set make it very easy to «quantify»: to automate its use, from Gutenberg's movable type all the way to 8-bit ascii. But the Latin alphabet is also imperfect; specifically it is not well-matched to the human visual physiology and the adult reading process, as I will show. The purpose of this work is to arrive at an improved alphabet that can be read more fluidly.*

*The alphabet has evolved over the centuries, and contrary to popular perception it continues to evolve. Except for notable but rare cases such as the Carolingian standardization of the lowercase forms, this evolution has been directed by «non-conscious» forces such as the need to write more quickly. However, unlike carefully considered conscious design choices such development can have detrimental effects. For example the Greek lowercase letters « » , « » and « » (which in fact resulted from the need to write quickly) are much more easily confused than their uppercase parents « » , « » and « ».*

**WRITING VERSUS READING.** Until the advent of printing from movable type we read handwriting exclusively; the written and read letterforms were the same. However with the spread of printing we started to read letterforms increasingly detached from the hand. This is entirely normal – even desirable – because writing is fundamentally different from typography<sup>1</sup>. This difference is most startlingly demonstrated in the PalmPilot device which allows us to execute handwritten letterforms (illustration 1) using a «pen» but converts them real-time to typographic forms intended for reading. In fact you don't even see the forms you're writing; they're just certain movements which spawn the desired letters!

*On the other hand, mainstream type continues to be largely subservient to its handwritten parent, clinging close to it as a child. If we assume typography to now be a mature self-sufficient craft this strong attachment is unnatural and unhealthy; it needs to become its own master if it is to achieve its true promise<sup>2</sup>. The best way to accelerate typography's independence and improve its functionality is through the reform of our basic alphabetic structures, breaking free of the hand and aiming for greater readability.*

**NECESSITY VERSUS SACRIFICE.** Reform is compelling in its challenge and good intentions. But reform by definition entails sacrifice, and for any change to be viable its necessity must handily outweigh any sacrifice. The gain of reforming the alphabet is unlikely to be of monumental importance so we must not expect any active sacrifice whatsoever on the part of the reader. All we should ask for – and not necessarily explicitly – is open-mindedness. This means that an improved alphabet must be composed of letters that remain deci-



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# RAUL MARIO ROSARIVO

## A GENEALOGY OF ARGENTINE GRAPHICS

### HISTORY

*In the forties, out of the public eye, a brotherhood of demiurges established the bases of an intuitive discipline. this mathematical philosophy evolved on the basis of the exploration of an ordaining principle, thus establishing the fundamentals of typographic architecture*

■ Raúl Mario Rosarivo loved books and believed that they should be beautiful. He devoted a considerable part of his life to studying the origins of the printed book and sharing his knowledge like a true master, which he was. He was convinced that the ancient incunabula contained a geometric value which would yield the formula of beauty.

To understand his life, at a distance of one hundred years from his birth, we need to reveal the diversity of his work, take a closer look at his enigmatic personality and the origins of the graphic arts in Argentina, in order to identify its forerunners who worked to spread and elevate the ancient craft of typography.

Rosarivo was born in Buenos Aires on 17 July 1903. He studied at the National Academy of Fine Arts and in 1924 graduated as a Professor of Drawing. He began his search for incunabula while still in his youth, and became a collector of the classics, published by famous printers. In 1939 he participated in the organization of the book exhibition for the Fifth Centennial of the Invention of Printing. On this occasion he mentioned to the organizer of the exhibition, Dr Teodoro Becú, his belief that the old Renaissance prints enclosed a fundamental geometric value.

He moved in intellectual circles and had contact with famous literary figures; he began his work in the field of graphic arts as an illustrator of themes on national culture. He dealt exhaustively with the subjects of the gaucho, the indigenous population and the Argentine landscape.

**THE DIVINE PROPORTION.** Rosarivo developed his theory on the basis of philosophy. He was particularly interested in mathematical and platonic principles and on the principles of the origin of the Universe, and to symbolize this concept he chose the circle, considered to be the perfect form because of its absolute equidistance from any point. In Rosarivo's words, «Argument: for lack of contradiction of the fact that it is possible for something to be and not be at the same time, it is conclusively determined that disorder is opposed to order, precisely because order requires an harmonious relationship of the parts that is in natural opposition to its contrary, disorder.» Furthermore, he considered that geometry «therefore possesses the absolutely certain

pherable with no conscious learning effort. It might seem impossible to arrive at an improved alphabet while maintaining high decipherability but a study of human cognition and the physiology of reading reveals a very interesting avenue.

**HOW WE READ.** Countless studies by some of the keenest minds in the field of linguistic cognition have yet to shed an unfaltering light on the convoluted activity of reading. We do however seem to have a general view of reading that most scholars agree upon.

When reading our eyes saccade<sup>5</sup> (jump) from point to point on a given line of text fixating for a fraction of a second at each point. The saccades vary in size but average about the span of 10 characters. Sometimes saccades are very short, causing a fixation on the latter part of a long word. And sometimes saccades go backwards, regressing to text that has already been scanned.

During a fixation all the words of the given line in the field of vision are processed, in parallel. However the acuity of the retina varies greatly across its surface and we can demarcate clearly between foveal vision and parafoveal vision. The former is a small more-or-less circular region of high resolution. It is the part of the retina that receives the image from the actual point of fixation, but it only spans about 3 characters. Parafoveal vision starts outside the foveal region and drops off quickly in resolution: the farther away from the fovea the blurrier things get.

The foveal region is the only place where we can clearly differentiate and identify the component letters of a word, and at the very most four. Since the average saccade spans 10 characters we must conclude that parafoveal vision – which presents us with blurry, nebulous word-shapes – plays the principal role in reading. So the brain does not usually need to make out the individual letters of a word to decide what the word is<sup>6</sup>.

This phenomenon was studied extensively by the Dutch psychologist Herman Bouma, and the blurry word-images have come to be called «Bouma shapes». For the sake of convenience we will adopt the term bouma to mean the shape of a word.

A bouma is recognized by comparing it against boumas stored in the brain through previous exposure. The more words are recognized through parafoveal vision the fewer fixations we need to perform, because fixations occur at points where the parafoveal boumas do not give enough information<sup>7</sup>. This can happen either because of an unfamiliar word or because of an ambiguous bouma. This latter case is in fact where we will focus our reform efforts.

**SO, WHAT'S THE PROBLEM?** Readability is proportional to reading speed which in turn is a function of reading com-

fort. Reading comfort itself is best gauged with respect to the number of saccades a reader has to perform: the fewer the saccades the more comfortable it is to read.

Examining the above description of the reading process we can make two observations that might lead to improved readability. One thing we realize is that the Latin alphabet is too expansive horizontally. Since the letters are more or less squarish and they form words through horizontal sequencing, words are generally wide and short. This causes two problems: longer words don't fit in our foveal vision, often requiring two fixations; and a string of words in a line quickly overruns the retina's acuity putting subsequent words outside potential parafoveal recognition.

Because our visual acuity drops off in a circular pattern we would need less fixations to read text with squarish boumas. To make the Latin alphabet fit this mold we would need to do one of the following: greatly compress the letters horizontally; devise a new alphabet with tall and narrow letter-symbols; or maintain the conventional letter structures but compose words by stacking two rows of letters. Unfortunately the first approach yields letters with low readability (because the essential structures of the alphabet become unrecognizable when highly condensed), while the other two require active learning on the part of the reader, something we need to categorically avoid.

The other thing we realize is that ambiguous boumas cause problems: any doubt when matching a bouma to a word causes a fixation or worse still a regression. Although this cannot be avoided for unfamiliar words, in most cases it is caused by the possible mapping of a bouma to more than one word. The level of ambiguity varies greatly even among existing conventional type designs: because of its high level of modularity and reliance on the basic line & circle, Avant Garde presents us with much more uniform – therefore ambiguous – boumas than Gill Sans (illustration 2). However, unlike mainstream type design the purpose of this work is to greatly decrease bouma ambiguity by modifying the underlying abstract definitions of the letters.

**THE FIX.** How can we make boumas less ambiguous? We need to determine what features make a bouma distinctive in the first place and accentuate them. The key feature of a bouma is its silhouette. The brain's primary mechanism of identifying an object is by way of its external outline. This is especially relevant for boumas seen through parafoveal vision since their blurry appearance obscures much of the internal detail. But even in foveal vision – where all letterform details are available – the silhouette of a word is of key importance<sup>8</sup>.

The most prominent features of a bouma's silhouette are its width and the ascenders and descenders of its constituent letters. It is in fact the lack of such extenders

that makes all-uppercase text much less readable than lowercase text. So in modifying the letter-structures we need to consider primarily the ascenders and descenders, and secondarily their «bodies». However, the words these new letters form also need to remain decipherable in case of non-bouma (letter-wise) scrutiny, so we cannot deviate too greatly.

**THE NITTY-GRITTY.** There are two types of ambiguity we need to reduce. The first and more important is bouma ambiguity where the parts that letters contribute to words are what need to be diverged. Of secondary importance is the need to reduce ambiguity among the individual letters. For each of these two types of ambiguity we need to determine the specific problem areas of the conventional alphabet. The Modules + Similars diagram (illustration 3) represents both sets of ambiguity conflicts: the Modules are the groupings of letters into sets, which represent the components of letters that contribute ambiguity to boumas; the Similars show the conflicts between individual letters<sup>9</sup>, with the thick lines indicating a higher degree of ambiguity than the thin ones. What techniques can we use to diverge a letter's structure?

1. Add or remove elements that do not weaken the letter's decipherability.
2. Modify curved elements to make them angular or straight, and vice versa.
3. Borrow from the uppercase structure of the letter (if different to that of the lowercase).

Since providing a complete convoluted explanation of all the modifications to all the letters would be impractical I will not attempt that here. However illustration 4 shows one conclusion of the extensive mental machinations. As an illustration, let's go through the bulk of the process for the letter «q».

The essence of the «q» is something to the effect of: a more-or-less circular shape with something descending from its right side that doesn't turn leftward (to avoid being a «g»). The conventional structure of the «q» exhibits two modules: «descender» and «o». The first is of greater significance since extensions play the primary role in a bouma. I can't turn the descender to the left but I would like to avoid leaving it straight because the «p» – the most common descending letter – has a straight stem. What I can do is add a rightward turn. The exact form of this turn can be determined by looking at the reformed «y»: to avoid similarity I make it angular instead of curved. As far as the body of the «q» is concerned, I would like to reduce its «o» modularity by adding angularity to it. I do this first at its top since the tops of letters bear more weight in recognition. I could stop there but to avoid modularity with the reformed «c» I can also flatten the bottom of the body. This can also be justified by the need to pull the «q» away from the «p» which has a curved stroke at the bottom of its body.

I would now move to reducing Similar ambiguities, where the only remaining issue is the «g», but it turns out to be sufficiently dissimilar at this point.

**IMPLEMENTATION & DISSEMINATION.** The actual glyphs of a typeface are derived from the structural skeletons. In conventional type design the structures are somewhat loosely defined. As we saw, however, the structures of the reformed alphabet are necessarily of a stricter nature. For example the middle part of the «w» should not reach the x-height. Even so there is still ample room for a world of diversity through the variation of stroke contrast, stroke stress, weight, width, x-height, ascender and descender size, serif shape, and other attributes.

This reform proposal is not a top-down process. No organization or entity can have authority over its implementation and adoption simply because the alphabet is «public property». It cannot be promulgated but has to be embraced by individual typographers, with the support of individual type designers.

The reading public obviously plays the biggest part in this effort but it's necessarily a non-conscious role. The reformed alphabet has been based on the premise of not requiring any active effort on the part of the reader so the public should not be subjected to preaching about the benefits of a book set in a reform typeface. Although a short blurb in the colophon pointing out the use of the unorthodox readability-optimized face might be a good idea, the six o'clock news need not carry a story. The main daunting task now is to convince typographers of the benefits of this effort, as they are the ones who hold the greatest power to improve the tool. ■

I would like to thank Peter Enneson for pointing out numerous relevant references, as well as engaging in fruitful discussion.

### NOTES

- <sup>1</sup> «The most serious defect of the English alphabet is that only 23 letters are available to represent about 44 phonemes. (Of the 26 letters, 'c', 'q' and 'x' are superfluous.)» Insup Taylor & M. Martin Taylor, The Psychology of Reading, New York, Academic Press, 1983, p. 93.
- <sup>2</sup> From Derrick de Kerckhove and Charles J Lumsden, eds. «Canons of Alphabetic Change» (Watt), The Alphabet and the Brain, New York, Springer-Verlag, 1988, p. 133.
- <sup>3</sup> «The visual aspects which distinguish manuscript writing from either monumental inscriptions or print are its elasticity of form, adaptability of size, and mutability of spatial arrangement.» Johanna Drucker, The Alphabetic Labyrinth, New York, Thames & Hudson, 1995, p. 104.
- <sup>4</sup> «The factor of easy writing, which influenced the forms of the alphabet at the time of the scribes, can have no actual significance any more; we have to reckon with the technical requirements of typography nowadays.» G. W. Ovink, Legibility, Atmosphere-Value and Forms of Printing Types, Leiden, (The Netherlands), A. W. Sijthoff, 1938, p. 213.
- <sup>5</sup> Translator's note: The use of the word saccade in reference to the eye is attributed to Émile Javal (1839-1907), a Frenchman considered to be one of the fathers of ophthalmology. The French word chosen by Javal describes the small vibrations of a candle flame. In Spanish the word is generally translated as «sofrenada», «tiron» or «sacudida», however the direct translation sacada would appear