Maaluma

Effective in inducing affect

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Abstract

Preoccupied with the Arabic language's complexity, and striving to find one common pointer of educational strength, this thesis, epistemological in its core, deals manifestly with typographic issues. Nevertheless, it engages in the cultural, psychological, and neurological in order to serve the educational.

It builds upon substantiated historical study of the genetic descent of the letters in general and the Arabic alphabet arbitrariness in particular with their respective cross-cultural interpretations along with related criticisms. From the naïve Cuneiform system of writing to the most elaborate mature Phoenician alphabet and onto the Latin before the Aramaic of which the Arabic is believed to have evolved, time tables and charts alike are set up as a leading reference manual, to mark the advent of typography with the printing press of Guttenberg in the 15th century. The rich exhibit of the various Arabic calligraphic styles is to mark the opposition of Islam towards typography, poising their sacred script above the machine made-type form, I am striving to reconcile throughout this investigation, I called *Maaluma*. It engages for this purpose in an overall study of phonemes of all civilizations ranging from Hieroglyph to the Proto-Siniatic the Hebrew and Latin before reaching out in particular for the Arabic phoneme as a unit base of that Arabic sacred script investigating its potentials according to Abbas's domaining sensory analysis of the clusters of phonemes 1998.

Changing towards operational and more functional outline status, carrying on bouba/kiki sound symbolism theory, the thesis proposes *Maaluma* a detached-attached Arabic letterforms concept, with its effect induction model and approved psychological methodology.

A full spread on the bouba/kiki sound symbolism theory is devoted for that matter at the end of the thesis, offering to delve in the psychological infants, based on cognitive mapping, brain-sciences, and field experiments.

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Thesis Research Strategy

A. Definition of field of research & subject of research

a.1 Field of research | Domain

This research covers a new development in the phonetic Arabic alphabet and will deal with its typography in the framework of the discipline of Graphic Design. By its nature, the phonetic Arabic alphabet attributes "...a separate character for each distinguishable speech sound. These symbols in themselves have no meaning but they represent the sounds of speech. By ordering the phonetic symbols along a line, the sound of a word can be represented." (Baines and Haslam 2005, p. 12). As for typography, it is defined as "the design and use of typefaces as a means for visual communication" (Pflughaut 2007, p. 154).

In *Understanding Media*, a book about the evolution of mediums of communication as extensions of Man: "Typography extended the minds and voices of men to reconstitute the human dialogue on a word scale that bridged the ages" (Mcluhan 2003, p. 233). In other words, the thesis will engage in the psychological and neurological domains along with the study phonology and vocalize.

In the analysis of David Crow in his book *Visible Signs*, the author says, "The theories which we apply to graphic design and visual communication are taken from a study of the general science of signs known in Europe as semiology, in USA as semiotics, and in the East and the Arab World mainly as *Al-Simyaiya*. They are borrowed from the study of language (linguistics), so we can define semiology, or semiotics, as the study of signs, of how they work, and of how we use them" (Crow 2003, p.15). In fact the term semiology can be applied to all sorts of human endeavor even though we may not realize how they may evolve. Although these may be lacking unfortunately in most Arab countries, there are countless dynamic forms of expression such as cinema, theatre, dance, architecture, graphic design and painting, not to mention also politics, medicine, religion and history.

a.2 Subject of research | Problematic | Objectives | Aims

The consonants and vowels in the alphabet represent vocal skills as "Illustrations of how sounds are produced with little or no abstraction of the vocal

tract." (Noble & Bestley 2005, p.134). Although each of the Arabic vowels and consonants has a power of its own, as Khatibi and Sijelmassi stated in their book *The Splendor of Islamic Calligraphy* published in 2001, "Arabic script is definitely revealed in the Qoran as a miracle" (Khatibi and Sijelmassi 2001, p. 21), although this "...remains marginally disputed by some Muslims, perhaps even by the great Al-Ma'arri[2] (973-1057). Basically, this concept affected the whole process of writing when "...the manuscript culture had sustained an oral procedure in education that was called 'scholasticism' at its highest levels." (Mcluhan 2003, p. 237). But by putting the same text in front of any number of students or readers, print ended this scholastic regime of oral disputation very quickly. Print provided a vast new store of memory for past writings that made personal memory inadequate, however divine it is alleged to be. In Islam, indeed, "Writing is an absolute, *the* absolute, the *Sanctum Sanctorum*." (Khatibi and Sijelmassi 2001, p. 22). This crucial point is decisive in the question of writing. Let us consider briefly some of the problems that arise.

One of the major problems encountered in getting a real insight into the Arabic language is "The inability of the later generations of Arab and non-Arab speakers of Arabic alike to fathom the depth of the Arabic language". (Ibn Jinni 2008, Vol. 2, p. 164). They fail to respect the vivid interplay between sound, image and meaning, for example in the works of Ibn Jinni on the sound (*lafz*) and the meaning (*mā'ana*) of the Arabic word.

In addition, on the meta-linguistic level, when referring to the non-Arabs, Al-Arsuzi[1] charged that there was a noted failure to codify the grammar of the language of his period. In his book *The Arabic Language and National Identity*, Suleiman asserts, "On the meta-linguistic level of grammatical description and explanation, the involvement of the non-Arabs in the codification of the language has meant that they failed to realize fully, owing to linguistic interference from their mother tongues, the special character of the language as the embodiment of the Arab's view of life and as the structural articulator of their status as a special nation among nations" (Suleiman 2003, p. 148).

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"A major difficulty," says Abou Rjeily "in learning and mastering Arabic lies in its calligraphic origins and its modern script." (Abou Rjeily 2011, p. 13). Indeed, another conspicuous problem to be tackled relates to the complexity of the inherent

calligraphic nature of the Arabic alphabet, with numerous shapes of the letters according to their position in the words and their overlapping levels, which will always render the typographer's task difficult and make it even a challenge. Ever since the advent of Islam, typographic designers in Arab societies have always been faced with problems resulting from the lack of flexibility of Arabic type and to a great extent (of) clarity, order, simplicity, dynamism and functionality", claims Kortbawi. (ISTD journal issue 60, 2004).

But "The highest impediment to reading Arabic remains its cursive writing style." (Abou Rjeily 2011, p. 12). Learning Arabic poses another challenge for children and especially for adult non-Arab beginners. When they learn the Latin alphabet they are faced with 26 letters each of which has one basic shape, whereas in Arabic they are confronted not only with 28 characters but also with their many variations as they occur in handwriting. According to strict rules, Arabic letters can have up to five different forms according to their position in a word, separate, initial, medial, terminal and in ligature.

According to methods used in reputedly elitist schools in and around Beirut that I in turn investigated, "...a child learning Arabic systematically, starts with the complicated and never reaches the simple way." (McCree, 2011). In other words, "...the program most considered in advanced schools in Lebanon for teaching the child to read Arabic is spread over two years. But it may take him another two or three years before he can write correctly." (McCree, 2011). A closer look at any child or beginner first entering into the world of the Arabic book reveals that it is always through the medium of a foreign language and vocabulary which is not his mother tongue that he acquires knowledge of the Arabic language. "By the time he has learnt to read Arabic, he is indeed already far ahead in his ability to read that foreign language and thus has even begun to think in that foreign language" (McCree, 2011). In brief, relegating his own language to a secondary place in his education might become a process that will probably persist throughout his entire apprenticeship.

A recent survey in some highly reputed schools in Beirut revealed more concrete difficulties which both students and teaching staff encountered in dealing with the variations of the letters of the Arabic alphabet for the study of phonemes, the basis of any speech. As phonemes are the smallest units of sound making up a spoken language, the phonetic speech system is entirely dependent on them. There is an

obvious lack of the comprehensive psychological approach needed to inter-relate the three principal elements, namely articulatory phonetics (the way we create sound), acoustic phonetics (the physical properties of sound), and auditory phonetics (our perception of sound). There is a need to make the general Arabic learning system easier and to make Arabic appeal to beginners.

These problems stimulate one into a better, more comprehensive and more persuasive exploration into the Arabic language. Hence my quest to release the traditional Arabic language from its complex mystic structure according to the concept that "...the status of writing derives from the Qoran", proclaimed in unison by the noted grammarians Al-Farabi[3], Ibn Jinni[4] and Ibn Hazm[5]. For these "...the Arabic language is set to be divine whereas its late development may be the activity of humans" (Khatibi and Sijelmassi 2001, p. 32).

So this study may, we hope, serve as a communicative tool to facilitate understanding of the Arabic language through the educational system, in order to build a correlation between the sound-image and the meaning-related dimensions within their Arabic identity context. So Arabs and non-Arabs alike may retain the natural essence of the letter together with its potential meaning. This is an alternative approach to the relationship between the spoken Arabic language, its meaning and the way it is written.

While investigating theory about the Arabic language, I found Ibn Jinni to be one of the major figures of Arabic linguistics who, although not racially an Arab, elaborated notably on the correspondence between the sound (*lafz*) and the meaning (*mā'ana*) of the Arabic word, a matter still open to discussion. According to Ibn Jinni, the implication here is that the relationship between the acoustic and semantic contents of the Arabic word is not arbitrary or merely conventional, but natural and motivated, owing to the "Wisdom of the Arabs." (Suleiman 2003, p. 48). In other words, the connection between sound and meaning is said to be obvious even if needing some interpretation or manipulation.

a.3 General hypothesis

If typographers alter the 28 vowels and consonants of the Arabic phonetic alphabet, exploring closely the interplay between sound, image and meaning, they

will then facilitate the education of the Arabic language for beginners, Arabs and non-Arabs alike, and bring about reform.

B- Reasons for the choice of the subject & its scientific justification

b.1 The choice of the subject | Personal interest | Education career

My imagination has long seized upon letters as a source of distinct visual voices, in particular Arabic letters, for Arabic is particularly challenging owing to its national and sacred identity and the forms of its letters viewed as ever-sacred invariables. Further, I have always been curious about the relationship between sound, image and meaning during my studies in typography, these being the fundamental elements of Graphic Design. On a more personal level, I wish to "...achieve for the reader (Arab or non-Arab, young or old alike) what voice tone conveys for the listener," as stated by El Lissitzky in *The Elements of Typographic Style* (White 2004, p. 103). In other words, I wish to address myself to all potential readers and to draw their attention to a language which has long been seen as rigid and unappealing.

As a child I was raised in a bilingual community in Lebanon, a small Levantine country at the crossroads between western and eastern civilization. I found French and English much easier to study than Arabic although this last was my first language. I learned both alphabets, Arabic and Latin, becoming thoroughly proficient with the two, without however pausing to consider their different backgrounds until much later when I had matured and resolved to find out why it was easier to study English or French than Arabic.

But during my apprenticeship I came to enjoy the elegant forms of the Arabic characters. After completing my BA in Graphic Design at Notre Dame University, I wanted to learn more about them and to investigate new approaches to design and to typographical questions. I decided to enroll in the MA Design program at the main campus, a move that proved to be both challenging and inspiring.

I feel myself motivated by the general reactions of people and in particular by the dynamic response of young students when they meet such a lively unconventional approach to the teaching and learning of language.

b.2 Scientific justification

In my quest to reconcile the ancient and the modern throughout typographic fundamentals investigating what was ever called invariables and arbitrary, I chose to outline the parameters of a close interplay between sound-image and meaning, dedicating resources to learn and better understand the Arabic language concerns, needs, challenges and aspirations, recognizing nevertheless its strength and values.

"Before this world existed, the various letters applied to God, to assist in the work of creation, then the twenty-two letters of the alphabet descended from the crown of God, whereon they were engraved with the pen of flaming fire." (Firmage 1993, p. 57). Accordingly, the alphabet is often associated with mythical histories, as is clearly shown in the Bible story of the Tower of Babel, in the Hebrew legend from the *Sefer Ha-Zohar* (*The Book of Splendor*) and in Arabic mythology. We find that the forms of letters during Greek and Roman times and the days of the Arab Empire were believed to have magical powers, "...the power to curse, to heal, to empower, and to constrain," as explained in the book of Johanna Drucker, *The Alphabetic Labyrinth* (Drucker 1995, pp. 65).

As cultures expanded, developed and interacted during the early Renaissance, printing urgently required updating and reform, and called on the services of typographers, printers and even mathematicians and linguists for a constructive debate on the reshaping of the letters, whether Latin or Arabic.

The Latin language followed the new tendency and so Latin typefaces also were quickly and continuously modified as progress demanded, but the Arabs held back. "Arab thinkers reject the idea of a usage inspired by spontaneous naturalism relative to mankind." (Khatibi and Sijelmassi 2001, p. 28). Indeed, "...it was mainly due to its type-form considered aesthetically inferior by comparison with the manuscripts produced by the numerous skilled Arab and Turkish calligraphers." (Abi Farès 2001, p.43), when type-setting was originally devised in order to liberate these same calligraphers from the tedium of handwriting, I intend to elaborate on this subject of historical development throughout the following chapter.

This rejection of change was indicated with equal clarity by Khatibi and Sijelmassi in *The Splendor of Islamic Calligraphy*. It was suggested that Arabic

calligraphy should not follow the change imposed by the requirements of printing that was occurring in other languages, including those that belonged to monotheistic[6] cultures, especially the Christian. The letters of the Arabic alphabet remained fixed in their inherent sacred calligraphic nature, although the first purpose of "...the invention of the printing press was to liberate writing from handwriting or calligraphy" (McCree, 2011). As Abou Rjeily remarked, "When Arabic typography is based on calligraphy, it maintains its traditional origin and remains connected when transferred into movable type, while the Latin alphabet became detached during the Renaissance "... it being noted that calligraphy and typography serve different purposes." (Abou Rjeily 2011, p. 13). There were only a few scattered attempts at change during the centuries following the invention of typography, attempts which did not find acceptance in the Levant and were in any case only very cautious.

This led to solecism in the linguistic field, something which is said to have weakened the attachment of the Arabs to their ideological beliefs. Worse, it involved non-Arabs in the codification of the Arabic language, which for them was a foreign language and not their mother tongue, and in its grammatical description and explanation.

Following the Syrian Alawite intellectual and political activist Al-Arsuzi, author of *The Arabic Language and National Identity* (Suleiman, 2003), we could name among such scholars some of the foremost non-Arab thinkers and men of letters, for example Ibn al-Muqaffa'[7], Ibn Sina[8], and Al-Ghazali[9], to mention only a few. They are often referred to by epithets marking them off as "other", even as *al-aghyar* (strangers), *al-dukhala* (aliens or imposters), or simply *al-a'ajim* (non-Arabs of Persia). Paradoxically, some of the most fundamental insights of Al-Arsuzi and of his fellow philosophers into the Arabic language can be traced back to linguists who were not racially Arab, particularly to Ibn Jinni, said to be of Greek stock[10].

The following exposition is inevitably of a technical nature and does not pretend to be complete, rather striving to be accurate within its limits, as I am going to outline the parameters of this linguistic link with the past, considering various references, recording the relevant statements of past philosophers, both Arab and non-Arab, and highlighting the close interplay of sound, image and meaning.

One of the most important insights in this field was reached by Ibn Jinni when he made the assumption of there being correspondence between the sound (*lafz*) and the meaning (*mā'ana*) of the Arabic word. He postulates the bond between the acoustic and the semantic contents of the Arabic word and assumes that it is neither arbitrary nor conventional, being simply obvious. Ibn Jinni "...expresses this property of the Arabic lexicon by talking about the contiguity (*imsas*) of sound and meaning in Arabic words" (Ibn Jinni 2008, vol. 2, p. 12). He considers this property as further evidence of the principle of "the Wisdom of the Arabs" (Suleiman 2003, p.48), which is fundamental to his entire project of Arabic grammatical theory.

"The Meccan Openings" offer another broad insight into Arabic thought about language in Ibn Arabi's book *Al-Futûhât al-makkiyya*, where the author dwells on "the inner meanings of the Islamic rituals, the different stages reached by travelers in their journey towards God and in God, the nature of the cosmic hierarchy, and the spiritual and ontological meaning of the letters of the Arabic alphabet" (Ibn Arabi 2002, p.376).

Strongly motivated, Ibn Muqlah, "a child of his time", dwelt on the image part of the theory as "...he built his design parameters for the cursive styles on geometric proportions using three basic elements, the rhombic dot (measured by the thickness of the stroke of the pen), the *aleph* (the measuring rod of the Arabic alphabet), and the circle (the diameter of which is equal to the height of the *aleph*)" (Abi Farès 2001, p. 96).

Quite inspiring, such rules based on the pure geometry of the forms of letters may have influenced European artists and scholars during the Renaissance. Going further into this subject, we may turn to the book on typography written by Geoffrey Tory in the year 1529, wherein he studies letterforms according to the principles of geometry, perspective and the proportions of the human body. We may well suspect a *déjà vu,* with principles borrowed from Ibn Muqlah, for "Tory states in poetic terms that the letters from which all the letters of the alphabet are born are nothing less that the capital letters *O* and *I* – the circle and the vertical straight line" (updated issue, Tory 1970, p.46/96).

Similarly, the widely acclaimed Lebanese poet Rashid Salim al-Khoury during the mid-nineties assigned meanings to individual letters of the Arabic alphabet in many of his literary works.

During the first decades of the twentieth century there were in Egypt various bold attempts to reform the use of Arabic type, particularly around 1939 when a committee presided by King Fuad himself was formed of Arabs and orientalists to study the reformation of Arabic typeface. From hundreds of proposals only two were admitted, those of Ali el-Jarem in 1944 and of Abdel-Aziz Fahmi Basha, both of which were selected for possible implementation. Whereas Ali el-Jarem suggested the introduction of diacritical accents as part of the characters instead of being placed above and below, Abdel-Aziz proposed the use of Latin letterforms in addition to the Arabic ones as a helpful alternative for foreign students learning Arabic.

A notable contemporary, the Lebanese writer Youssef Ghossoub established a method reducing the basic Arabic printed letters from three hundred and sixty characters to no more than sixty, paying particular attention to the aesthetic aspect of the Arabic calligraphic form.

More convincing than these, the project of Nasri Khattar called "Unified Arabic" proposed in 1947 to make Arabic typography correspond to the Latin fonts in order to simplify Arabic for both printing and for learning. The several forms of each Arabic letter would be reduced to only one in so far as it was possible. Unified Arabic was later developed and reshaped in the 1990s by the London-based typographers and calligraphers Mourad and Arlette Boutros, commissioned by Cecil Haurani.

The items of material listed above do not form an exhaustive list but are tools to be taken into account for the wide selection of influential thinkers, whether poets, authors, artists, graphic designers, typographers or computer scientists. Many of these avant-garde designers were seeking to clean up the ambiguities and excesses of Arabic typographic language and to standardize spelling, building on the interplay between sound-image and meaning, with such persons as Professor Salman Hassan al-Ani[11], Sheikh Abdallah al-Aleili[12], Dr. Sobhi al-Saleh[13] and Dr. Hassan Abbas[14] carrying out relevant experiments in Arabic linguistics. But close examination shows that the lack of rationalization needed for modernity and of flexibility and legibility

due to the complexity of Arabic type (with a structure more difficult even than that of Chinese or Japanese) makes any great future achievement in this direction most difficult.

However, I am trying here to investigate more closely on my own terms the interplay between sound, image and meaning, by building on Arabic letterforms within the Arabic phonetic alphabet that should be widely employed as both practical and artistic.

Following earlier successful cognitive psychological studies on thought and language that would show a natural relation between sound and image, particularly the one developed by Köhler[15] in 1929 that entail matching a series of images with their corresponding set of nonsense words, as *maluma* and *takete* (in other instances *bouba / kiki* ref.p.18) (*Thought and Language*, 2001), as in (fig.5 p. 82), I set up to conduct my own investigation and experiments, hoping for similarly convincing results proposed by the thesis project reform *Maaluma*, and its new detached attached letterforms concept, investigating the correlation between sound-image and meaning, explaining how metaphor is used to relate between the sense of hearing and other senses. In other words, how most attributions from hearing are based on an image, whereas the reverse relationship is also possible. Sounds can be used to translate a visual or tactile phenomenon, keeping related characteristics.

Authors could not agree on one definition to describe the potential of the bouba/kiki[16] (fig.5, p. 82) sound symbolism phenomena, whereas traditionally phonetic symbolism comprehends all the occurrences wherein sounds produced by the human sound-producing organ express a meaning without using the system of language. The research in this field takes on many forms according to the sounds studied, the experimental methods applied or the meaning being investigated.

So sound symbolism definition depends on the kind of sound it deals with, as numerous studies refer to sound symbolism on different levels, ranging from paragraphs to pure tones. Such intermediary stages as words or phonemes as *Maaluma*[1] are the main concern of my thesis on Arabic letterforms. Poetry uses many techniques, for example, whereby the sound is essential for the meaning. In his famous imitative alliteration, Racine wrote "Pour qui sont ces serpents qui sifflent sur

vos têtes?" (Racine 1988 *Andromaque*, Vol, 5). Here the idea of snakes rests on the repetition of the sound "s". Such an example would be considered as being on the fringes of sound symbolism. Onomatopoeia reflects as here, quite a fine link between sound and sense (Hinton, Nichols & Ohala, 1994) despite its apparent arbitrariness on the linguistic signs level. It is clear that within a given language the origin of onomatopoeia lies in the imitation of sound produced by animals, thus creating a kind of sound symbolism. Beyond onomatopoeia, all languages use mimetic words, whose phonetic structure is analogous to the meaning the words convey (Magnus, 2010).

In fact, "...direct linkages between sound and meaning can exist at several levels of vocal or verbal communication: at a corporeal, an imitative, or a synthetic level, or as conventional sound symbolism." (Hinton, Nichols & Ohala, 1994, p. 1-6). At the most basic level, pre-verbal sounds of the body can be used for communicative functions. Depending on the context, a shout, a groan, a laugh, or a clearing of the throat can express one's desires or needs. Imitative sound symbolism occurs at one level above the corporeal, with onomatopoeic words and phrases (e.g. *knock, swish, snap, ding-dong*) representing environmental sounds translated into Latin in parallel with another Arabic translation such as the whistle of the wind, the rumble of thunder, or trickling of water.

Indeed, in the discussion of Ibn Jinni, Ramachandran & Hubbard[17] and Hassan Abbas on the subject, it appears from the results that there might be natural constraints on the ways in which sounds are projected on objects.

b.2.a Current state of knowledge

Only recently psychologists have started calling into question, from an empirical point of view, the fully arbitrary nature of the link between signifier and signified, exploring the possibility that certain sounds contain within themselves a certain meaning.

The idea of a direct link between sound and meaning was upheld quite early in ancient times by Plato and Socrates, but the theory of sound symbolism or phonetic symbolism, as a science of its own, has among others surfaced in the 19th century by Wilhelm von Humboldt.

Consequently numerous studies and experimental methods focused on mere phonemes instead, in order to prove the existence of such a privileged link between sound and sense, much used in cross-language generalization. Replicated among subjects from different countries and with different native languages, these studies proved effective in word learning as reflected in Abbas's study of the Arabic word cluster and thus In *Maaluma's* effect strategy. Phonology gives further evidence of sound and sense interplay, within the sound symbolism phenomena (Farmer, Christiansen & Monaghan, 2006).

Besides the fact that this experiment brings to light a reproducible link between linguistically meaningless sounds and geometric shapes, already found in many languages (Davis, 1961), in Latin as well as in Arabic and with spoken words (Maurer, Pathman, & Mondloch, 2006), it puts forward another hypothesis to account for the success of the bouba/kiki theory and its effect on pre-literate 2.5-2.8 year-old children, one that is due to the mimic employed and the articulatory movements we make when pronouncing these words; this is a major phenomenon which Abbas [1]pointed out and highlighted throughout his thorough study of the Arabic phonemes.

We call this hypothesis the "articulatory hypothesis". Such an explanation could be related to motor theories of speech perception. Speech perception and production are often separated in schematic neurological theories of language, taking place respectively in left superior temporal and inferior frontal lobes (the so-called Wernicke's and Broca's areas) (Wernicke, 1874; Damasio & Geschwind, 1984; Gernsbacher & Kaschak, 2003). However, many neurobiological and psycholinguistic theories of speech consider that speech perception and production could be strongly linked. For example, the motor theory of speech perception postulates that people perceive speech sounds by identifying the articulatory movements necessary to produce them (Liberman & Mattingly, 1985). The direct realist theory of speech perception also proposes a direct link between speech perception and production (Fowler, 1986), as in *Maaluma* inducing effect. Imaging experiments have brought evidence for these theories, with activation of left inferior frontal cortex or motor and premotor cortex during passive listening to words (Wilson, Saygin, Sereno, & Iacoboni, 2004; Hauk, Johnsrude, & Pulvermüller, 2004).

One crucial point of these theories has been addressed recently: the specificity of activation for heard speech components in premotor cortex. It has been shown that

passive listening to phonemes [t] and [p] activated different precentral clusters, corresponding to the ones activated to pronounce them (tongue motor area for [t] and lips motor area for [p]) (Pulvermüller, Huss, Kherif, Moscoso del Prado Martin, Hauk, & Shtyrov, 2006). As the authors of this study note "this is evidence that information about specific articulatory and motor features of speech sounds is accessed in speech perception". More recently, researchers reported behavioral evidence that specific speech production commands are automatically and involuntarily accessed during speech perception (Yuen, Davis, Brysbaert, & Rastle, 2010).

This is crucial indeed for justifying scientifically my choice of Abbas's substantial analysis of the automatic behavioral mimic during the articulatory information when engaging the visceral, the guttural and the facial affect as well. Thus, it seems highly probable that when hearing "kiki" or "bouba", specific articulatory information about these words are accessed, the mouth articulation gesture and hand movements (Rizzolatti & Arbib, 1998) even leading to a grasping action.

Another theory would be that shapes and sounds are linked because of physical similarities, relative to low-frequency sounds or high pitch and size; modulating congruency along these two dimensions could influence multi-sensory integration, explained by Spence, as the result to "synaesthesic congruency" (Spence, 2007), whereas Doehrmann calls it "weak degree of semantic".

To note that initially vowels and consonants were defined in the phonetic symbolism according to the tongue position in the vocalize as back and front vowels, maximized by empirical opening of the mouth in the process, whereas consonants are labeled either stop consonant as in "t, k, p", or even voiced continuant as in "m, n, s, l", or vibrant "r, z", when the airflow and the articulatory movement are totally different between stops and continuants. To our knowledge this is the first study separating the role of vowels and consonants of the bouba/kiki effect.

The bouba/kiki sound psychological experiments owe their expertise and their methodological advice to the Implicit Association Test (IAT[18]) (Greenwald, McGhee, &Schwartz, 1998), a method which is widely used in social psychology to observe effects that are not found by explicit questioning.

The IAT is a tool used in social cognition studies to assess the strength of association between concepts belonging to two different categories (shapes-words). The results

show that the associations they study exist for the majority of our subjects but the question concerning the implicit nature of these associations remains. First, the word *implicit* may not be appropriate here as most subjects explicitly associate "lojo"-like pseudo-words with round shapes and "kipi"-like pseudo-words with spiky shapes. Consequently we prefer to use the word automatic.

The IAT seems to show that the links we study are automatic and pervasive but does not give information about the possible cross-modal integration between shapes and pseudo-words (Doehrmann & Naumer, 2008).

Furthermore, these convincing explanations I elaborated on, conducted on bouba/kiki sound symbolism, logical from the perceptual level for the matching effect to the conceptual level for the congruency effect, are justified with imagery activation for multiple comparisons across the whole brain. In this FMRI (Functional Magnetic Resonance Imaging) study, I based my thesis upon the coordinates reported as Montreal Neurological Institute (MNI) standard coordinates. Indeed the areas in the brain where integration between shapes and pseudo-words takes place could give us important insight into the kind of link implicated (Beauchamp M., 2005).

b.3 Interest of study

Apart from any benefit it might offer in teaching, this study has the aim of enhancing awareness among designers in general and in particular serves as a functional strategy paper. Thus it may help typographers who are keen to learn more about the function of each separate Arabic letter by building on the connection between sound, image and meaning (analogs and metaphors).

When studying closely the anatomy of Arabic letterforms and using my reference manual, readers may be considerably helped by logic. The manual, I trust, will stimulate undergraduates doing Graphic Design, develop educators, give children a visual eye, and make beginners appreciate the details of letters and comprehend the totality of Arabic typeface design.

Furthermore, this publication will have pages devoted to the talents of several outstanding designers and will serve children and adult beginners, marketing experts in the Arabic and in the European educational worlds, advertisers and brand designers, and particularly those wanting to create names for new products, relying on the sound of words to evoke images and to have emotional impact.

Equally, it could also be a significant ideological stimulus for a new generation of net illustrators, promoting this conceptual process of sound, image and meaning interplay and challenging the conventional Arabic alphabet used up to the present both in printing and on the net. Last but not least, this thesis can provide an advantageous platform for leading cognitive psychologists in their quest for a better way of investigating human behavior.

Although designers and typographers claim great achievements in their respective fields, there is much that they still lack and one of these is knowledge taken from what linguists and psychologists have to offer. A whole spread on psychology and brain stimuli is devised for this purpose.

Since bouba/kiki study offers to explain scientifically why people preferentially associated non-sense words with certain shapes, building upon closely monitored, clinical tests and experiments on the brain functions and the psychological mapping response, this justifies *Maaluma's* main goal strategy effect towards a better apprenticeship of the Arabic language.

As Peter Bilak a contemporary Slovakian graphic and typeface designer, noted in *Looking Closer Five*, "Linguists rarely venture into the visible representation of language because they consider it artificial and thus secondary to the spoken Arabic language; on the other hand, as typographers are often concerned with the appearance of type in print and other reproductive technologies, they often lack knowledge of the language that they represent." (Bierut, M., Drental, W., Heller, S. 2006, p. 175). Thus my thesis offers to bring together various working methods that so far have been considered as separate by linguists, typographers and designers and only rarely combined.

C- Organizational brief

This thesis has been arranged into four respective comprehensive chapters. Although they appear mutually independent, they do relate to one another. There is a liaison allowing a logical assessment of coherent information. This allows consideration of alphabets in general and of the Arabic alphabet in particular.

The first chapter gives a historical outline that reveals the genealogical evolution of the various systems of type, with adaptation to the particular

environments throughout history. Cultural and religious beliefs and practices are highlighted as they developed both before and after the introduction of printing. The second chapter gives a broad outline of the discipline of Arabic calligraphy as it evolved from handwriting in parallel with printing and in spite of it. Here calligraphic styles are clearly portrayed in the succession of time and place, showing the Eastern and Western influences during the Ottoman regime in the Levant and beyond.

The third chapter examines further the letterforms of the various alphabets and in particular of Arabic scripts, analyzed in alphabetical order letter by letter, classified according to a multicultural metamorphological comparative time chart viewing Leonardo da Vinci's universal geometric principle according to his study of human anatomical proportions, the medieval table of correspondences of Bryhtferth, the emotional aspects proposed by Hassan Abbas, a professor in Arabic linguistics. In brief, Elements are taken from different fields of study, presenting the analyses and conclusions of the great masters, thinkers, philosophers and linguists down the centuries. Finally, the fourth and last chapter engages in a supportive methodology within Maaluma project reform, elaborating on the design process, highlighting the phoneme interpretations before viewing Maaluma detached-attached display letterforms, put into trials for evaluation, ending with a conclusion.

Endnotes

1. Al-Arsuzi (1899–1968) a Syrian writer, described as a proponent of the *Arabic linguistic image*.
2. Al-Ma'arri (973 AD –1058 AD) was a noted blind Arab philosopher, poet and writer, born in Ma'arra, Syria.
3. Al-Farabi (870 AD–950 AD) an outstanding linguist who translated the Greek works on Aristotle and Plato.
4. Ibn Jinni (932 AD–1002 AD) was an important Arab grammarian born in Mosul.
5. Ibn hazm (994 AD– 1064 AD) is a Muslim theologian and man of letters.
6. Monotheistic attributed to monotheism: The belief that there is but one God. The term comes from the Greek *monos* "only", and *theos* "god". (John MacArthur 1998, p.501).
7. Ibn al-Muqaffa' (720–757 AD) an accomplished scholar of Middle Persian was the author of several moral fables such as Kalīla wa Dimna.
8. Ibn Sina called by the Latins Avicenna (980–1037 AD) was a true polymath contributing into medicine, psychology and pharmacology.
9. Al-Ghazali (1058–1111 AD) a theologian, a jurist, and mystic of Sunni Islam promoted the successful introduction of Aristotelianism or rather Avicennism into Muslim theology.
10. Greek stock is a humoristic hint widely adopted in describing the non-Arab philosophers of Greek origin (Arab fanatism). (Lorimer 1994, p.420).
11. Salman Hassan Al-Ani (1957) is a contemporary active Professor of Near Eastern Languages and Cultures known for his *Arabic Phonetics* published in 2007.
12. Sheihk Abdallah al-aleili *(1914-1996) was a Lebanese linguist.*
13. Dr. Sobhi al-Saleh (1938) a contemporary leading figure teaching Quranic sciences and Arabic linguistics in the Lebanese university; famous for his Dirasat Fi Fiqueh al lugha published in 2002.
14. Dr. Hassan Abbas (1932-2011) is a professor in Arabic linguistics, known for his *Characteristics of the Arabic letters and their meanings published in 1998.*
15. Köhler Wolfgang (1887 – 1967) was a German-American psychologist and phenomenologist who was the first to observe a non-arbitrary mapping between speech sounds and the visual shape of objects known as Bouba/Kiki phenomenon.
16.The bouba/kiki phenomenon is a form of sound symbolism when "Kiki" sounds for many people sharp and explosive and "Bouba" sounds rounded and soft. It is an example of how the brain assigns qualities to shapes, sounds, colours and numbers. (fig.5 p. 82)
17. Ramachandran & Hubbard are both reknown neuroscientists specialized in neurological behavior and visual Aristotle psychophysics.
18. IAT stands for Implicit Association Test that measures the strength of automatic associations people have in their minds. It is used to some extent in clinical cognitive and developmental psychology research.

Chapter One

Type concept genealogical descent

1.1 Introduction

A brief historical summary is needed before relating sound-image and meaning to Arabic typeface. So before considering the development of the phonetic Arabic alphabet down through the earlier centuries, we must trace the genealogical development of the type as it evolved originally and adapted to its environment and survived.

"The invention of writing alone made possible the passage from barbarism to civilization and secured the continuous progress of the human race." (Firmage 1993, p. 3). Whereas "the dominant organ of sensory and social orientation in pre-alphabetic societies was the ear – 'Hearing is believing' – the phonetic alphabet forced the magic world of the ear to yield to the neutral world of the eye, and man was given an eye for an ear" (Mcluhan 2001, p. 44).

1.2 Genetic descent of type | writing systems' evolution

"Writing is a means to communicate of a more elementary nature, distinguishing it from speaking or gesturing. There existed a great many different forms of writing referred to as proto-alphabets that developed before the universal definitive proto-alphabet." (Farès 2001, p. 21). They have been classified into a few broad categories. The developments are briefly summarized in the paragraphs that follow.

1.2.1 Logographs or ideographs

"The first writing in the world was born in Mesopotamia in 3300 BCE combining both logographic (representing a word) and ideographic (representing an idea) at the same time" (Abi Farès 2001, p. 19); the oldest sample described, serving an administrative purpose, was found in Uruk (the land of Sumer) on a clay tablet. It

consisted of between 300 and 900 signs and was first written from right to left in columns.

In 2800 BCE, the Sumerian cuneiforms evolved, the signs being reduced to five hundred monosyllabic, bisyllabic and trisyllabic phonetic values, of purely abstract shape, in columns from top to bottom as in western newspapers today. The texts were no longer merely administrative documents but now included literary works. They were inscribed first on clay and later on stone, ivory, glass and wax as well, but as yet were never written in ink on papyrus.

Some four centuries later, around 2340 BCE, Semitic Akkadian replaced Sumerian before separating into two distinct spoken languages, first Assyrian and then Babylonian, which became the *lingua franca* of the Late Bronze Age, dominating in Egypt, Iran, Anatolia and the island of Bahrain. "One of the most famous texts is *The Epic of Gilgamesh* (1700 BCE) evoking the 'great flood' of that period" (Pflughaupt 2007, p. 12).

1.2.2 Hieroglyph developed from pictographic writing

Contemporaneously, around 3200 BCE another system of writing developed in the Egyptian Valley of the Nile. This is known as hieroglyphic script and it evolved into a phonetic consonantal form with basic signs called logograms. "The term *Hieroglyph* derives from the Greek (*hieros* meaning sacred and *glyph* meaning carving) to describe the Egyptians' reference to their own writing system as the words of gods." (Abi Farès 2001, p. 20). It was mainly used for inscribing on stone, especially on grandiose monuments. Around 2500 BCE the cursive style developed (*Hieratic writing*) for faster writing on papyrus, leather and fabric. Subsequently another "...new style developed called *Demotic* (from the Greek word *Demotika* meaning popular writing)." (Abi Farès 2001, p.21). Unlike the original hieroglyphic style, this could be read in any direction, from left to right, from right to left, or vertically, but the hieratic and demotic scripts were always read from right to left.

1.2.3 Pictographic or iconographic

The first actual writing was in the form of simple pictures designating simple objects as may be clearly seen in the Chinese and Moki pictographs for rain and for lightning around 2600 B.C (Firmage, 1993).

Moki Indian pictographs for rain and lightning

1.2.4 Proto-Canaanite

Further, Proto-Canaanite script emerged around 1500 BCE in the Sinaï Peninsular, rich in turquoise mines. This script, like the one found at the temple of the popular Egyptian goddess Hathor, represented Semitic pictorial language and extended to cities in Canaan (modern Lebanon and Palestine). The Ugaritic script of Syria, named after the Canaanite city of Ugarit and representing the local Semitic language written in cuneiform, bears no resemblance to the previous Babylonian style.

1.2.5 Phoenician phonetic writing systems

This was the most decisive intellectual breakthrough ever achieved by mankind in the evolution of writing, when the Phoenicians produced a written language corresponding to the oral language, with the same signs representing both homonyms and homophones. Loosely speaking, *Phoenician* is a generic term covering northern Semitic scripts of about 1000 BCE. It originated in the city of Byblos strategically situated between the two powerful civilizations of Mesopotamia and Egypt, whose seafarers traded from Britain to the Indian Ocean.

1.2.6 Phoenician alphabetic writing system

The final development of this phonetic writing system lay in the limitation of the characters to a set of twenty-two phonetic consonant signs, each representing a single sound and written from right to left. These were easy to learn and could be

adapted to non-Phoenician languages, as appears from the "Inscription of the epitaph of the sarcophagus of King Ahiram of Byblos dating from nearly 1000 BCE." (Pflughaupt 2007, p.14). As it was used mainly on monuments, there are only a few examples of writing in ink on stone or pottery, particularly with the advent of the cursive style as it evolved into Punic and neo-Punic script derivatives. The Phoenician alphabetic system was very simple as a concept and rapidly spread to cover all possible phonetic combinations.

This Phoenician script evolved in two main directions. One branch developed into the Greek alphabet and from there into the modern Latin alphabet. The other evolved in the direction of Aramaïc, which in turn evolved into Modern Hebrew and Nabatean, the latter being in use from the 2nd century BCE in what is present-day Jordan (Moginet, 2009). This may be seen in the following chart.

TRANS-LITERATION	UGARITIC	PHOENICIAN	PALESTINIAN	ARAMAIC	HEBREW	SYRIAC	ARABIC	SOUTH ARABIC	ETHIOPIC
ʾ		𐤀	𐡀	𐡀	א	ܐ	ا	𐩱	አ
b	𐎁	𐤁	𐡁	𐡁	ב	ܒ	ب	𐩨	በ
g	𐎂	𐤂	𐡂	𐡂	ג	ܓ	ج	𐩣	ገ
d	𐎃	𐤃	𐡃	𐡃	ד	ܕ	د	𐩤	ደ
ḏ							ذ	𐩥	ዘ
h	𐎄	𐤄	𐡄	𐡄	ה	ܗ	ه	𐩠	ሀ
w	𐎅	𐤅	𐡅	𐡅	ו	ܘ	و	𐩧	ወ
z	𐎆	𐤆	𐡆	𐡆	ז	ܙ	ز	𐩦	ዘ
ḥ	𐎇	𐤇	𐡇	𐡇	ח	ܚ	ح	𐩡	ሐ
ḫ	𐎈						خ	𐩢	ኀ
ṭ	𐎉	⊕	⊛	⊛	ט	ܛ	ط	𐩩	ጠ
ẓ							ظ	𐩪	ፀ
y	𐎊	𐤉	𐡉	𐡉	י	ܝ	ى	𐩺	የ
k	𐎋	𐤊	𐡊	𐡊	כ	ܟ	ك	𐩫	ከ
l	𐎌	𐤋	𐡋	𐡋	ל	ܠ	ل	𐩬	ለ
m	𐎍	𐤌	𐡌	𐡌	מ	ܡ	م	𐩭	መ
n	𐎎	𐤍	𐡍	𐡍	נ	ܢ	ن	𐩮	ነ
s	𐎏	𐤎	𐡎	𐡎	ס	ܣ		𐩯	ሠ
ʿ	𐎐	𐤏	𐡏	𐡏	ע	ܥ	ع	𐩰	ዐ
ġ	𐎑						غ	𐩲	ጸ
p	𐎒	𐤐	𐡐	𐡐	פ	ܦ	ف	𐩱	ፈ
ṣ	𐎓	𐤑	𐡑	𐡑	צ	ܨ	ص	𐩳	ጸ
ṯ							ث	𐩵	ሠ
q	𐎔	𐤒	𐡒	𐡒	ק	ܩ	ق	𐩶	ቀ
r	𐎗	𐤓	𐡓	𐡓	ר	ܪ	ر	𐩷	ረ
ś	𐎘				ש		س	𐩸	ሰ
š	𐎚	𐤔	𐡔	𐡔	שׁ	ܫ	ش	𐩹	ሸ
t	𐎛	+, X	X	X	ת	ܬ	ت	X	ተ
ṯ	𐎜						ث	𐩻	

Fig.1 Comparative chart of the most important forms of Semitic writing (Gelb, 1963)

1.2.7 Aramaïc

However, by 1000 BCE the Aramaïc alphabet, representing the language of the Arameans of Syria and Mesopotamia (sons of Sem, father of the Semites as described in the Bible) bore a marked resemblance to the Phoenician alphabet and evolved into two sub-branches, modern Hebrew and Nabatean.

1.2.8 Nabatean alphabet

Considerably later, around 100 BCE, from around the city of Petra (near the Dead Sea in modern Jordan), the Nabatean alphabet spread northward to Damascus and southward to the city of Medina in northern Arabia. It flourished with its abundance of ligatures and curvilinear and circular shapes, a peculiar quality appreciated later by Islamic calligraphers, and then extended into Sinaï and the tribes of Syria. "The oldest inscription relating was found on a tombstone at Umm Al-Jimal and dates to 250 AD" (Abi Farès 2001, p. 24).

At the same time the Syriac alphabet known as Estrangelo, from the Greek meaning Gospel writing, was being used for transcribing the first Syriac Bible of the Eastern Church. It was born in the 3rd century AD in Mesopotamia as a variant of the Aramaïc alphabet and was appreciated for its originality and its abundance of ligatures. It is still used today by the Christians of Azerbaijan in Iran, modern Syria and Lebanon for liturgical purposes and represents an evolution parallel to that of modern Arabic scripts.

1.2.9 Early Arabic alphabet

The printing press failed to generate much interest in the East, because of the major conflicts between Europeans and Ottomans, and because it was considered aesthetically inferior to the manuscripts produced by numerous skilled Arabs and Turkish calligraphers, despite the fact that printing press was devised precisely to free these same calligraphers from the tedium of handwriting (Farés 2001).

As to the development of the Arabic script, there are two conflicting opinions. The English school claims that Arabic script evolved out of the Nabatean in Jordan, as previously indicated, whereas Arab and French historians consider that it is derived

from the Estrangelo Syriac of Iraq. In either case, the origin is Aramaïc, either Nabatean or Syriac. According to Dr. Hugh Moran, "...religion is the only possible widespread organizing principle that could have united early people before they diverged noticeably into separate areas and civilizations" (Firmage 1993, p.47).

With competent scribes, Arabic script flourished, especially after the death of the Prophet and of his loyal *huffaz* (men who had memorized the Qoran in order to preach to the people) for fear that the message might be lost. This was encouraged in the early seventh century by the third Caliph, Uthman, who decreed that the Qoran must be recorded in writing (Abdelkebir & Sijelmassi, 1996).

"As Thomas pointed out, humans relied on their memories helped by memory aids before the development of writing systems and it appears that prodigious feats of memorization were accomplished even by the Greeks, Romans and Hebrews long before the Muslim *huffaz*, major epics and sagas being passed on through generations by bards and storytellers." (Firmage 1993, p.3). The Homeric epics in their original form are but one example of marvelous "literary" creation without writing before the advent of *huffaz* to extol the virtues of oral Qoranic Islamic culture; the existing system was at first archaic before undergoing a series of visual and structural reformations for better accommodation.

A brief description of the Arabic alphabet would here be appropriate in order to give an understanding of its powerful insight. It expanded from the original twenty-two Syriac letters to twenty-eight, twenty-five consonants and three long vowels. This alphabet abounds in ligatures and variations that depend on the position of the letter in the word and on whether a letter is connected with another or isolated, there being a strong linear emphasis and use of a system of diacritical dots, short vowels and consonant enhancers.

The Arabic alphabet underwent progressive visual alteration before finally settling into the form used today. It also developed many calligraphic styles, I intend to elaborate upon in the following chapter.

Arabic script flourished throughout the tenth century in the eastern and western parts of the Arab empire and reached a high level of refinement under Mamluk rule in Egypt before attaining its climax in the eighteenth century under the auspices of the Ottoman sultans, despite the introduction of the movable-type printing

press in the 15th century by Guttenberg.

1.3 The advent of the printing press

Several years after the Guttenberg breakthrough in the mid-fifteenth century, printing progressed steadily in Italy, resulting in the production of oriental typefaces serving the oriental languages. The Hebrew of the Old Testament was the first language to be so printed, in Ferrara, followed by Arabic. "The first book printed in Arabic was a Melkite prayer book called *Salat al-Sawahi* published in the Italian city of Fano in a printing press established there by Pope Julius II" (Bobzin 1996, p.4). Other languages followed when the Psalms were printed under the title *Sifr al-Zubur* by Pierre Porrus with parallel columns in Hebrew, Greek, Arabic and Chaldean, plus a Latin translation. Obviously the printing presses could be set up and operated only under the patronage of such powerful figures as European, mainly French, kings on European soil, as in Rome. The presses were owned by great rulers or ambassadors who were devoted to knowledge and discovery, for example that of Nicolas Guistiniani's printing house, owned by Francis I, king of France. Duke Ferdinand was another striking example of such passionate commitment; he was particularly fascinated by oriental culture, especially Arabic, so he commissioned the French designer of type Robert Granjon to design elegant Arabic characters for the Medici press to cast.

As keen interest in Arabic books developed in Rome, oriental presses were gradually set up in the Eternal City. From there they spread to the nearby cities of Venice, Milan, Palermo and Padua, to Leyden in the Netherlands, Leipzig, Frankfurt, Copenhagen, the *Imprimerie royale* in France, and later London and Oxford in England.

1.4 Development and expansion of the printing press in the Orient

Soon the Ottoman sultans became suspicious of this wide cultural expansion, especially printing, into Constantinople, which they regarded as a sacred core ensuring their religious grip, and they questioned its impact on their manuscript Qoranic codices and other religious texts. This penetration into the Levant accentuated religious and cultural animosity between Western Christendom and

Eastern Islam. Obviously, "Once a new technology comes into a social milieu it cannot cease to permeate that milieu until every institution is saturated." (Mcluhan 2003, p. 241). It further provoked distrust and rejection of all Western inventions. Even worse, it led to a cultural conflict within the Muslim Ottoman Empire between the conservative *Ulama* and the progressive intellectuals. To further complicate matters, the first printing house in Constantinople was founded by a "Jewish" scientist who used only Hebrew typeface when publishing Arabic texts. He is said to have feared Islamic teaching and the influence of the scriptoria, as it is clearly stated: "The alphabet and its extension into typography made possible the spread of the power that is knowledge, and shattered the bonds of tribal man." (Mcluhan 2003, p.171). It was not until the year 1801 that the first book, printed in Arabic, entitled *Kitab Tahrir ousul al-Handasa liUqlidi.s* and commenting on Euclid's *Elementorum Geometricorum*, was published in Istanbul in *Matbaa-i Amire* by Al-Tusi, one of the eminent scientific and intellectual personalities of the East.

1.5 Cultural beliefs' influence on type

The invention of printing assured the steady progress of the human race, Christians, Hebrews and Ottomans alike, enriching their intellectual heritage. The printing press failed to generate much interest in the East, because of the major conflicts between Europeans and Ottomans, and because it was of poor quality compared aesthetically to the manuscripts skillfully drawn by Arab and Turkish calligraphers alike, despite the fact that printing was devised precisely to free these same calligraphers from the tedium of handwriting. "When typography was no more than an addition to the scribal art than the motorcar was an addition to the horse, it was not uncommon for the purchaser of a printed book to take it back to a scribe, to have it copied, illustrated and signed in a scriptorium with a commentary" (Mcluhan 2003, p. 236).

Printing spread from Constantinople to neighboring countries at the beginning of the seventeenth century, entering Syria. There, a printing press was set up in the monastery of St. Anthony of Kozhaya in the northern Lebanese mountains, where the book of the Psalms in the language of the Maronite (Christian) rite was published in the year 1610. The pages were set in two columns, bilingually.

The first Arabic typeface appeared around the first decade of the eighteenth century, but it is still argued whether or not this occurred in the city of Aleppo in Syria. The German scientist Shnurrer claimed that this typeface was imported from Bucharest in Rumania, but the noted orientalist Silvestre de Stacy rejected this assumption. "As yet, we still do not know how, by whom, or where these Arabic typefaces were punch-cut and cast" (Kortbawi 2004, p. 54).

Abdallah Zaher, a Melkite and skilled metalworker and engraver from Aleppo, together with the Jesuit priest Father Fromage, founded the Arabic press of the Catholic monastery of Saint John the Baptist in Shuwair (Deir el-Shweir) in Mount Lebanon. It published Christian religious works with an elegant Arabic typeface until the twentieth century. In Beirut the first printing house was the St. George's. The second was American, one which devised the American typeface inspired by the best calligraphic forms set by Constantinople. Here the Holy Bible was translated into Arabic by Smith, the American founder, with scholarly contributions from Butrus al-Bustani, Sheikh Nassif el-Yazigi and Sheikh Yusuf al-Asir. Last but not least there was a third Catholic press established in Beirut in 1848 by the Jesuit mission.

1.6 Conclusion

Such were the mainly Christian printing presses, which tried to reach the level of refinement required to gain popularity among believing Muslims, still strongly attached to their advanced calligraphic skills. These ran counter to any concept of human influence built on interplay between sound-image and meaning, as it was believed that writing was an inherently divine accomplishment clearly mentioned in the traditions by the Holy Prophet when he remarked, "The art of perfect hand-writing is a gift which reveals truth and is the first of Allah's creations. Almighty God in His first heavenly message to the Holy Qoran swore by the Pen and its sacred manifestations as a sacred matter" (Ghulam Reza Rahpaymah, 2011).

In the second following chapter, such clear arbitrariness is made manifest throughout the various calligraphic styles run and documented in a chronological order marking the endeavor and the talent of the calligraphers' art mastery and their close dependence on the script ritual or ruling order ignoring the printing boom process around.

Chapter Two

Arabic calligraphy identity

2.1 Introduction

It must be clearly understood that we must trace the genealogical descent of Arabic script if we are to comprehend its nature, its format and its development into today's forms, following the historical and technological connectives and taking into account the efforts of great calligraphers and their contributions to the structure and visual qualities before turning to the simple Arabic forms currently in use nowadays, upon which I intend to build my thesis.

It is instructive to note in here the difference between calligraphy and typography as: "Arabic lettering is built on the calligraphic rendering of form, when calligraphy is handwritten, and more of an artistic practice, related closely to religion, unlike typography, that is machine-made and an offspring of calligraphy, owing to the evolution of printing" (Heller 2004, p. 146).

2.2 Conflict | Type in the West | Islamic calligraphy in the Levant

"In fact according to the great Tunisian scholar Ibn Khaldoun, calligraphy can flourish only when a civilization is at the peak of its cultural activities and prosperity." (Abi Farès 2001, p. 28). A true statement indeed! Arabic calligraphy reached a high level of refinement throughout the Arab Empire in the tenth century; after the Mamluk rule in Egypt it reached its climax under the Ottoman Sultans eight centuries later, despite the technical revolution in the 15th century of Guttenberg that I mentioned in chapter one. The fact that Arabic script was originally developed to document and represent the Word of God led calligraphers to spend centuries perfecting and embellishing the written script as a higher art form stemming from the core of Islamic belief.

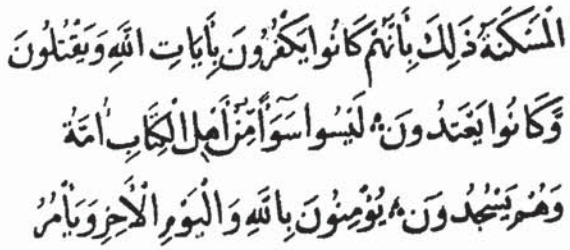
Calligraphy evolved into different styles. Initially archaic, it received various influences owing to the Islamic expansion to the East and to the West alike. It was mainly due to the consecutive Arab ruling dynasties that impacted calligraphy manifestly each in turn, causing its diversity, through a dynamic variety in styles and categories. Indeed those styles were devised, precisely to reflect closely if not

officially the identity, and concern of each respective dynasty and its governor whether a sultan, a caliph or a Wali each in his quest for perfection, and show of devotion for Islam.

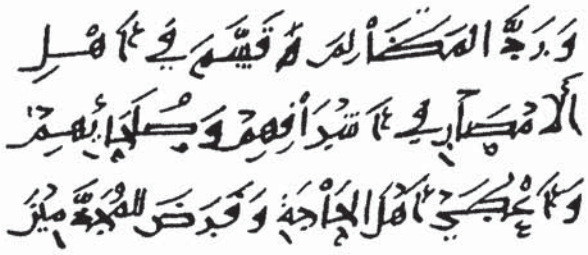
Scripts and disciplines evolved and competed in that concern generating new styles that differed in content, layout, and purpose as well, according to the domestic political issues among the Muslim rulers themselves in their everlasting conflict over power, greed, and religion; further, the dramatic Ottoman invasion of all the Arab empire contributed also to such profusion in styles, stimulating by far a constant cultural exchange between the conquered population and the conquerors, the oppressed and the oppressor throughout the varied occupied territories.

The first name given to Arabic script was *Jazm* in the 6th century AD, a style that was to influence all those yet to come. In Hira in Iraq there were three main styles during the first Islamic era, the *Ma'il*, the *Mashq*, and the *Naskh*, the latter giving rise to all the cursive styles. In Kufa, however, only the *Kufi* had any long-lasting influence on calligraphy. All Arabic calligraphy styles fall into two main categories:

-The *Muqawwar wa Mudawwar* (the curved and the rounded), which comprises all the cursive styles, starting with the archaic *Naskh* style that showed no diacritics at first in the 6th century, before evolving throughout the 7th century AD, as follows.



-The *Mabsut wa Mustaqim* (the elongated and the right-angled), which comprises the *Ma'il*, the *Mashq*, and all the styles following the *Kufi* of the same period 7th century AD, with the exception of the *Maghrebi* style, which combines features from both categories.



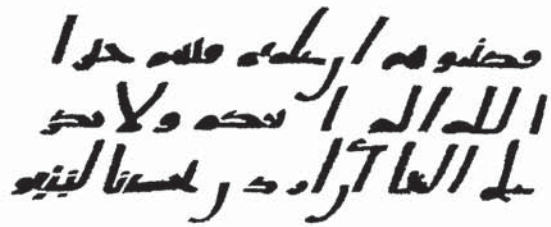
The major distinct styles are classified in five main groups, the Archaic, the *Kufi*, the *Maghrebi*, the Cursive and the non-Arab styles of Spain, Turkey, Persia and other countries to be dealt with subsequently.

*All pictures used in this chapter are taken from *Arabic typography* (Abi Farès, 2001)

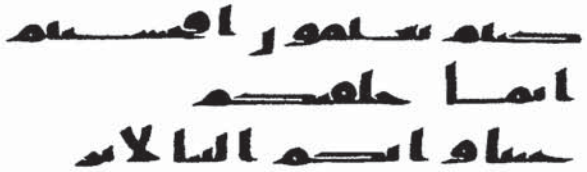
2.3 Arabic Calligraphy discipline

A – The Archaic styles

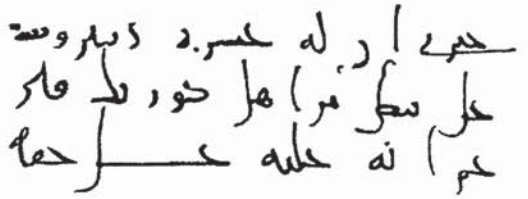
A.1 – The *Ma'il* or slanted style is the form closest to the original *Jazm* script developed in the city of Hira in the 7th century AD. Its angular letters and its strokes slanted towards the right, as if against the flow of the direction of the writing, and the total absence of any diacriticals, contributed to the austerity of the general aspect.



A.2 – The *Mashq* or horizontally extended style, with bold rounded curves, short ascenders and descenders, and total absence of any diacriticals, merged eventually with the *Kufi* style in the 7th century AD.



A.3 – The old *Naskh* or scriptorial style evolving around the 7th century AD is one of the simplest original calligraphic styles also developed in the city of Hira. Its fluid cursive lines and the total absence of any diacriticals influenced the later cursive styles and developed into an independent style with the same name as its aesthetic features developed and its popularity grew.



A.4 – The old *Kufi* style, named after the city of Kufa in the 7th century AD in Iraq, was reformed and standardized in a way tending towards the visual characteristics of the Syriac script known as Estrangelo referred to above. This favored an angular geometric style with somewhat square letters, monumental bold strokes, short ascenders and descenders, and extended horizontal strokes with no diacriticals. Eventually there were many derivatives and variations.

B – The Kufi styles

The original *Kufi* style was the most refined Arabic script of its time. Reaching its perfection in the 8th century, it then became an unrivaled style considered for three hundred years as worthy for transcribing the Qoran, but it was rather austere. It became more ornate as the Arab Empire became more prosperous and subsequently developed in two main directions, one more smooth and the other rigid. Evolving

from the geometric eastern *Kufi* style, the smoother cursive style of the 9th century competed with other highly cursive styles of the period that were popular in the western part of the Arab Empire, as it displayed decorative endings ranging from folic and floral motifs to arabesque. The rigid style however developed in squarer *Kufi* during the 13th and 14th centuries and was used extensively for inscriptions in stone on architectural ornaments including whole façades of buildings and even mosques. Some of its major variations are described in the following as different eastern and western styles.

B.1 – *Eastern Kufi* was developed by the Persians around the 10th century. The Eastern *Kufi* differs considerably from the original form. It is sometimes called Slanted *Kufi*, because its short vertical strokes are slanted towards the left, following the direction of the writing. Its closed letterforms are less rounded and are pointed at the top. It is more horizontally condensed and shows strong contrast between the thick strokes and the thin. Overall, it is lighter and more delicate than the original *Kufi*.

B.2 – *Qarmatian Kufi*, 10th century A.D. The Qarmatian was developed in Eastern Persia as a variant of the Eastern *Kufi*. It owes its designation to the Arabic express *qarmata fi al-Khatt* since it has finer and lighter ligatures and highly ornate letters, often integrated into richly decorated backgrounds.

C – The Maghrebi styles

As the name indicates, the *Maghrebi styles* were born in Maghreb (the Arabic word for the West, where the sun sets, Morocco); meaning all those styles that developed in the Western Arab Empire, from Libya to Northwest Africa, and during the Middle Ages (10th till 15th century AD) in Spain. "This style made full use of curves, especially in the last letters of words, which reached out to touch, or intertwine with, the following words" (Moginet 2009, p. 31).

D – The Western Kufi

The *Western Kufi* was first taught in the Islamic school in Qairouan (modern Tunisia) during the 10th century AD and influenced many further calligraphic developments within the Western Arab Empire. It is distinctive, with a further rounding of the letterforms into small circular hoops, shifting from the angularity of earlier *Kufi* into more delicate cursive strokes, with the semicircular forms of its long descenders and their large open shapes that extend well below the baseline and freely touch the line below. The ascenders terminate bluntly with a slight curve towards the left, only the short ones being slanted towards the right. Fluidity and lightness characterized this playful and elegant style which renounced the old geometric rules of proportion and made possible the individual visual interpretations of the great master calligraphers.

D.1 – *Fasi Kufi*, 10th century A.D. – The *Fasi Kufi* style attributed to the city of Fez in Morocco developed as a cursive version of the Western *Kufi* similar to the cursive *Naskh* style. It was used for large-size Qorans in which it was fully vocalized and meticulously penned.

D.2 – *Andalusian Kufi*, 13th century A.D. onwards, emerged in Cordoba in Spain before spreading throughout the whole Muslim Arab part of Spain in the thirteenth century. It was compact and characterized by thin lines and small letterforms, vocalized according to the western system of diacriticals. It spread in the early seventeenth century from Spain into Morocco with the Arabs' exodus. It merged later with *Fasi Kufi* to form what became known as the *Maghrebi* style, already seen. Later there was an ornamental version favored in Morocco and used for large-type displays and inscriptions on stone. This decorative style was marked by long ascenders with the gaps in between filled with floral and arabesque motifs, giving the overall composition a dense and rectangular shape.

D.3 – *Sudani kufi* 13th century A.D.. Meanwhile, from Timbuktu the Sudan *Kufi* style spread through the sub-Saharan regions of North and West Africa, being adopted by the Hausa, Fulanis and other Muslim inhabitants of the area. This austere style, reminiscent of the archaic *Kufi* style, is characterized by thick strokes and rather square angular letter forms.

E – The cursive styles

The cursive styles rooted in the pre-Islamic era, late sixth century and early seventh, more akin to handwriting than to a calligraphic script, were used strictly for secular correspondence. They developed later into calligraphic styles, influenced by the *Kufi* style, when the son of Caliph Abdelmalek became the first patron of the art

of calligraphy; it was during his reign that the two main cursive styles, the *Jalil* and the *Tumar,* were decreed for both official and religious use.

From the *Tumar*, other styles evolved that had names indicating their proportions in relation to the *Tumar*. They used the *aleph* of the *Tumar* as the standard unit of measurement. The *Nisf* (Arabic for one half) was approximately half the size of the *Tumar*. The *Thuluth* (one third) was equal to one-third and the *thulathayn* (two-thirds) was equivalent to two thirds. In this way, they were more cursive in proportion as the size of the letters decreased, with the size of the letters depending on the importance of the text – the more important the occasion, the larger the writing, according to the rules laid down by the vizier Abu Ali Ibn Muqlah. There followed down to the ninth century a succession of some twenty styles of calligraphy, but only six of these cursive styles managed to rival the *Kufi* for transcribing the Qoran and to eventually replace it, thanks to Ibn al-Bawwab with his *Naskh* and Yaqut al-Mustaasimi with his *Thuluth*.

E.1 – *Thuluth*, 7th century A.D. Created initially as a display, the *Thuluth* was refined into a lighter and more elegant style by the Syrian calligrapher Ishaq ibn Hammad. It was one of the most difficult and yet most elegant styles, characterized by relatively thin fluid strokes, used mainly for secular writing and being especially suitable for titles, chapter headings and dedications, until it was replaced by the *Naskh* style.

E.2 – *Naskh*, 7th century A.D. This word means literally to copy, or the hand of the copyist. It is one of the six major cursive Arabic scripts, *al-aqlam al-sittah* consolidated under the system of the vizier Ibn Muqlah. *Naskh* attained its highest aesthetic development under Ibn al-Bawwab, the famous calligrapher referred to above. It rivaled the *Kufi* style and finally replaced it. It was used mainly for transcribing the Qoran; it was very legible, with short horizontal strokes, ascenders and descenders of equal size, full curves and ample spacing between words. It was

adopted most widely for publications and is even now fully integrated into the mechanical and digital means of reproduction.

E.3 – *Muhaqqaq*, 8th century A.D. *Muhaqqaq* means well executed and the style is rounded and cursive, having reached perfection under the influence of Ibn al-Bawwab. In some ways it resembles the *Thuluth* and *Naskh* styles, with its tall ascenders, short horizontally inclined descenders, and compact word structures which create distinct word units. With its smooth slant to the left it leads the eye in the correct direction for reading while being clear and elegant. It was favored for large volumes of the Qoran in the Islamic East, particularly in Egypt, Iraq and Persia down to the 13th and 14th centuries.

E.4 – *Rayhani*, 9th century A.D. – The *Rayhani* style owes its existence to Ali Ibn Ubaydah al-Rayhani and combines elements from *Thuluth*, *Naskh* and *Muhaqqaq*. It is unique in that its diacritical signs are always written with a pen finer than the one used for writing the letters. It was popular for transcribing large copies of the Qoran in Persia down to the 13th and 14th centuries.

E.5 – *Tawqii*, 9th century A.D. The *Tawqii* style bore the names and titles of the Abbasid caliphs as the official title for inscriptions. It combined elements from both the *Thuluth* and the *Ruqaa*. It is distinguished by all its words being connected into one continuous line, with the curve that ends each word being carried on into the initial letter of the following word. Further, it makes a minimal use of marks of vocalization. In due course it became popular in Turkey and developed its own particular variants.

E.6 – *Ruqaa*, 9th century A.D. Introduced by the calligrapher Mumtaz Beik during the reign of Sultan Abdul Majeed, *Ruqaa* is the simple style of everyday writing, economical and easy to use, popular for writing both Turkish and Arabic. It is densely structured with short horizontal strokes and is characterized by a prominent thick baseline and horizontal and rather flat letterforms.

F – The non-Arab styles

As mentioned earlier, the non-Arab styles flourished in countries where they were used by non-Arab calligraphers for writing native languages in Arabic script as a sign of acceptance of the Islamic faith. They in general developed new variants of the letters but only a few ventured into calligraphy, and of these the most prominent were Persians and Turks, due to their nations exercising authority over the Arab Islamic Empire during their time. The two major Turkish styles were the *Diwani* and the *Diwani al-Jali* (15th century AD) while the three major Persian ones were the *Taaliq* also in the 15th century AD, the *Nastaaliq*, and the *Shikasteh*, which exercised their influence further East in India and even in China.

2.4 Reflection

If I chose to cover most of the calligraphic emerging styles, Arabic and Non-Arabic, and their Eastern and Western categories as they evolved from simple to complicated and vise-versa, it is mainly to involve the reader all along, in proving the thesis objective sound, and approve of the final future selection of the adequate style *Naskhi* (Axt Salwa[1]), to build upon the new letterforms concept, as devised in chapter four.

Indeed with the decline of the Ottoman Empire, the creation of new calligraphic styles waned noticeably; I ought to recall the thought of Huda Abi Farès in her book *Arabic Typography*; "Writing gives historical insight into the ideas and the spiritual and technological developments of human civilizations" (Abi Farès 2001, p. 18); there have been a few minor calligraphic inventions since, but these all fall under freeform art till the early twentieth century, such as the *sunbuli* style a variant from a Diwani style, which was developed for King Fuad of Egypt in the 1930s.

They however lacked a great deal, disregarding the human cognitive mapping that relates to sound-image and meaning and considers calligraphy as a divine art. After reflection we wonder whether it is purely arbitrary as a divine art only dictated by God or simply the craftsmanship of highly talented knowledgeable individuals with a high sense of wisdom of service Dom to human kind and God as well. Indeed, the renowned Persian calligrapher Ghulam Reza maintains, "God in His first Divine Message introduced knowledge and the art of using the Pen as one of the greatest blessings granted to mankind". He also added in the same article: "God commands the using of the Pen as an art to document all that concerns man till the Day of Resurrection" (Ghulam Reza, 2011).

2.5 Conclusion

To sum up this thorough display of the development of the various Arabic calligraphic styles as they evolved in a chronological order is to shed light on its rigid structure ruled by a sacred script, devised or destined originally to document and represent the word of God as a higher art form, unlike typography that is machine made thus mechanical and more functional.

Turn to page 45 for endnotes.

Such rich exhibit of the variety of patterns, marking each calligraphic parcours or style, when assessing its potential and intensity in form and sound, judging by its simplicity or complexity, is quite instructive for the reader as it inspired me a great deal in devising my concrete thesis project, a detached-attached letterforms concept, I named *Maaluma*, based on one of the simplest styles of all, we call *Naskhi* (Axt Salwa), whose main objective proposes a reform of the current complex alphabet, facilitating the Arabic teaching and learning as well.

If each calligraphic style is ruled by a script, the words carried along are ruled by letterforms obeying the phonetic alphabet, I shall tackle the phonetic alphabet development as a unit base of this Arabic calligraphic system and explore its survival, observing the close interplay between sound-image and meaning, ever since its birth with the Phoenician before its parting into Aramaic and Nabatean, to early Arabic, and then to modern Arabic at present day; as maintained in *The Fundamental of Typography*: " The Phoenician alphabet is the bedrock for many subsequent writing systems including Arabic, Hebrew, Greek and Latin and ultimately for the modern European alphabet that is used today" (Ambrose & Harris 2006, p.18).

Endnotes

1. Axt Salwa refers to an Arabic Naskhi typeface used in children educational books for its simplicity.

Chapter Three

Comparative study of phonemes

3.1 Introduction

The Arabic script that rules the various calligraphic styles we covered previously in the second chapter is a *whole* that comprehends a *unit base* we call phonetic alphabet composed of *phonemes* we shall explore their development, survival and symbolism from its parting into Aramaic and Nabateen and onwards to the actual current Arabic in use nowadays; But before tackling the Arabic alphabet and its genetic descent one should delve into the essence of the word script and its evolution throughout the centuries in order to posit it vis à vis typography my main field of study.

3.2 Script | Typography

Since the word *écrire* in French stems from the Latin *scriber*, noticeably rooted in the Indo-European language borrowing *ker* or *sker* relating to cutting or incision, writing would infer the fixing of any concept by means of engraved signs and not simply, as most dictionaries would have us believe, as declared in the *French Dictionary*, "Representing a word or thought through preset graphic signs." (Pflughaupt 2003, p. 8). Therefore, etymologically, the term *écriture* (script), signifies any message or thought using images or signs, not just a writing, and is often applied to notation in music and choreography, for example (Pflughaupt, 2003). The methodology of Dr. Abbas, a renowned specialist in the characteristics of the Arabic letters and their meanings, adopted when studying of the Arabic script, clearly applies to this concept as he states "I had already assorted letters according to their dominant sensory or emotional characteristics or pursuant to their particular phonic nature, or the way they are pronounced, as it has been referred to herein and some other times been silenced" (Abbas 1998, p. 39).

"Writing is a means to communicate of a more than momentary nature, distinguishing it from speaking or gesturing. It is also distinct from objects signifying meaning. Writing is expressed by markings on objects signifying meaning, not by the objects

themselves." (Firmage 1993, p. 5). On the etymological level "to write" descends in diverse languages from words standing for incising, marking, carving and painting. According to A. Lloyd Jones: "The human brain has done nothing that compares in complexity with this fusion of ideas involved in linking up the two forms of language. Once it is achieved in our early years, we cannot think of sounds without thinking of letters; we believe that letters have sounds. We think that the printed page is a picture of what we say." (Firmage 1993, p. 5). In his *Logic*, Aristotle[1] declared that "...spoken words are the symbols of mental experience and written words are the symbols of spoken words" (Firmage 1993, p. 5).

3.3 Arabic alphabet | Sound symbolism

Indeed, as Pflughaupt maintains in his book *Letter by Letter,* "Letters possess phonetic values that make them indissociable from speech and its graphic representations" (Pflughaupt 2003, p. 9); in his quest to understand the Arabic script Abbas declared, "The sound of letters gives a visual insight," adding, "No need to say that the letter's sound shall undoubtedly interact with other letters, sometimes producing an effect on them and some other times being influenced by others." (Abbas 1998, p. 73, 74). Together, they form words and phrases we manipulate and decipher unconsciously on a daily basis, unaware of their hidden or forgotten meanings. I shall elaborate on this, revealing the authenticity, the original value, and musical vibrational potential of each of these abstract signs, highlighting mainly the unit base of this Arabic calligraphic system, and explore its survival throughout its geographical and strategic comparison time chart development as shown below, observing the close interplay between sound-image and meaning, ever since "...its birth from Phoenician to Nabatean, a direct descendant of Aramaic, which is itself the offspring of a Proto-Semitic alphabet, an early script, developed between the 18th and 16th centuries B.C," as maintained in *The Odyssey of the Arab Language and its Script* (Salloum, 2001). In this thesis we note the characteristics of the Arabic script, as they developed to form what we now call Arabic. Gruendler (1993), Professor of Arabic Language and Literature, stated, "The term *script* refers to a writing system using a specific set of letters. In the case of Arabic the script governs the connection

Turn to page 80 for endnotes.

between the individual letters, the base line, and the ligatures among other things.

In other words, the script sets down the rules about in what way the letters from an alphabet are allowed to be used. This difference between alphabet and script is much more clear for Arabic than for Latin, where the two terms are often mixed up" (Gruendler, 1993).

Thus, *Maaluma's* potential lies entirely on that enriching wide feedback comparative interpretative strategy.

3.4 Arabic Alphabet | Genetic Descent

In discussing the evolution of the basic letter shapes within this comprehensive comparative historical outline, certain highlights are mentioned between brackets depicting the gradual refinement, the alteration of the letters, their conflict and their confusion, among Latin, Greek, Phoenician, Aramaic, Nabatean to early Arabic, that was usually the result of centuries of usage by countless and frequently anonymous scribes, calligraphers and type designers as well; as we notice, there is a great variation even within the major historical styles, and any illustration is only one among innumerable variants. Unlike the Arabic mighty sacred divine script, no form of any Latin letter was ever considered definitive, not even the noted Roman capital letters of the Trajan column, on which letters never ceased to vary; though in those times an abecedarium[2] system was no child's amusement—"the meanings and relations of the letters could have universal religious importance." (Firmage 1993, p. 61). In his analysis of the Arabic script, Abbas (1998) highlights Idriss's reflection on the essence of the letters and the origin of calligraphy, especially when introducing the aleph, claiming that "The Prophet was the first who transcribed letters from simple voices to written letters; thus his name is derived from the words studying and teaching, which became his prevailing nickname" (Abbas 1998, p.72).

The following chart represents an analysis of the various changes and forms of each of the letters, allowing each letter to be seen at various stages in its history.

Zoghbi, 2009 / www.29 letters.com

Unlike the basic order of the Latin alphabet that has remained remarkably consistent since it was established, as we know it with the Phoenician script, the Arabic abcedarian system gained in consistency and visual recognition and adopted an opposite departure order, starting from right to left. It consists of 28 letters representing the consonants only, with the exception of three letters that depending on their context are sometimes pronounced as long vowels—the aleph as the vowel 'a' (or as a short glottal consonant), the Waw and Yeh as semi-vowels (Abi Farès, 2001). "The vowels represent sounds that can be independently articulated whereas the 'a' consonant represents a sound that cannot be pronounced by itself." (Firmage 1993, p. 56). The aleph on the other hand, as reported by Gruendler, does not represent a phoneme, "...but can function as a carrier of a *hamsa*, the glottal stop, as well '*mater lectionis*' (in Latin *mother of reading*) for the long vowel ā. In some cases, she adds, "...the *hamza* and the *Lām-aleph* ligature are considered letters in their own right, adding up to thirty letters" (Gruendler 1993, p. 89).

As Hugh of St. Victor conveys the matter clearly: "The mystical sense is only gathered from what the letter says, in the first place. I wonder how people have the face to boast themselves teachers of allegory when they do not know the primary meaning of the letter" (McLuhan 2008, p.111), and the question remains as Khatibi and Sijelmassi wonder in their book *The Splendor of Calligraphy,* "yet writing is to be found at this point" (Khatibi and Sijelmassi 2001). In here, I think that the following will reveal much to many who believe they already know their ABCs. Reading from right to left, like the Early Arabic, "The modern abecedarian system groups letters according to their visual resemblance, sharing the same basic shape

distinguished by their diacritic dots, and arranged one after another" (Abou Rjeily 2011, p. 51), as is manifest in the following.

3.5 Phoneme analysis

— *Supremacy, Nobility* **Aleph – ا**

The shape of the head of a bull or an ox 𐤀 was the first pictogram, one that evolved into the first Phoenician letter aleph in honor of that important domesticated animal, and eventually into the present letter "A" after many modifications, drawn rather realistically on the astrological beliefs of each respective culture developing successively along the Sinai peninsula: from the proto-Siniatic 𐤀 1700 BCE, to the Egyptian hieroglyphic vulture 𓃾, to the Hebrew for "cow" or "bull" אלף, and later to the Greek ALPHA meaning honor. The Semitic aleph is regarded as the basis for our Latin word *Alphabet* before the final Arabic script shape currently used nowadays. This stands as the successor to Nabato-Aramaic, which is the aleph 𐡀, 𐡠, alluded to as soft aleph ا, developed in Abbas's 1998 Arabic studies on the *Characteristics of the Arabic letters and their meanings*.

Far from the initial scientific reasoning build-up principal of naming letters – called the *acrophonic* principal from the Greek *akros*, "edge" (Pflughaupt, 2007), which relates to arbitrariness – in ancient times the meanings and relations of letters, could have religious universal importance (sound symbolism), and according to a Hebrew myth it was believed, that God considered the letters, their various petitions, their merits and their faults, linking them with the meaning of the words they began. The same was true of Arabic letters, based mainly on myth, standing at the center of the Islamic story of creation. Aleph stands for *almighty*, since the development of point to line, of light to movement, and the Aleph to the alphabet, claims Abou al-Abbas Ahmed al-Bhuni; adding, "Arabic letters arose from the light on the pen that inscribed the grand destiny on the sacred table. Allah had ordained that therein should be recorded the deeds of all creatures, till the Last Judgment. After wandering through the universe the light became transformed into the letter Aleph, from which developed all others." (Khatibi and Sijelmassi 2001, p. 21). Furthermore, in *Arabic Typography*, Abi Farès claims, "God created a point of light (like the *hamza*); God looked at it, the

point begun to drip, becoming ink, and the letter Aleph was formed; it is the first moment of creation, when non-matter (the *hamza*, the point, the light) becomes matter, the Aleph, the line, the ink in the flux of movement" (Abi Farès 2001, p. 93).

The spiritual symbolism of the Aleph is also proclaimed by Ahmed al-Bhuni in another variation of the myth where "Allah created the angels according to the name and number of the letters, so that they should glorify him with an infinite recitation of the Qoran, praising him; then the ALEPH, was the first to do so and was rewarded thereafter by being appointed as the first letter of his name and of the alphabet" (Khatibi & Sijelmassi 2001, p. 21).

As the first letter in almost all ancient alphabets, A and Aleph correspond to a breathing sound that is "neither a vowel nor a consonant" (Firmage 1993, p. 47); in Hebrew, for instance, the *aleph* corresponded to the element of air, because it made a slight hissing sound when pronounced. In the *Oxford English Dictionary* there are at least thirteen separate sounds represented by the letter A. The Aleph with its poised vertical masculine nature carries a sacred mystic range of fundamental vibrational energies relating to sound that allow for the spirit to be elevated. "Despite the plain sound of the letter Aleph, it is multifunctional and possesses many vocal characteristics: some are mimic and some others are suggestive" (Abbas 1998, p. 72); We are not far from reality if we talk about such similarity between the sound of the letter and the image it refers to, claims Abbas, conforming with the sound symbolism theory when introducing Idriss's analysis about the Aleph, as "...it is the first letter of the Arabic Prophet. This letter occupies the first place of the alphabet. This is made on purpose for his honor, to show that the Prophet was the first who transcribed letters from simple voices to written letters. Thus he is the Arabic Prophet if the story appears to be right, and the first teacher who taught the Arabs calligraphy. I think that his name is derived from the words for studying and teaching, which became his prevailing nickname" (Abbas 1998, p.72).

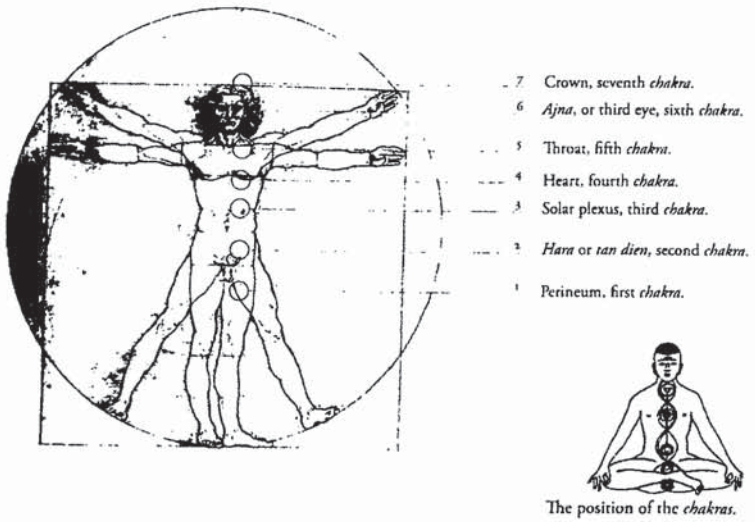
In both Hindu and Buddhist philosophy certain syllables and phrases are considered sacred mantras that strengthen the body's energies when vocalized. Thus the letter A as well as the Aleph is the basis for the mantras that encompass the whole range of vibrations from the first *chakra* to the last as displayed in the chart below. Indeed as

Abbas elaborates, "This vowel expresses almost the full range of our souls' movements," adding, "Visual Aleph is specified by presence, clarity and view, thus providing a sense of stability, spiritual and physiological, a link with the earth's energy, marking the space with impacting separate pronouns for esteem, preference and hierarchy." (Abbas 1998, p.72/73). His claim for the interlocutor and the addressee started with *Ana, Anta, Antounna*, while separate pronouns for the third person started with H (Houwa, Houmma, Houm) for absenteeism and doubt. Arab linguists, distinguished two related audible sounds, the *Hamza* and the soft *Aleph*; If the *Hamza* comes at the beginning of the word, it is pronounced A' as in *Akbar* (*the most esteemed*) and pronounced soft A as in *wahed*. Here Abbas finds Aleili's definition ambiguous when he says that it refers to inner content, a tool for the meaning and the adjective (Abbas, 1998).

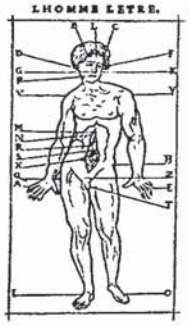
The *Aleph* deserves all the credit and the praise it receives as the first letter of the alphabet. Coming first, as its symbolic significance imposes, its sound potential conveys its mythical ascendancy. The profusion of metaphors and theological allegories attributed to it prove the sound symbolism theory to be highly evident and conclusive. However, its plain verticality is blunt, a little rigid, motionless and detached, lacking human qualities. Be it noted that in ancient times Aleph was alleged to be complemented with the following letter "B", with which the house structure virtual image is completed.

N.B — Quotations from Abbas have been translated by Valia Baalbaki.

LOCATION OF THE CHAKRAS



The position of the *chakras*.



	NOTES	VOWELS	ELEMENTS	COLORS
seventh CHAKRA	B (Si)	M	–	Violet, white, and gold
sixth CHAKRA	A (La)	I	–	Indigo, yellow, and violet
fifth CHAKRA	G (Sol)	E	Ether	Blue
fourth CHAKRA	F (Fa)	A	Air	Green, pink, and gold
third CHAKRA	E (Mi)	O^o	Fire	Yellow, gold
second CHAKRA	D (Re)	O^c	Water	Orange
first CHAKRA	C (Do)	U	Earth	Red

In the "vowels" column, Oo stands for "open O" and Oc stands for "closed O." M is considered a vowel here (see M). Left, the correspondences between letters and body parts, established by Geoffroy Tory, from *Champ Fleury*.

***Fig.2** Formal Analysis — Chakra Chart (Baginski, Bodo J., 1991)*

— *Housing, Sheltering* **Bā'– ب**

The [b] sound in the Egyptian hieroglyphics was translated in various ways, among which this image 𓃀 representing a foot. After successive changes applied to the floor plan of a house, Baytou, 𓉐 the second letter of the Proto-Siniatic alphabet, followed a similar transition from Phoenician BETH to BETA, invented by the Greek goddess Caramenta, to *bayit* meaning a house in Hebrew בּ. It was adopted as well in Arabic (image) and is evoked in Aleili's analysis of the meanings and of the "souls" of the letters, when Aleili says, "Pronounced loudly with strength. Its form looks like a house," explaining, "...it is for reaching the meaning, the straight shape by activity." Arsuzi replies, "It suggests emanation and appearance." (Abbas 1998, p.76). This

reflection is approved by Abbas, who finds Arsuzi's definition accurate but insufficient, adding, "If this letter is pronounced alone with an extended sound Bā', it is the best letter used to express expansion, hugeness and heights, as the mouth opens out giving the sound a way to go out between both lips. It is a mimic function. If it is pronounced at the beginning of the word, but not extended, it seems to be the best letter to express emanation, rising and flowing, such as the sound emanating out of both lips with a mimic, not like the 'noun' from deep inside" (Abbas 1998, p.77).

Indeed, Otto Ege claimed that BETH was given second place in the alphabet to honor the second most important of human needs—shelter (Firmage 1993, p. 56). In speaking of the ancient Semitic BETH, Dr. Moran gives the word a number of meanings: house, temple, daughter, woman, place.

Just as the Aleph symbolized force and unity in the shape of a bull, the BETH leaves us on an earthly plane in the layout of a house, where one is confronted with the dichotomies of good and evil, life and death (Pflughaupt, 2007), recalling Dr. Moran's interpretation of the dualistic concept of creation (Firmage, 1993). It is similar to Abbas's *Analogy* (1998) in his sound-imagery exploration of the Bā': "As the sound of that letter goes out immediately when both lips are open, it suggests indenting and digging, cutting and opening searching for water related to the agricultural era in the Jazira al Arabia (the Arab Kingdom), or destroying and squandering provoking surprise and trouble as in war time evocating the feeling of events, a suggestive function" (Abbas 1998, p. 76).

Besides its powerful symbolism as is maintained in *The Alphabet abecedarium,* the letter B and Bā' (ب), which is the second in order in both the Roman and Arabic alphabets, stands as the first consonant in both systems.

Further explorations on sound-image and meaning relating to the Latin form of the "B" lead us to connotations evoking the shape of lips, *bouche, boca, bocca,* all derived from the Latin *bucca* and the romance related to it, as *baiser* (kiss), equally common in Arabic as in *Bakara (cow)*, adding a feminine value attributed to this letter, made manifest in Abbas's elaboration (1998) on the sound value when comparing the previously classified suggestive phonemes "B" and "M" in his

analysis, and saying, "The Bā'sound is explosive; it hints at the cow (*bakara*) and mostly suggests the toughness of the man, the father "... despite the plain sound of this letter, it is multifunctional and possesses many vocal characteristics: some are mimic and some others are suggestive; here, it has a mimic function" (Abbas 1998, p.76/77).

Owing to its rich interpretation, it is apparently well suited to serve as a sheltering tool. Yet, I believe it lacks refinement. However serious the responsibility of the Bā' and however functional its task, it still lacks plenty in the feminine attributes inherent to its role and essential to its identity.

Such an earthly feminine attribute housing the masculine spiritual Aleph inspires high expectations manifested in the following letter we shall discover hereafter.

— *Earthly, Material* **Tā' – ت**

There are two unilateral signs in the Egyptian hieroglyphs transcribing the [*t*] sound; the first looks like a loaf of bread  and the second a pestle . In addition, there is a third sign resembling an animal's leash  transcribing the [*tch*] sound.

Ibn Sina describes the Tā as a phoneme that can be heard when strongly tapping with your finger on the palm (Abbas, 1998). According to Aleili, it is the most volatile whisper, employed with no intensity for uneasiness and its touching nature (Aleili, 1968). Despite the intensity and volatility that have been attributed to the tā', adds Abbas, its coherent tone and suppleness give a supple and mellow feeling, as if your fingers touch a cotton pillow, or as if you are stepping bare-foot on dry sand delicately dancing or dandling. When the breath starts to get out loosely and slowly with the sound *thā'* (*th*), the tip of one's tongue forces its way between the front upper and lower teeth. Then it retracts back slightly. The three phenomena are noticed: two are visual (mimic) and the third is evocative. In other instances, Abbas maintains, in addition to the fact that the sound *thā'* strongly evokes femininity, delicacy, softness and warmth, Arabic conferred upon it meanings that indicate femininity, without any imagination or insinuation or metonymy. No other letter is endowed with such

features. For example the Arabs took the word *Ontha* to express femininity, and *Rafatha* to express the pleasure experienced with the female (Abbas, 1998).

The "*T*" is equally a symbol of justice, recalling also a roof, relating to the idea of shelter or protection. After this comprehensive comparison between the tā' and the *thā'*, I imagine the *tā'* to be more dynamic and joyful.

Although, the *tā'* visuals differ from one culture to another, its shape remains oddly coherent and supple in both Latin and Arabic, endowed with an acoustic notion of youth, and audible volatility.

— *Femininity and glamour* **Thā'- ث**

The *thā'* phoneme manifests great sensuality and elegance, which one could qualify as feminine; Abbas elaborates, saying, "It is used to smarten up the thin *Sīn* (s), and to effeminate the Tā (t), as if in Arabic this phoneme were created only for a woman. It is to be distinguished from Thā'. " (Abbas 1998, p. 47). He adds that women themselves have given it their attributes of fitness, delicacy, and mildness. Not every woman, he carries on, is gifted with feminine peculiarities. The word f*eminine*, he maintains, fits much better her gender than the word *woman*. The feminine aspect of living creatures and various objects did not give enough feeling of gender, so they were effeminized with the feminine *Tā*, which conveys the impression of the gender with a veil of delicateness, affection and womanliness. Thā' then, he resumes, shall possess alone "...the throne of femininity". One finds softness, mellowness and a comfortable warm touch in the *thā'* phoneme, Abbas maintains. Professor Anis considers that there is only one slight difference between the *thā'* and the *dāl* sounds, "...one is like a whisper and the other one is like raising one's voice." (Abbas 1998, p. 48). He justifies this by the affinity found between these letters; one is pronounced with the tip of one's tongue and the other with the gingival.

With this Abbas concludes: "While *Thā'* titillates the tip of one's tongue gently and mildly, evocating an oily taste, a soft and warm touch, we can perceive the womanly feeling under a thin texture of different pronunciations in our language" (*ounoutha* opposing *zoukouria* in Arabic) (Abbas, 1998).

Upon this thorough sensory investigation and rich comparative interpretative lay-out presented by Abbas, we can perceive that this letter incarnates visually and auditively the young woman, her figure and all the glamour surrounding her.

— *Grandeur* and magnificence **Jīm – ج**

The "G" is the outline of a jar  , a basket with a handle  [*k*], a sandy hill  [*q*], and the last glyph, a cobra at rest  [*dj*]; "...its explosive phoneme suggests harshness, rudeness, warmth and coarseness for sensory feelings; as to auditory feelings," specifies Abbas, "it suggests intensity and explosiveness" (Abbas 1998, p.79).

In terms of pronunciation, the "G" is the first guttural consonant, close to the Greek GAMMA originating from the word GIMMEL, and the Hebraic word GAMMAL, alluding to the camel hump shape before it took the current shape "ج" in Arabic described by Abbas, as the furious camel when pronounced loudly; when its form in Syriac language is similar to the camel image.

It acts as a voiced velar plosive as in *get* or *bag*, an affricate as in *gin* or *edge*, and lastly a velar nasal in words such as *ring* or *sing*.

The "*G*", with its spiral shape, recalling movement and revolution, has been since the earliest times a symbol of life, growth and fruitfulness; it relates to the throat and speech or eating as in *glutton, gourmandize, gourmet, gastronomy* (Pflughaupt, 2007). It is described also by Abbas (1998) as gustative with smelling and of greasy taste (Abbas 1998).

Due to its circular shape, it fittingly introduces "...the prefix *gyro* from the Greek *guros* meaning *circle*" (Doczi 1994, p. 33). It is a sign of vitality and birth relating to "... *grain* from medieval French and Latin *granum/grana*" (Doczi 1994, p. 1), equally evident in *germinate*, *genesis*. However in the prefix *geo* or the Greek terms *Ge* and *Gaia* designating the earth, the letter "G" points to terrestrial reality. When it is combined in the prefix *giga*, Pflughaupt concedes that it conveys clear audible suggestions relating to heaviness and strength (Pflughaut, 2007), as in *gigantic* and *giant*. This idea was approved by Abbas, who classified it among the vocalized

letters, restricting it to roughness and claiming that it never suggests humane feelings (Abbas, 1998). This is an attribute borrowed significantly by Freemasonry, which placed it in the center of its five-pointed-flamboyant star logo, inferring glory, generosity and gnosis, a Latin word for knowledge (Boucher, 1994).

Last, in terms of vibrations, the "*G*" corresponds to the sol key musical note of Romance countries.

Oscillating between *K, Jīm, Gh*, this phoneme, according to its genetic descent and cultural context, is undoubtedly harsh, intense, endowed with explosive auditive properties which most cultures agreed upon, the Egyptian, the Greek, the Hebrew, but mainly the Arabs.

—*Aristocracy* **ħā' – ح**

As it has its roots in the ambivalent consonant *H muet* or the silent H, as in *Honest*, and is pronounced delicately, one remarks that it is uttered as an *"H" aspirée*, referred to in Latin and particularly noticed when used in onomatopoeias as in Ah, Ah, Ah! Ooooh!

The *ħā' (h)* phoneme, according to Arab linguists, is used for tenacity, especially in secrecy. Aleili says it points to juiciness; but does it echo the soul (*rouh*), however? He wonders whether this is so, and indeed Abbas in his comprehensive comparative study of close phonemes portrayed the *ħā' (h)* as the most aristocratic letter, mostly translated in a soaring bird like the *hamama* or in gold (Abbas, 1998).

Further, according to Abbas if this letter is uttered very loud with intensity, magnificence, it suggests warmth and strong human feelings (*harara*). But if pronounced as we do nowadays, softly, it suggests a silky, soft and warm sensation (*harir*), a sweet and sour taste (*halawa*), a fine and powdered perfume, and it is harmoniously heard as if one were looking at a flowered garden (*hala*) during spring time. Going out through the palate, it suggests the finest feelings of love, tenderness and desire. It is the best letter to express our deep emotional feelings of love and tenderness; the Arab, adds Abbas, made use of this letter to express meanings of delicacy, transparency, sweetness and love in stories (Abbas, 1998).

This phoneme in particular is a fine proof of the sound symbolism conducive theory, as the *ħā'* refined visual aspect reflects the beauty of its soul, its aristocratic attributes, and refined acoustic characteristic.

— *Contradictory values*, d*elicacy* or *revulsion* **Khâ – خ**

A plosive derivative, *Khâ' (kh)* خ is equally another potential phoneme that the Arab linguists valued in the Arabic language; built upon the combination of two Latin consonants, "kh" was classified as a guttural and sensory letter in the study of Abbas. He elaborates: "It is the last guttural letter and is loosely murmured." (Abbas 1998, p. 128). Aleili says it is for malleability, dispersion and annihilation. The suggestion of this letter differs according to the way it is pronounced. If pronounced thinned out and softened, not nasalized, it evocates sensory feelings such as malleability, delicacy and a velvety warm touch as in *mokhmal* in Arabic. If pronounced intensively and nasalized, far from the inner palate, it suggests a sensory of malleability with bad taste, malodor, a visual sense, a subversive audible sense along with human feelings of disgust and revulsion, recalling in here among others, the pig figure. This made of the letter KH a dustbin, with filthiness, ugliness and imperfection on the bodily, mental and psychic levels. This description, points out Abbas, indicates that the letter however pronounced and wherever positioned, enjoys a very strong personality in favorable and pejorative words alike (Abbas, 1998). Further, he continues by saying about the *Khâ'* phoneme: "Either it was the woman who created the letter KHA during the agrarian era, or it was the man who did it later. Its use varied from one era to another according to the way it was pronounced; undoubtedly, the Arab, either man or woman, invented the letter KHA, loose and nasalized, to express dirtiness." (Abbas 1998, p. 132). However, this study sustains contradictory evocative suggestions related to the letter *Khâ'*, sustained also by Abbas (1998): "But the moment pronunciation became more polite, the Arab started pronouncing the letter KHA without nasalizing it. The Arab used it for cutting, splitting and banging meanings. He also used it for delicacy, purity and flexibility, even in a narrow and limited scope." (Abbas 1998, p.128). It is also connected with an earthly notion in Latin, and with matter inferring to the Latin *cacare (*to defecate*)* or in French *caca*, conceding with

Pflughaut: "Yet the consonant also expresses grandeur and force, as in *colossus* from the Greek *Kolossos"* (Pflughaupt 2007, 86/87).

Quite common in Aramaic, Hebrew, Syriac, and later in Arab, for its suggestive mimic potential, this odd explosive phoneme conveys conspicuously quite distinct contradictory sensory and inherent audible properties, long favored by the Arabs.

— *Passage becoming* **Dāl – د**

From the Phoenician DALETH 𐤃 to the Hebrew word beginnings *delet, dad, and dag*, meaning *door, breast* and *fish* respectively, the letter *D* with its triangular or breast-like shape suggested femininity; moving on from the Semitic to the Greek alphabet it became DELTA; and then from the Syriac into Arabic *dāl (D,),* representing a bucket.

As a Strong Voice Rising, the *dāl (D),* Sheikh Aleili says in this connection, "...is for intransigence and scattered shift" (Abbas 1998, p. 52), a point argued adamantly by Hassan Abbas as he replied that intransigence is right, but the scattered shift is unclear and is incompatible with stubbornness, adding that the *dāl (D)* sound is deaf, blind and impenetrable like a pyramid as in *dahaliz,* meaning labyrinth, with the notion of depth; it only evokes tactile feelings and especially those that indicates hardness and stiffness as of a granite boulder, or an overweight bear figure, with its heavy pace as in Abbas'analogy (*dajja meaning dabba wa asraa).* The *dāl (D)* sound does not suggest any tasty, olfactory, visual or sensational feeling. Thus it is the best letter to express material strength and effect (Abbas, 1998).

Oddly, the letters D and T, considered two dental consonants, were often confused when pronounced within vowels according to the word, as alluded to in the studies of Hassan Abbas (1998) on the *Characteristics of the Arabic letters and their meanings*, where he asserts that "...the sound *dāl (D)* will undoubtedly interact with other letters, sometimes producing an effect on other letters and some other times being influenced by others." (Abbas 1998, p. 54). That is why a lot of reference books point to a soft, weak and languishing meaning of this letter due to the interference of letters, whose sounds then imply softness, grace and malleability.

In terms of vibrations, the key sound *D* is equal to the (*RE*) note when played. It acts upon the second chakra known commonly as *Hara*, situated two fingers above the navel, alleged to be the spot where a child develops within its mother, radiating out to the rest of the chakra when she is breathing during sleep.

When we compare the multiple intercultural interpretations, of the letter *dāl*, we find them oddly compatible in conveying the essence of its sound and visual match.

— *Manliness* **Dhāl – ذ**

Another phoneme variation on *Dāl (d)* is manifest as an easy voice rising we call in the Arabic alphabet the *Dhāl (dh)* ذ, which means the language of the rooster's crest; it is for uniqueness, claims Aleili, while Abbas, comparing the *Thā' (th)* ث and *Dhāl(dh)* ذ , replies "If all feminine features flock together in the *Thā'* gathering together delicacy, mildness and decency, the whole of manliness is focused in *Dhāl*, with a tense voice, tough contact and strong appearance." (Abbas 1998, p. 51). That is how manliness and womanliness are expressed in Arabic and are similar in the way they are pronounced but are contradictory in their features. The *dhāl* has a more acerbic taste, a hotter feeling, a stinging touch and a stronger tension. As Abbas sums up, "In this way each phoneme reflects the characteristics of both genders. Both letters *Thā' (th)* ث and *Dhāl(dh)* ذ incarnate a lifetime friendship along with contradictory characteristics" (Abbas 1998, p. 52).

Indeed, the *Dhāl* phoneme is striking by its uniqueness and originality; it gathers in all the witty manliness attributes, keenly pictured in the rooster's appeal and handsomeness.

— *Articulation* **Râ'– ر**

The sign  for mouth was used to mark the [*r*] minuscule sound in Egyptian hieroglyphics. The modern *R* has its origin in the Proto-Siniatic  , pronounced (*ra'chu*), representing the profile of a head; adopted by the Phoenicians, it gained that shape  after simplifications, and was pronounced RESH, which corresponds to the

Hebrew word *rosh* (head). In Latin by extension it refers to the notion of principle (*principium*) symbolizing beginning, origin and cause, associated with the letter YODH in Hebrew, elaborated on previously. This has been justified by Abbas as he states that when moderately and loosely pronounced its form looks like a head, while Aleili replies that it designates the queen or a popular description. On the sound of the *Râ'(R),* Abbas elaborates further; he refers to the human body's articulations and joints, claiming, "Indeed if some Arabic letters are as strong as human bones, as elastic and energetic as human muscles, and as soft and tender as the flesh, other letters are as sensitive as human feelings" (Abbas 1998, p. 64).

After a serious of modifications,  , the letter finally took the form  . The Romans nicknamed the *R* the canine letter because of its pronunciation which evokes the sound of growling hungry dogs, implying lust or craving for food. Further, the rounding process that this letter was subject to recalls its gustative potential sound values, as maintained by Abbas. What seems strange and curious is that Arabic introduced the letter R into most words designating sweetness of things tasted in the desert such as dates and honey: the thickened juice of cooked dates – the honey froth – the palm fruit before it ripens and becomes dates. Highlighting further the *Râ'* values, Abbas claims, "I overstepped the quantity standard and assorted it as gustative for two reasons: first, because *Râ'* is a lingual letter and the tongue is the member used for the sense of taste, and second, because *Râ'* is unique for going through pantomime to represent delicious meals at a restaurant, much as the *Lām (L)* is fantastic for talking about chewing and masticating; That is why, I decided to consider *Râ'* a gustative letter such as the letter L for characterizing sweets" (Abbas 1998, p. 68).

The *Râ'* value has been praised unanimously by all cultures alike, nicknamed the "canine" letter by the Romans for its acoustic suggestive potentials, and built upon by the Arabs, for its unique imitative role. Comparing it to the human body's articulations and joints, Abbas classified it among gustatives besides its main lingual sensory domain, but Aleili's description of the *Ra'* value as the queen remains the best.

— *Sword, Lightening* **Zāy** – ز

This unilateral sign, in the Egyptian hieroglyphs, similar in phonemes to [z], resembles a lock or a bolt —•—. Another Egyptian sign could be associated with the letter "*Z*", because of its shape and evolution; it was pronounced [*st*] according to the linguist Émile Benveniste and represented a stylised arrow or an arrow piercing an animal skin. In the Proto-Siniatic alphabet however, it took the shape of two strokes. The current modern "Z" in use nowadays, and adopted by the Phoenicians, was inspired by, and was called ZAYIN. Its sinuous structure ζ appears in ancient Aramaic writings, and in Phoenician script as well, but in early Greek inscriptions it was ZETA; it was not until the classical Greek period that it attained its final shape Z.

"In written English Z is the most rarely used letter. It transcribes the voiced alveolar sibilant [z] (*zodiac, prize*), but can also represent a fricative in words such as *seizure*. In Spanish, Italian and German, the [z] sound is written as a double letter [ds], [dz], or [ts]" (Pflughaupt 2007, p. 137/138).

The letter *Zāy* (z) ز serves then to condense letters all together. Elaborating on the Zāy (z) ز, Abbas claims that, when pronounced loudly and loosely, its form in Syriac language looks like the forearm, whereas Aleili replies that it is rather for strong uprooting. Despite the simplicity of the present phoneme, Abbas claims that it is endowed with several characteristics. Its intensity evocates strength and efficiency, and it is similar to iron being scraped. It expresses similar sounds in nature; since the present letter phoneme is derived from loud vocal vibration, he explains, it suggests turmoil, tremor and movement as in *zoubaa* and *zilzal* in Arabic, if it is pronounced intensely. However if pronounced with less intensity, it suggests scattering and sliding; for further illustration Abbas observes a striking link of the *Zāy* with the *Futuhat Al-Makkiyah* clearly depicted in this report: "These are human feelings experienced by Arabs during the later agrarian era." So soon the letter became the noblest letter, as he classified it, under the emotive sense, and he justified his choice as follows: "That is how I ranked up this letter from an audible sense although it is whistling, to sensory letter, because its sound refers to honor and chivalric spirit" (Abbas 1998, p.103/104).

Of all the metaphors, and descriptions, evoked throughout his comparative interpretation paper on the *Zāy* phoneme, the reflection of Abbas, relating honor and chivalric spirit, remains the most emotive and applies to both the Latin letterform 'Z' and the Arabic *Zāy*.

— *Secrecy, diffusion* **Sīn – س**

Three unilateral glyphs had a similar pronunciation to the [*s*] sound in Egyptian hieroglyphics: [s], [z], and [ch]. The first represents a folded cloth, the second a lock, and the third a water basin. The sign , an ancestor of the modern "S" in the Proto-Siniatic alphabet, may be interpreted as an image of teeth, a breast or a bow, depending on the following character. It gave birth to the SHIN, written like the current Latin "W"; in the Greek alphabet, it was baptized *sigma* . The Phoenicians developed two other sibilant consonants, the SAMEKH [*ks*] and the SADE [*ts*]. Inspired, the Greeks replaced the SIGMA by the SAN, shaped like the current modern "M" in use nowadays.

"The letter gains its strength," says Pflughaupt, "from its spine, which divides a circle perfectly into two equal parts, a characteristic found in the Chinese symbol *tai-chi-tu* , composed exclusively of curved lines, highlighting the shape of the "*S*" espouses suppleness and grace." (Pflughaupt 2007, p. 116). Concerning the audible *seen,* Abbas says, "Its coherence and pure phoneme evocates a sensory feeling between softness and smoothness, a visual feeling of sliding and expanding." (Abbas 1998, p. 83). "The Sīn," Aleili carries on, "loosely murmured, in its form in the Syriac language looks like a tooth; it stands for abundance and comfort without specification" (Abbas 1998, p. 83). "It is for movement and request," replies Arsuzi (Abbas 1998, p. 84).

Nevertheless, the Sīn, Arab linguists maintained, also evokes a contradictory interpretation because it suggests negative connotations, mainly when compared to a serpent, to lightning or the staggering sway of a drunkard. Words such as *hiss, sin, satan* infer menace, threat and danger. We quote here the hissing sound of Abbas in his definition and Aleili's peculiar description, "It is for uncontrollable spread." (Abbas 1998, p.83). Further, Abbas describes it as spreading one's breath, while voicing this letter is similar to events when spreading, diffusion and mingling occur. The way it is pronounced by showing one's teeth evokes the triviality and

unimportance of matters and problems, he maintains, and most probably suggests a sensory feeling between dryness and melancholy (Abbas, 1998).

Finally, for the Romans the "S" symbolized silence; its symbol "*S*" appeared preceding the signatories' names on diplomas, standing for *signum* (sign).

The *Sīn* is well served by the thorough analysis of Abbas, Aleili's reflection, and Arsuzi's reply. The three combined confirm the Sī*n*'s acoustic and visual potential.

— *Pastoral* **Shīn** – ش

Further, Arab linguists studied the Shīn (*sh*) ش, another phonetic derivative built upon the Proto-Siniatic sign. It was particularly studied by Abbas. Loosely murmured, its form in Syriac language looks like the sun or *shames* in Arabic. When pronounced, it causes the speaker to show his teeth, evoking in such a case the women who had spoken in a low voice of trivial matters and household needs, especially when hushing her babies, as well as in a bird's nest with a mother figure hushing her little crying cheeks. Adopted then during a more developed pastoral era, this letter is then classified in the group of mimicking, pastoral and refined letters (Abbas, 1998).

This phoneme occupies its place in the Arabic alphabet, and sustains a symbolic meaning, translating the sun's power, the woman's shining face, or even a pastoral era.

— *Purity* **ŝâd**– ص

On the phonetic level, the *Sīn* when vocalized, Arab linguists maintained, exhibits another interesting auditive phoneme *ŝâd* (*s*) ص. Abbas praises its pure and clear echo, comparing it to the magnificence of the *đâd* (*d*) ض impact, and to the intensity of the Zâ' (*z*) ظ. In fact the Arabic language, most linguists agree, is the language of the *đâd* ض, intense, heavy and impacting. The *ŝâd* marks especially words like *safaa* (purity) and *salat* (prayer in Islam), as well as strength, endurance and difficulty associated in nature to birds like *sous* (cheek) or *sakr* (falcon)

Like its counterparts, the *thāh, ŧâ'* and *đâd*, the *ŝâd* is equally noted for its magnifying echo on the *sīn*, impacting the visual and the acoustic.

— *Emotional impact* **Dād – ض**

Striking by it uniqueness, the *Dād* impacts the Arabic language with its intense auditive potential, as if amplifying the *Dāl* phoneme. Aleili contends that it is used to designate victory due to its heavy weight relating when it is vocalized according to the muscle strength and contraction, and the audible beating of one's pulse, recalling conspicuously a frog with its bulging belly and eyes as described by Abbas. "Arabic language was called the *Dād* language. Some referred to Prophetic tradition by pointing out this letter. Al-Mutanabbi proved it in his poem" (Abbas 1998, p. 114).

In this specific context, the emotional impact of the *Dād* comes not from the representational aspect of the letterform but from its acoustic aspect and how it is pronounced.

— *Talent* ***ŧâ'*** **– ط**

Evolving from the [t] sound, the TAW is traced back to the Proto-Siniatic alphabet, borrowed by the Phoenicians, to transcribe the TAW.

It was observed by Arab linguists in general, and pointed out by Abbas (1998), who described it as "...intensively murmured, its form in the Syriac language looks like a bird." (Abbas 1998, p. 89). Aleili said in this connection, "It is for talent." (Abbas 1998, p. 89). The phoneme of such a letter is for magnifying the thin ŧâ', Abbas confides, adding its sound is like a drumbeat. Elaborating further, he says it suggests flexibility and tenderness, greasy taste, perfume scent, and as for the visual sensations it evocates conglomeration, flatness, and wideness. This letter infers also gustatory sensations, Abbas carries on, for when pronouncing this letter, the tongue touches fully the palate, as if putting pressure on a soft piece of meat. As for the sense of smell, its pronunciation must cause vibration in the nose, tickling it softly much as a soft breeze. The sense of smell is stimulated mechanically and not chemically (Abbas, 1998).

It took Aleili, Arsuzi and Abbas in combined consecutive interpretations to translate the magnified potential of the ŧâ' phoneme when it was introduced naturally by the Proto-Siniatic long ago, noting once more the sound symbolism efficient theory, opposing the arbitrariness of the language.

— *Victory* **Zâ' – ظ**

Marked by its uniqueness, the *Zâ'* (z) ظ identifies the Arabic language, especially, when pronounced loudly and loosely, evocating magnificence, beauty, freshness and appearance found in nature as well the wild with its endearing species like the dear with its poised nose and elegant pace, involving strength and strictness as in *azama, nazafa,* and *zahira* in Arabic. Professor Bachir classifies it among letters of which the phoneme is like rubbing, loud and emphatically pronounced. Aleili claims, "It is meant for ability." The phoneme of the present letter, however, according to Abbas, is an emphasis to the *Dhāl* (*dh*) ذ, pronounced with the lips in order to lighten its intensity (Abbas 1998, p. 91).

Inspired Arab linguists, according to the study of Abbas, built upon similar auditory emotive respective phonemes the *Zāy* (z) bز and *Zâ'* (z) ظ; comparing the *Dhāl* (dh) ذ and *Zâ'* (z) ظ, he finds, "Despite the sound of this letter which engenders vibration such as the *Dhāl* (dh) ذ and *Zâ'* (z) ظ, it is characterized by a specific intensity, neither lowered by the lips with *Dhāl*, nor by the magnificence and elegance with *Zâ'*(z) ظ" (Abbas 1998, p. 91).

Certainly in the case of *Zâ'* the emotional impact of the phoneme takes precedence over its representational meaning.

— *Knots, convulsions* **ξayn – ع**

The ξ*ayn* **ع**, Arabic linguists find slightly intense; its form says Abbas looks in Syriac language like an eye. Aleili says, "It is used for inner emptiness and absolute vacuity." (Abbas 1998, p. 153). The ξ*ayn* phoneme is contrary to the phoneme *Ghayn* (gh) **غ**, says Abbas, because, "...the latter is pronounced through the throat, which contracts and convulses, while the breath disperses in a tickle suggesting knots, death, darkness and gloom," adding, "While the phoneme ξ*ayn* is pronounced out of the throat as in a smooth circle, the sound going out suggests light, appearance and glory"

(Abbas 1998, p. 152-154), as in *azama,* contrary to what the letter *Ghayn* suggests. In his study, Abbas classifies the ξ*ayn* as a guttural with a high sensory value that has no sibling in any Latin language

Repulsive in its acoustic essence, this phoneme translates rejection, physiological convulsions, and endurance.

— Ambiguity, confusion **Ghayn – غ**

Ambiguity and confusion are conveyed apparently by the *Ghayn* (gh) غ phoneme. Both Aleili and Arsuzi contend that the present letter is to render the meaning ambiguous, unclear, implying secrecy. Abbas justifies this view: "It does not suggest only ambiguity, but also disappearance and nonexistence," such as in *ghoumoud* and *ghyab* in Arabic; furthermore, its phoneme, while pronounced, tickles the palate and gives the impression of removing dust from a camel's hide. If the phoneme is slightly lowered, it gives the impression that a rubber is being used on a rough tissue, scattering dust around as in *ghashawa.* The sound of this phoneme as it is described in here by Abbas "...is accompanied by a mimicry: the breath is dispersed in the air, by tickling the palate and scattering dust in the air, or like a baby's babble during his sleep" (Abbas 1998, p. 93).

Indeed, the *Ghayn* phoneme is peculiar, and conveys, as Abbas states, a remarkable mimicry that is inherent to its ambiguous acoustic properties.

— *Danger, warning* **Fā' – ف**

In Egyptian hieroglyphics, the  , a horned snake, representing the [f] sound, differed from the origin of the current letter F, which dates back to the sixth letter of the Proto-Siniatic alphabet, called WAW, written either  or  , referring relatively to an oar, a peg or hook, or a sled. Building up on it, the Phoenicians came up with the following sign  ; with the Greeks it oscillated considerably and was confused with others symbols. "It is soft and inward, mainly for efficiency," stated Arsuzi, and Abbas believes this definition is quite precise (Abbas 1998, p. 98); it also implies danger as from a serpent swift poise spitting out its deadly poison in attack. Here we quote Abbas's reflection on the image and sound potential of the letter in general and the Fā' sound in particular, "This is how I classified this letter among suggestive letters," referring to its mimic characteristics (Abbas 1998, p. 97).

Further, it evokes the breathing in certain words such as in *feather, fly* and *sniff,* conjuring up an image of cold when followed by "R" as in *frosty, fridge,* and *frigid.* Finally, particularly when sung on the note "F" (FA), the A releases its vibration into the fourth chakra on the level with the heart and the lungs (Pflughaupt, 2007).

Transparent like its audible clear sound, the Fā' visual in Arabic is traced back obviously to the Egyptian 'F" shape in the Latin alphabet. It is a fine proof of the inherent image and sound potentials of the majority of the letters, if not all, justifying the theory that language is not completely arbitrary.

— *Power, resistance* **Qâf – ق**

A unilateral sign  , representing in Egyptian hieroglyphics a sandy slope or a hill, was pronounced [q]. However, the modern letter's ancestor relates to the Phoenician symbols  ,  ,  and could be interpreted in several ways – the eye of a needle, a monkey (*qoph*) in Hebrew relating to the animal associated with wisdom, or the image of a double axe. The sign expressed clearly an act of cutting. From a symbolic point of view, Pflughaupt maintained that "...this may stand for the individual's acceptance in his own isolation in order to gain wisdom" (Pflughaupt 2007, p. 106).

The letter's sacred nature is clear in Medieval Latin, for *vocatio* means *vocation* or *calling,* referred to in the medieval table of correspondences (see ***Fig.3***). Building on the Phoenicians QOPH, the Greek named it QOPPA or GOPPA. Bearing a guttural attribute, it was placed between PI and the RHO in the alphabet, and appeared in its archaic form  . Its long tail and prolongation lend a supple rhythm to the otherwise solemn and somewhat austere text of that period. Pflughaupt and many others see it as the image of a sprouted seed or even an ovum fertilized by a spermatozoon.

"Only the Sumerian word *kur*  , which means mountain, seems to capture the full essence of the letter 'Q', expressing power, force, solidity and hardness both in terms of its pronunciation (as an occlusive velar, occlusive consonant) and its graphic depiction." (Pflughaupt 2007, p. 107/108). This view of its sound value is shared by Abbas, who asserts that it suggests volume, fullness and accumulation, a matter that makes it belong to visual letters (Abbas, 1998).

Since the Romans already had two letters "C" and "K" marking the sound [k], they used "Q" exclusively with "U" to indicate [kw] sounds such as in "queen" for "cwen". We may note the exception *Al Qaeda* from Arabic. When vocalized, the Qâf, claims Abbas classifying it among the auditive letters like the *Zāy* (z), with its plausive if not explosive suggestive phoneme, engages not only the mouth, the jaws and the throat muscles, but also the depth from within one's inner system in the pronunciation process. It expresses what is considered most sacred to the Arab nation *Al Mouqawama* (Resistance), suggested and intimated if not present in words relating to "oppression" (*qamaa*, qaher), invoked in battle, involving noise like the monkey energetic clever response. This is clear in Abbas' analysis: "It is vigorous; some pronounce it loudly, others pronounce it as a murmur." (Abbas 1998, p. 107). Aleili adds that it is for surprise, while Arsuzi replies that it is for opposition. Both attributes mark the present letters with sensory feelings of harshness, firmness and rigidity and with feelings of explosion or of a jar breaking (Abbas, 1998).

"It seems clear that the Arabic language used to pronounce Kāf in the first reference books with a kind of magnificence and strength, not as we pronounce it nowadays with softness and limpness" (Abbas 1998, p.107).

Indeed, of this visual letter, suggesting volume and exhibition of power, only the Sumerians managed to capture the full potential.

LATIN ALPHABET	GREEK LETTERS	NUMERIC VALUES	SEMITIC LETTERS	LATIN MEANINGS	POSSIBLE TRANSLATIONS
A	Alpha	I	Aleph	*Doctevia*	The path of wisdom?
B	Bεta	II	Bεth	*Domus*	House, dwelling.
C	Gamma	III	Gimel	*Plenitudo*	A being's complete development.
D	Delta	IV	Delεth	*Tabular(i)um?*	*Tabula*, board. *Tabularium* Archives.
E	Eta	V	He	*Ista*	What is yours, that one.
F	Serenon?	VI	Vav	*Et*	Coordinating conjunction, connection.
G	Zεta	VII	Zain	*Hec*	Alteration of *hic*? Used for designating.
H	Hεta	VIII	Eth	*Vita*	Life, existence.
	Θ thεta	IX	Thεth	*Bonum?*	Good.
I (J)	Iota	X	Ioth	*Principum*	Beginning, commencement, origin.
K	Kappa	XX	Caph	*Manus*	Hand.
L	λauda?	XXX	Lamech	*Disciplina*	Apprenticeship, education, science.
M	My	XL	Mem	*Ex ipsis*	From the same. Out of.
N	Ny	L	Nun	*Sempiternum*	Eternal, perpetual, endless.
	Ξ xi	LX	Sameth	*Adjutorium*	Aid, help, support.
O	Oa Omicron	LXX	Ain	*Fons*	Spring, fountain, origin, cause, principle.
P	Π Pi	LXXX	Phe	*Oms*	Mouth.
	M san		Sade	*Justicia*	Justice, honesty.
Q	ci.coppa	XC	Coph	*Vocatio*	Vocation (divine), invitation, calling.
R	P Ro	C	Res	*Caput*	Head.
S	Css ma	CC	Sin	*Dentium*	Tooth.
T	T Tau	CCC	Tau (v)	*Signa*	Signs, marks, impressions.
V (U)	Y y Upsilon	CCCC			
X	Φ ifi	D			
Y	χ chi	DC			
Z					
	Ψ Psi	DCC			
	Ω Omega	DCCC			
	ϡ Sanpi	CM			

Fig.3 *Table of correspondences, based on a text by the English monk Brythferth dating from the year 1011*

— Energy **Kāf** – ك

As we said previously when dealing with "C" and "G", two signs in Egyptian hieroglyphics had a phonetic value close to [k]   , one representing a sandy hill, the second a cup or a basket with a handle. In Hebrew, however, KAPH כ ך, the name given to the letter, means "palm of the hand", "sole of the foot" or "hollow". After simplification, the image of a hand  represented the letter KAPPU, pronounced [k] in the Proto-Siniatic alphabet. Writing from left to right, the Greeks turned it to the

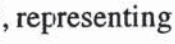
right and named it KAPPA. It was pronounced in Latin [K] before an A, written C before an E or I, and Q before a U, and [kh] at the very end. When the Romans invented the letter G to record a sound that was softer than C, the latter became K, a harder, strong, plosive sound; the Greeks however converted the Kappa into C. In the middle ages much later, K appeared as an initial for the word *Kaeso*, meaning *kalendae*, standing for *calendar* nowadays, whereas in English we use the letter "C" in addition to "K" to transcribe a hard [K] sound as in *clock, common, compare*.

Besides "the palm of the hand" meaning of *kaph*, inferring the idea of a cup or receptacle, it equally infers palmistry, borrowing the Greek prefix *xelpo* (*chiro-*) *chiromancy,* a word used for palmistry. Like the soles of the feet, each palm is a minor chakra point, besides the main ones listed on page (71) fig.2. There is a distinction between each hand clenched fully by whirling dervishes pointing their left hand to the earth and the right to Heaven, uttering a ritual murmur resembling the mantras adopted in Hindu philosophical practice, which is referred to as a strong murmur by Aleili and as a fricative by Arsuzi. Abbas adds that, if the phoneme is uttered, stretched, softened and somehow squeezed, one feels as if it is the sound of wood friction, wood crackling or crunching bones (Abbas, 1998); further, there is a common belief that the right hand releases extra magnetic charges from the body, whereas the left receives a charge from the surrounding environment.

It is interesting to note that *Ka* and *Ki* refer to early Egyptian religion, where they represented the vital energies animating gods and men, the second written *qi* and *chi* known in Chinese martial arts as meaning breath or energy.

Comparing the Latin visual to the old Hebrew *Kaph* symbol, then to the Proto-Siniatic *Kappu*, and to the late Arabic *Kaf*, we perceive a distinct acoustic similarity relating unanimously to the palm of the hand, leading once more to the sound symbolism conducive theory, essential in this investigation of the development of letterforms.

— *Discipline, Apprentissage* **Lām** – ل

In Egyptian hieroglyphics there are two signs associated phonetically with the letter "L", representing one a lion and the other a mouth  . They may also be pronounced [r]. The basis for the letter "L" currently used nowadays in the Proto-Siniatic alphabet looked like a staff  . After simplification, it was written by the Phoenicians in a way resembling a raised arm. We recall here Aleili's remark, "It is for causing an impression after a burden" (Abbas 1998, p. 61).

The name LAMEDH, a Hebrew word that means *goad* or *staff*, used to goad and direct animals, implied discipline, education and appropriate association. This idea was shared by Aleili, who claimed that, when moderately pronounced, its form in Syriac language was comparable with the bridle (Abbas, 1998).

The Greek borrowed the Phoenician LAMEDH and called it LAMBDA, but its shape ended with the classical form A when in Athens, the capital of the Greeks, they adopted  for their Lambda, the symbol used currently nowadays in the Latin alphabet ,"L".

The Greek GAMMA "L" was shaped like a square with a right angle symbolizing rigor, instruction and rectitude. We recall Abbas's coherent reflection regarding the suggestive tactile characteristics introduced above.

Phonetically speaking the letter's structure is one of roundness, soft, light and liquid, found in word such as *liquid, float, fluid, lap, lick,* and *lull* exactly as the suggestive characteristics mentioned by Abbas, using a mixture of malleability, flexibility and fluidity related to the tongue multifunctional purpose (Abbas, 1998).

Further more, the "L" phoneme is equally observed in theological beliefs associated with angels such as Gabriel, Michael and Raphael, the bearers of strength, justice, medicine and divine light (Pflughaupt, 2007).

Flexible as its sound, the Latin "L" has its basis in the Proto-Siniatic staff-like shape, resembling the Hebrew staff, adopted also by the Arabs, and recalling the raising of one's arm as indicated by the Phoenicians, all unanimous in their show of discipline.

— *Aquatic, motherhood* **Mīm** – م

There are two signs associated with "M" in Egyptian hieroglyphics carrying a potential pronunciation, the first representing an owl, the second a gazelle rib, symbolized visually by a unilateral hieroglyph 〰 resembling waves which was pronounced [n] before being modified to the "M". In fact the current M's ancestor was written 〰 in the Proto-Siniatic alphabet. The Phoenicians rotated it vertically 𐤌 in the Ahiram form; the first letter in Hebrew for the word *mem* meant water, evoking the Egyptian sign in its original shape depicting a stream of water or ocean waves. "It was not long before the letter underwent, in Aramaic, a rotational change from vertical 𐡌 to horizontal 𐡌, to attain its definitive form in the Greek MU (M)." (Pflughaupt, 2007).

Phonetically, it is a bilabial nasal consonant engaging both lips in its pronunciation. Abbas appropriately describes the sound of this letter as it occurs when the lips carefully close and open, allowing the air to pass. That is why its sound suggests the same sensory feelings as those experienced by the lips when they close up, softly and warmly holding together. Abbas classified it at first among suggestive letters before he realized that it fitted better with the mimic phonemes like the Fā' covered previously (Abbas, 1998).

Its symbolism in Hebrew is imparted from a spiritual connotation, recalling the ascending and descending theological belief represented by *mi* and *ma* in the waters of Genesis, a religious principal of duality reflecting spiritual association. Such association with water, dwelt upon by Pflughaupt, with its shape and interpretations, indicates that there is an aquatic motion inherent to the letter "M" represented by the image of flowing water (Pflughaupt, 2007). This matches Abbas's appropriate reflection on its image, as when moderately pronounced its form in Syriac language

looks like the rain, but differs from Aleili's whose comment was clear as one of its meanings is assemblage (Abbas, 1998).

The "M" equally embodies maternal liquidity, as it is considered the most human of letters naturally found in various languages; in English as in *man, woman, mother;* in French *mère*, *maman*; in Spanish *madre* (Pflughaupt, 2007), in Arabic words such as *oum*, *oumouma*, *oumma*, marking a similar analogy observed by Abbas when exploring how the mother was called *mama* and the father *baba*. If the Mīm (M) mostly represents sucking up, nursing, joining and assembling, and suggests delicateness and maternity feelings, we can deduce afterwards that the Mīm is quietly similar to creation for the mother (Abbas, 1998).

When vocalized, the [*em*] sound causes potential vibrations in the human brain inducing the logical use of the mantras (India) for relaxation [*om*] or [*aum*] acting upon the seventh chakra located at the crown of the head (see ***Fig.2***) It also conveys a spiritual state, suggests Abbas describing its characteristics as sensory, visual and mimic, with a light contraction while closing and opening the lips during pronunciation (Abbas, 1998), as in a ritual. In onomatopoeia as in the *mmmh* sound and mimic, expressing pleasure, we find a perfect illustration of the underlying positivity of the letter's vibratory nature. Finally it should be noted that Mīm (M) is at the source of all spiritual life in its double aspect realizing the perfect union of body and soul.

Although the Mīm phoneme impacts from a spiritual connotation associated with an aquatic motion tied to the flowing waves' mellow shape, when vocalized it remains the most human of letters, the mother-figure naturally found in various languages, in Latin as well as in Arabic.

— *Spirituality, Negation* **Nūn – ن**

There are two unilateral characters  and  in the Egyptian hieroglyphics that transcribe the [n] sound; one representing flowing water and the other a red crown; this same phoneme is denoted by a snake image in the Proto-Siniatic alphabet,

adopted by the Phoenicians who simplified it as in 𐤍 and placed it fourteen in their alphabet under the name NUN. The Hebrew letter is derived from the NUN, which in Aramaic means *fish* or *water snake*. The "N" currently used nowadays derived from the Greek NU, was itself borrowed from the Phoenician NUN 𐤍.

The "N" is associated with the notion of birth, as is clear in the prefix *neo*. "In 1815 the writer Antoine Fabre d'Olivet *in La Langue hébraïque restituée* dwelt on this connection by writing of the NUN as a symbolic image." (Pflughaupt 2007, p. 95). Furthermore, the Hebrew letter represented great qualities such as purity and power, which had to be hidden from view in order to remain intact in ancient times, as Abbas indicates in his comprehensive study (Abbas, 1998) of the Nūn (n) evocating its emanation and sometimes inward movement, translated in a burning candlelight.

The English monk Bryhtferth also related the word *sempiternum* (eternal) to the "N" symbol, established in a table of correspondences on the values of all the various alphabets that evolved throughout the centuries. (Bryhtferth, 1011). Furthermore, it is associated with the fish element in Aramaic that meets with Christian iconography. Such a link with the water element is also found in the Greek word *nero* το νερο, water, and is clear in words such as *navigate, nautical,* and *navy*.

In his twelve-volume textbook on rhetoric entitled *Institution Oratoria*, the Roman historian Marcus Fabius called it the *littera tinniens* (the chiming letter) owing to its sound clearer and franker than other consonants" (Quintilianus vol.1, 1920), while Aleili attributes it to the emotive sense and states, "It is to express the core and essence of things" (Abbas 1998, p. 118).

Except in Greek, the N sign expresses negation as in *no, ni, non, nein, nyet*. It creates a vibration in the face as a nasal letter, which can be described as reassuring, appeasing, tender and intimate. This is the view of Abbas concerning the Nūn [n] sound; he explains that when pronounced with magnificence, it suggests elegance, submission and tenderness. If pronounced with a kind of intensity, it suggests emanation and effusion coming out of things. Its form in Syriac resembles the star. It means the blade of a sword or a whale. Maybe the way it is written in Arabic had been copied from these images before it took its present form. The point in the middle of the letter Nūn represents the protrusion of the sword handle or the eye of the whale.

However, dwelling more on the sound value of this consonant, Abbas classifies it among potential emotive senses, maintaining here suggestions relating to an uproar of sound coming out from the core, to express deep sorrow, as in "He moaned deeply." He next states that it is the best letter to express sorrow, pain and surrender (Abbas 1998, p. 119).

Despite the profusion of metaphors noted above, but especially the latter reported by Abbas in describing the inner potential of the Nūn as in "deeply moaned", the Nūn's current shape translates well its powers, with this woman imprint impacting the visuals, a striking example manifest of the sound symbolism theory.

— *Contradictory values, high and low* **[H]** Hā'- ◦

Several hieroglyphs  transcribed the [h] sound, with varying degrees of aspiration, representing a courtyard in a house or a shelter made of reeds, both pronounced like the "H" in the verb *to have*, while showing in other instances the image of a rope made of woven flax, pronounced like the "H" in the name *Hamed,* or even representing a cow's udder or its stomach and tail, pronounced as well more softly as in German *ich*. However the letter H was derived from the Phoenician HETH and the Greek HETA  , expressing various forms of borders, such as a wall, a fence, a field, before it was pivoted 90 degrees till it resembled more a ladder shape  and before it settled finally with one remaining rung resting horizontally in its middle.

Phonetically, HETH was a guttural, comparable to Aleph. In the crossover, it integrated the HETA consonant sound [h] that also became the vowel ETA [long *e*]. This sound/consonant ambivalence is evident with the first pronunciation called *H aspirée* as in the English word *Habitat,* considered a consonant adding a guttural force to the vowel that follows, with the second pronunciation called *H muet* or the silent H as in *Honest*.

As is obvious, the "H" image represents an obstacle but one of potential elevation; it became the ladder that "unites Heaven to Earth" (Plfughaut, 2007), a restricted and esteemed attribute relating to an honorary academic. Here we note the similarities between the letters "H" and "B", as the Egyptian hieroglyphs shared the same

representations of a shelter or a house image, even a temple, owing to its sense of stability on the ground, marking a phonetic elevation of the accompanying letter.

Further, the letter Hā', Abbas confides, is used in Arabic for words expressing sadness, troubles, or cerebral, psychic and bodily malformation, adding that Arab linguists entertained contradictory opinions as to the way it must be pronounced through the throat. If it is pronounced loudly enough, one notices that the sound goes out effectively from the front of the throat. The letter Hā', Abbas maintains, creates vibration in the inner throat and evokes psychic troubles. The Arab used this letter then to spontaneously express a specific psychic trouble or he might have imitated a person who was going through psychic troubles. If pronounced comically and nasalized, it suggests aspects of stupidity illustrating clowns or entertainers as well, body deformation and perverted mind. That is how the letter H is transformed from a sad letter to a comic letter. No difference is mentioned between the two, only the way it is pronounced. Is that due to vibration created while pronouncing that letter? He wonders (Abbas, 1998).

Whether in Latin or in Arabic, and despite the huge difference in their respective visual translations, both shapes concord, expressing oddly in their own terms a dilemma between sound and insane, high and low, rigid and wrong.

*— Joining, **Wāw** — و*

There is a unilateral sign in Egyptian hieroglyphics similar to the sound "W" representing a small quail, drawn either realistically  or more stylized  . The current modern "W" in use nowadays is rooted in the Middle Ages, when it abounded in diplomatic scripts, and was used as well to combine two proper names, like the manual shingle of Abbas, that rolls and unrolls, to join, secure and hold together separate vehicles. It was often modified from the U to the Qu [kw] in Latin and WYN or WEN in English.

In the opinion of the scholar Jean Mabillon (1632-1707) it was during the twelfth century (Middle Ages) that two V's were joined to form a single letter (Pflughaupt,

2007). There were several variations that included Uu, Vu, VV, and W. In 1839, in the French Dictionary (the *Landais* edition), the problems of integrating this double consonant into French are described: "We may say that this letter belongs in no way to the French alphabet" (Pflughaupt 2007, p. 129).

The letter "W" was tied up to early pictograms of water and found in words such as *water* and *wet*. Here we recall Abbas's reflection (1998), "If it were not for its waving sound, this letter would be absolutely void of any feeling" (Abbas 1998, p.73, 74); since the stylized form of the early "W" recalls the و in Arabic, Abbas built upon Rimbaud's analogy when he associated colors to sounds saying, "Maybe because the French poet Rimbaud felt this emotional emptiness in the sound of this letter 'OU' in French, which corresponds to the letter Wāw (w) و in Arabic, he said the following: "This letter evocates black color, because its sound in French is empty of any feeling or emotion" (Abbas 1998, p.76).

However, its empowering sound-image potentials, as described by Abbas upon Rimbaud's analogy, associating it to the black color, is quite dramatic, if not strategic.

— *Fecundity,Possessivity* **Yā' — ي**

There is one single consonant with phonetic value transcribing the [y] in Egyptian hieroglyphics representing two sprouted reeds 𓇋𓇋, before it was stylized \\. While one letter YODH in the Proto-Siniatic shaped like a forearm corresponded to the [y], the current modern Y in use nowadays is rooted in the Phoenician consonant WAW [image of Y] and the Greek UPSILON (vowel) as covered previously in "F".

After oscillating from 𐤅, 𐤉, 𐤉 in order to cover respectively the [u] or [o] sounds, the "Y", often called Pythagoras's letter, was finally settled. "It symbolized the tree of Samos owing to the philosopher's place of birth being the island of Samos" (Pflughaupt 2007, p. 135).

In *Champ Fleury*, Geoffroy Tory reflects upon the symbolic V shape of the upper part of the Y, comparing it to branches and interpreting the overall image as *volupté* "sensual pleasure" on the left, and *vertu* "virtue" on the right (view of the tree, ***Fig.4***).

[I] The letter's symbolism. The character's branches form a V, interpreted here as *volupté* ("sensual pleasure," on the left) and *vertu* ("virtue," on the right), in *Champ Fleury* by Geoffroy Tory.

Fig.4

This symbolism is alluded to by Pflughaupt as he ascribes the V in the Y upper half to the female genitalia and says the vertical below extends into a stem, symbolizing the opposite sex, the whole describing the dynamic design balance of loving relationship, recalling equally the androgyny of the primordial Man known as "Adam Kadmon" (Pflughaupt, 2007). One should note that this symbolism carries a universal potential applied in medicine where the Y sign is adopted as a chromosome connotation along with the X in male mammals (XY), but not present in female (XX).

On the phonetic level, the [y] sound symbolism is found in the interjections *yay!* in French and *hurray* in English, noted as well in Arabic by Arab linguists, mainly Abbas (1998) in his study on the visual letters where he classified the Yā' under auditive phonemes, stating that "The sound of this letter gives a visual insight that differs according to the place it occupies in the word." (Abbas 1998, p. 74). It is mainly used with intransitive verbs, indicating a possessive pronoun case value relating to the "I" first person as in *kitabi,* translating *my book* and highlighting here the appropriate relative pronoun.

Note that the Y-axis is the vertical axis in plane geometry.

Despite their visual differences, the dynamic description of loving relationships by Pflughaupt of the Latin phoneme fits equally, if not perfectly, the Arabic alphabet, lying low beneath the horizontal line, busy mating or hatching eggs.

3.6 Conclusion

This thorough investigation of the various comparative developments of alphabets leads to a striking visual difference of the Arabic alphabet span, in number, shape and phoneme values, noted by a handful of Arab linguists, to name a few, Ibn Jinni, Aleili, Arsuzi, but especially Abbas, as shown in his study built upon sensory emotion, as well as suggestive characteristics, classifying letters upon their visual, auditive, olfactive, gustative and tactile qualities and potentials, relating to the sound image and the meaning that I intend to deal with in my methodology protocol in the following chapter, observing new scientific enlightening methods combining psychological and neurological studies applied in phonetics; in other words, we, in chapter four will see the birth of *"Maaluma"*, the thesis main project, a detached-attached letterform concept, translated concretely in 28 singular phonemes inspired by *Naskhi* (Axt Salwa), as explained previously for its simplicity and built upon the given universal interpretation developed herein, together with my own visual perception.

Endnotes

1. Aristotle (384 BC – 322 BC) one of Plato's greatest students focused more on biology in his own Academy than its predecessor that relied on mathematics.

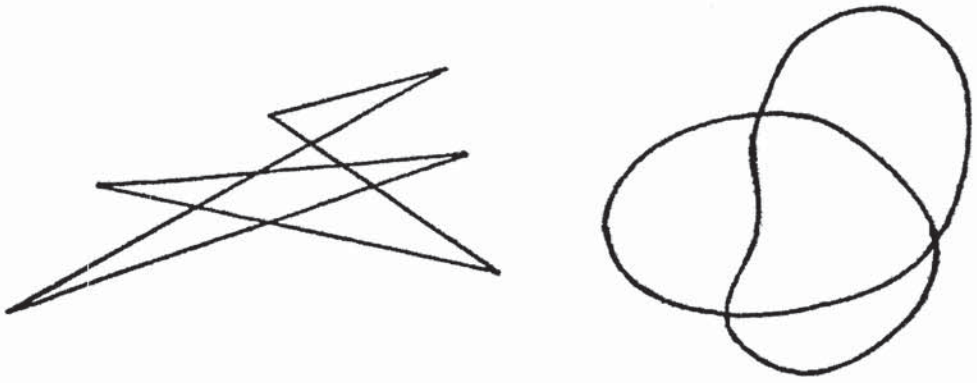
2. Abecedarium stands for abecedary from Medieval Latin, is an inscription consisting of the letters of the alphabet in order. (Lorimer 1994, p.1).

Chapter four

Maaluma | Experimental design overview

4.1 Introduction

Fascinated by Abbas's study of the domaining sensory or emotional characteristics, of the Arabic alphabet, pursuant to the particular phonic nature of each letter respectively, or the way it is pronounced or been silenced, I intend to shape up the 28 letters of the same alphabet accordingly, in a lively setting enhancing those sensory visuals or suggestive values inherent to each sign individually, as if using magnifying lenses in order to focus on the facial, visceral and even guttural contraction during the exercise of each pronunciation entailing the psychological and the physiological potential required. In my endeavor, I shall obey the rule of phonetics in general and reflect upon Margaret Magnus's useful analogy on consonants and their inherent meaning detailed in her book *Gods in the Word* in the process, but shall follow the spontaneity of Abbas in particular adopted in his sensorial "word cluster" vocalizing concept referential classification of the phonemes, as they occur in linguistic dictionaries and encyclopedias as well, transcribing the acoustic properties of each consonant and vowel's magnitude, in conveying motion, speed and velocity of the image or being merely static or motionless. One may note within this a striking demonstration that sound–object correspondences are not completely arbitrary as adults map nonsense words with rounded vowels (e.g. bouba) to rounded shapes and nonsense words with unrounded vowels (e.g. kiki) to angular shapes (Köhler, 1947; Ramachandran & Hubbard, 2001). Such naturally biased correspondences between sound and shape may influence the development of language if adapted as a selective methodological learning tool, specialized in the Arabic language, devised for preschool and kindergarten children.



kiki or takete *bouba or maluma*

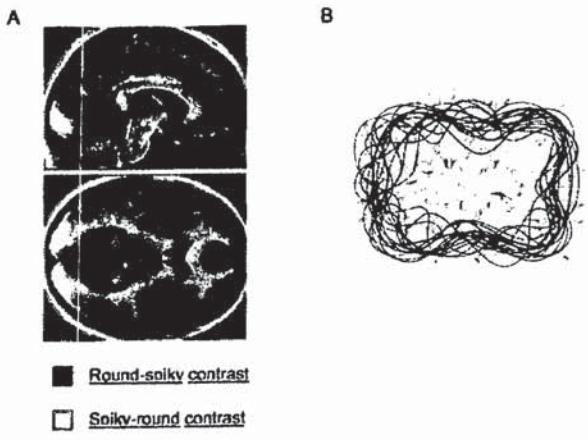
Fig.5 *Original drawings used in Köhler experiment*
As the comparative drawing indicates it clearly one should associate takete[kiki] with the left image and maluma[bouba] with the right one. Indeed, the angular sharp changes in the visual track of lines on the left corresponded to the sharp phonemic tones of the sound takete or kiki, while the fluidity of the sketch on the right translated the smooth sound of maluma or bouba.

Based on Köhler further findings in 1947, demonstrated on adults, Davis (1961) found similar patterns when he tested them on youth and children, as he asked school children to label Köhler-type drawings with the word "takete" or "uloomo"; this was true both—for English-speaking children, aged 11 to 14 residing in England, and for children aged 8 to 14 living in an isolated peninsula of Lake Tanganyika in Central Africa, who spoke Swahili and the Bantu dialect of Kitongwe, but not English— as all matched "takete" with star-like shape and "uoloomo" with a round amoeboid shape; numerous other examples of consistent similar mapping between vowel sounds and properties of objects followed (Vetter & Tennant, 1967; see also Koriat & Levy, 1977).

4.2 Mindmapping

Following in Daves (1961) steps in their concern for pre-linguist children, Ramachandran and Hubbard (2001) speculate that the bouba/kiki phenomenon arises at an early age from cortical connections among contiguous cortical areas that unite the visual percept of the nonsense shape (round or angular), the appearance of the speaker's lips (open and round or wide and narrow), and the feeling of the phonemic inflection and movement of the tongue when one says the words (rounded lips, large

mouth opening or lips stretched to produce a small mouth opening). In fact, within linguistics, the vowels |u| (as in 'Sue') and |o| (as in 'bode') are labeled as rounded vowels, while |i| (as in 'bead') and |^| (as in 'sun') are labeled unrounded or non-rounded vowels. Ramachandran and Hubbard argue that these connections among sensory cortical areas and between sensory and motor areas constrain the evolution of language, influence its development in the individual child, and sometimes lead to synesthesia, covered previously in scientific justification, a phenomenon affecting 1–2% of the population in which a stimulus induces not only the normal percept but also a second percept in a second modality or along a second dimension (*e.g.* the sound of 'a' looks red or tastes like oranges not quite ripe)(reviewed in Maurer & Mondloch, in press). Indeed recent imaging studies have confirmed that synesthetic percepts are correlated with activity in the expected primary and secondary sensory cortical areas. For example, in synesthetes with coloured hearing or coloured graphemes, hearing or seeing an 'a' is correlated with activity not only in the 'normal' cortical areas such as the auditory cortex, but also in area V4v in the visual pathway, an area known to be involved in processing form and color, and to a lesser extent, activity in lower visual areas including the primary visual cortex (Hubbard, Arman, Ramachandran & Boynton, 2005; see Maurer & Mondloch, in press, for a review of earlier studies).



Visual activations by shapes in passive experiment. A. Contrast of activations by round shapes minus spiky shapes is in red. Contrast of activations by spiky shapes minus round shapes is in yellow. Round shapes activated ventral and central visual areas and spiky shapes dorsal and lateral visual areas. B. Superposition of round shapes and spiky shapes used in passive experiment, with lines colored in red for round shapes and in yellow for spiky shapes. Round shapes lines are more peripheral than spiky shapes lines, which are more central. (Pulvermüller, Huss, Kherif, Moscoso del Prado Martin, Hauk, & Shtyrov 2006, p.103).

Although the findings with adults and in groups of children as young as 8 to 14 years are consistent with Ramachandran and Hubbard's hypothesis that connections between neighboring cortical areas are present early in development and influence the child's learning of language, there is an alternative explanation: it is their knowledge of language that allows adults and older children to generalize from the corpus of word–object mappings they have learned to nonsense and foreign words. By this account, there are some preexisting patterns in English and the other studied languages and consequently Arabic, such that words with rounded vowels (a round sound and/or a curved grapheme) label round objects and words with non-rounded vowels label pointed objects. In other words, language-learning comes first, and the bouba/kiki phenomenon develops later. Consistent with this alternative account is a report of random responding when the Songe of Papua New Guinea were tested with Köhler-like figures and "maluma" and "takete" – perhaps because sound/shape correspondences are not biased in the same way in Songe as in the other languages that have been tested (Rogers & Ross, 1975).

4.3 Maaluma design process

4.3.1Ttrials and errors / Sketches

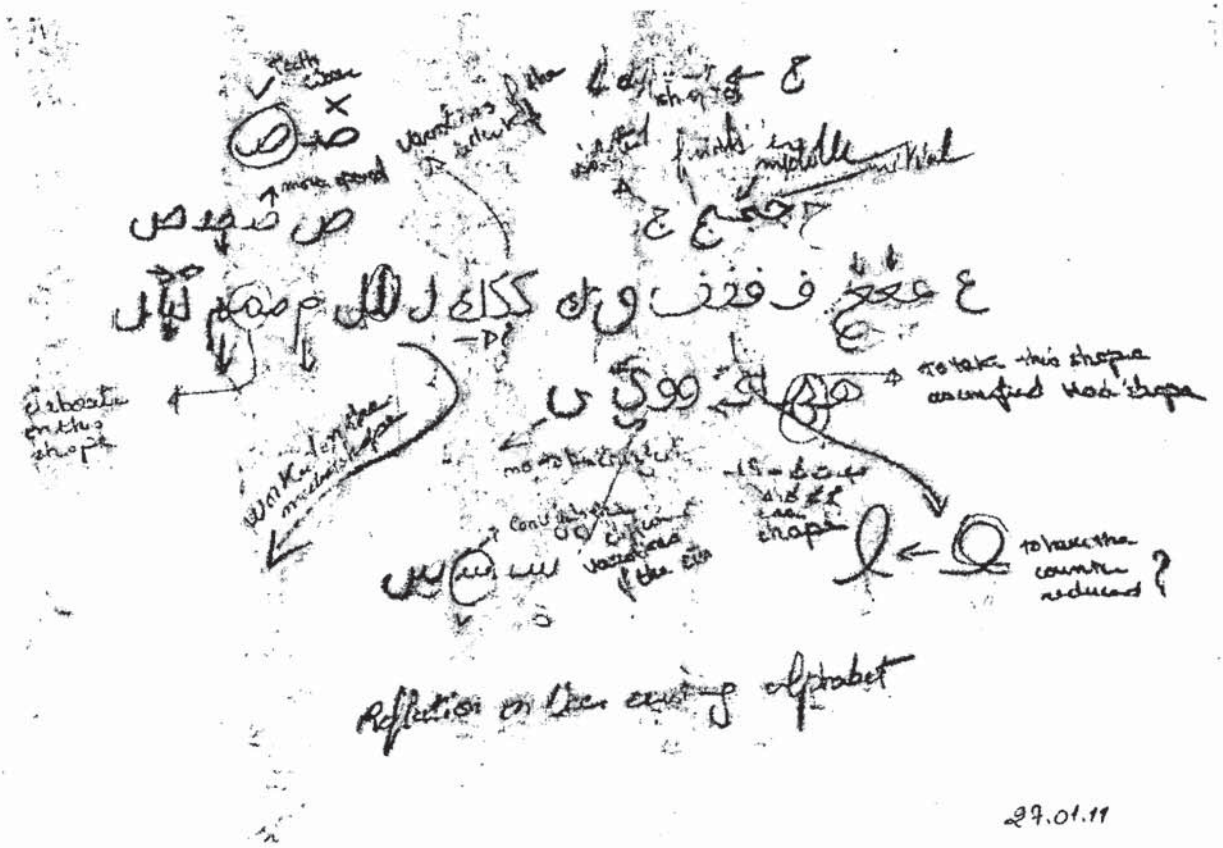
Chaotic from a simple brief — a typeface as condensed as possible— to large scale sketches, made on paper, reduced then edited before finally digitalized.

A first dive into the making of letter shapes gave us the occasion to get more familiar with the process and engaged some very practical reflections on the design of Arabic type, when a typeface should be designed for a purpose and going to the extremes is a way to find alternative solutions. It seems that at an embryonic stage, one can see in the synthetic brush construction the rounding of letters and their interplay with angles or the disconnection between the bowls and the stems, the premises of *Maaluma's* idiosyncrasies.

The practical reality of the overall workflow is a bit more chaotic than its concrete description on papers, as its phases of development often happen to overlap with each other. The frequent use of calque was of a great inspiration, as it allowed firmly disregarding some options, shaping errors, or introducing other key features instead.

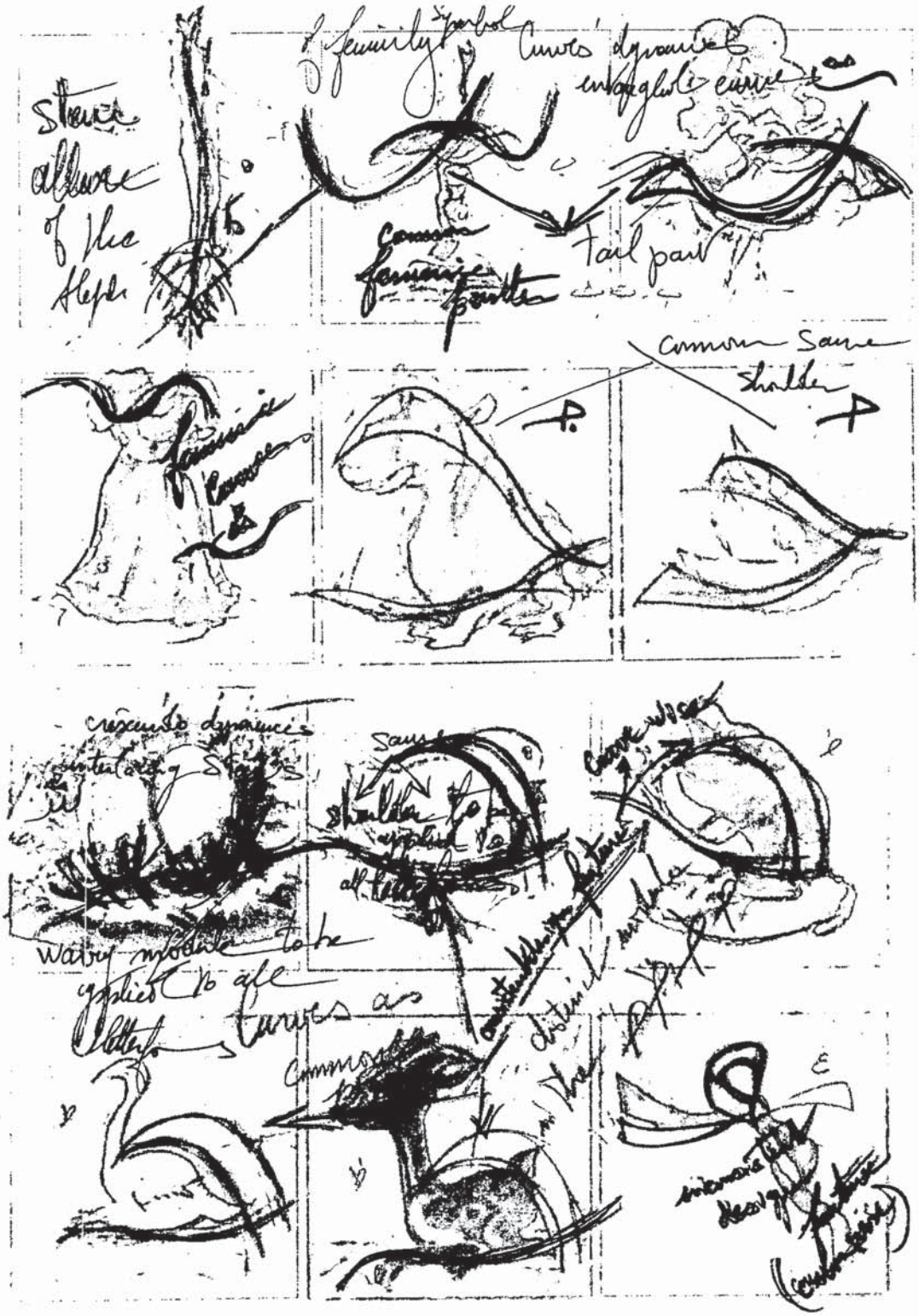
Dynamics order

Early sketches describing a review of the exixting alphabet

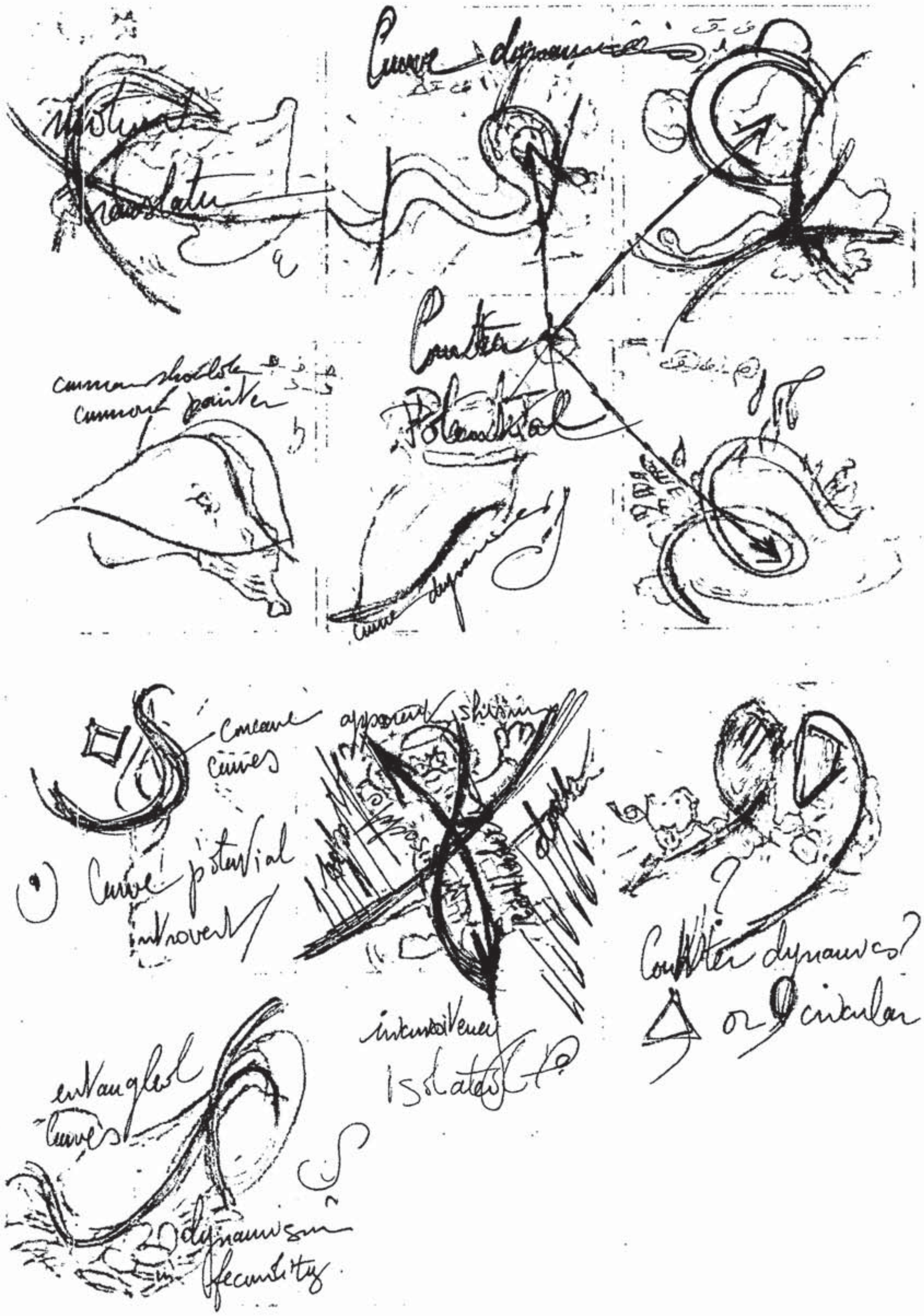


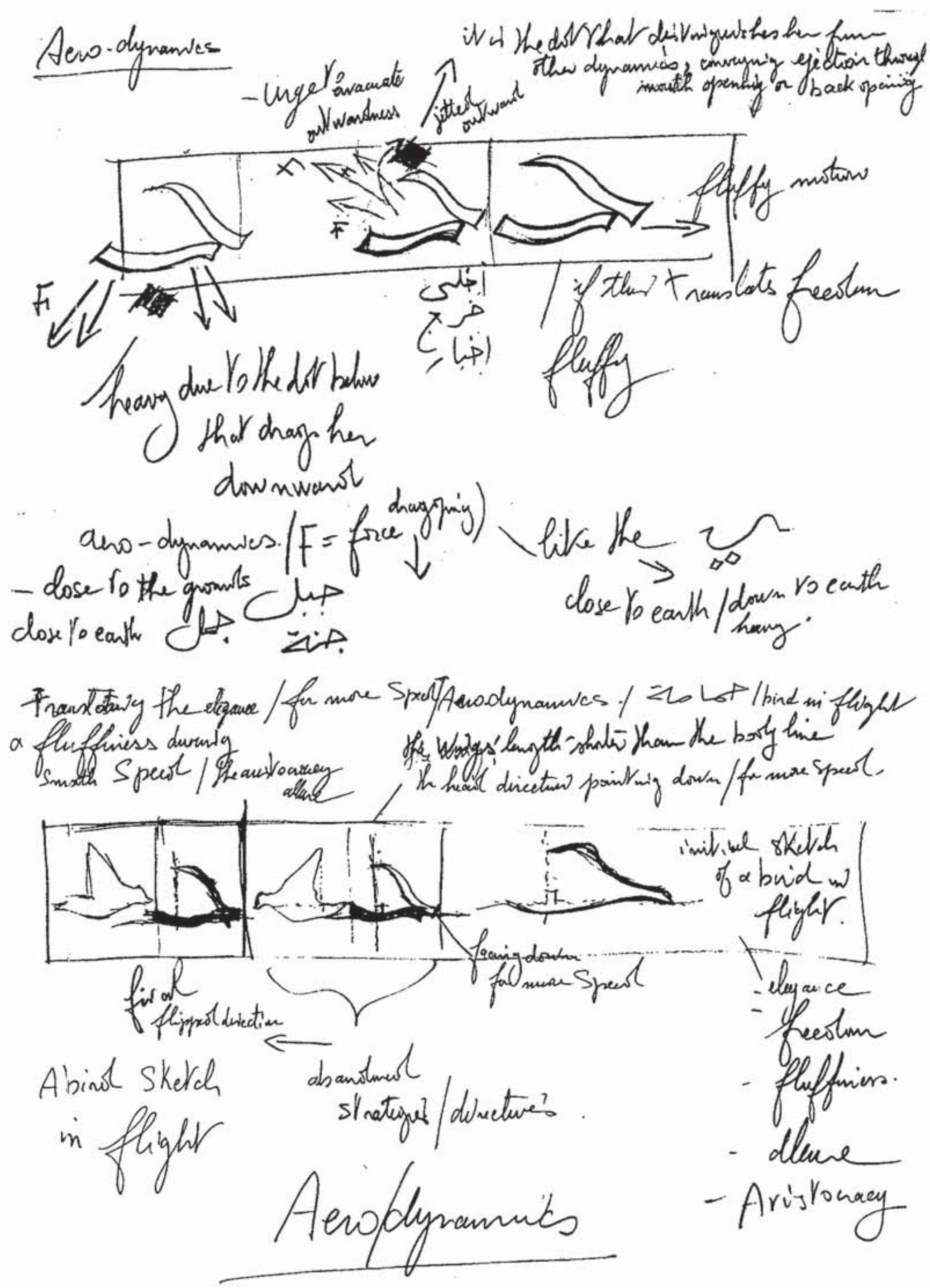
Phoneme's behavioral

Maaluma's early drawings
Illustrations of the draft versions produced along the process provide a concrete example of that chaotic state of the work flow.



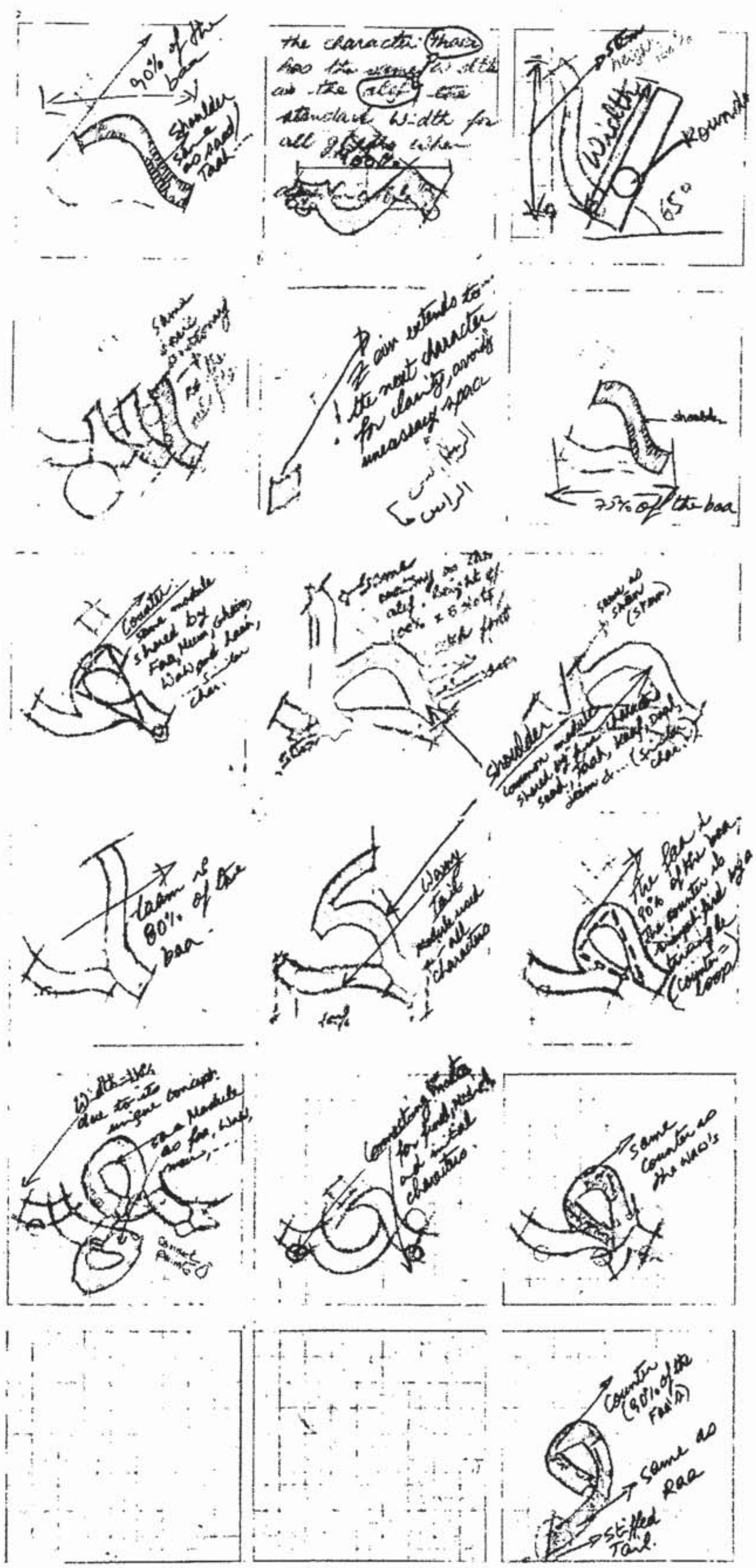
Fluidity analysis | Stroke and motion




Aero-dynamics
fluffy motion
if they translate freedom
fluffy
heavy due to the dot below that drags her downward
aero-dynamics / F = force
- close to the grounds
close to earth
close to earth / down to earth heavy
initial sketch of a bird in flight
facing down for more speed
first flipped direction
A bird sketch in flight
abandoned strategies / directives
- elegance
- freedom
- fluffiness
- allure
- Aristocracy
Aerodynamics

Proportions I Analysis

Maaluma
Shift of strategies abondoned routes



4.3.2 Maaluma display letterforms

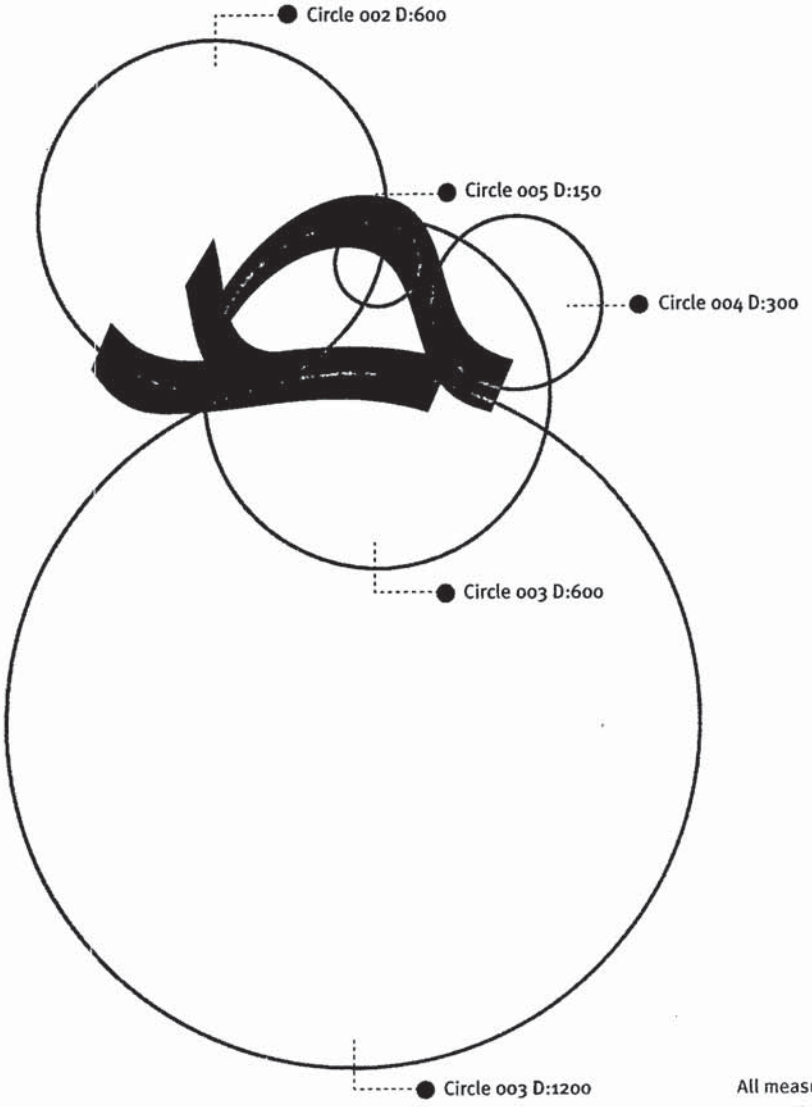
Throughout *Maaluma* design process, key points of the typeface progress are depicted, along with its mutating design strategies, raising conducive typographic interrogations.

Like every designed item, it seems hard to create an Arabic detached–attached versatile, legible and readable typeface that has personality from a self-impulsion. In our time, it seems impossible not to think of a typeface without a family context. Indeed the almost immutable model for *Maaluma* entry, besides its medium weight, follows the typographic sequence bold | italic, along with numerals and vocalization marks, and the Latin matching counter part (meta plus).

Rather than depicting a general view of the design, small details of weird outstrokes, lacking in maturity, marked the first attempts; when the angular focus on the counters occurred, and a slight tapering of the strokes altered the sketches, early drawings gained coherence and were made manifest. However the proportions problematic remains one of the first challenging issues of *Maaluma's* design process, needed to be reviewed and edited considering their legibility, readability functionality and personality; according to the fundamental Arabic type identity, novelty of a design seems often conflicting, specially when dealing with a detached-attached typeface that compels a unified width module serving all characters.

Nevertheless *Maaluma's* design progress owes its consecutive jumps to the technological and engineering expertise in the field that deals with structure and proportions of the Arabic typeface. The grid adapted to the structure of *Maaluma's* typeface observes closely a built up strategy sequence of circumferences interplay dynamics.

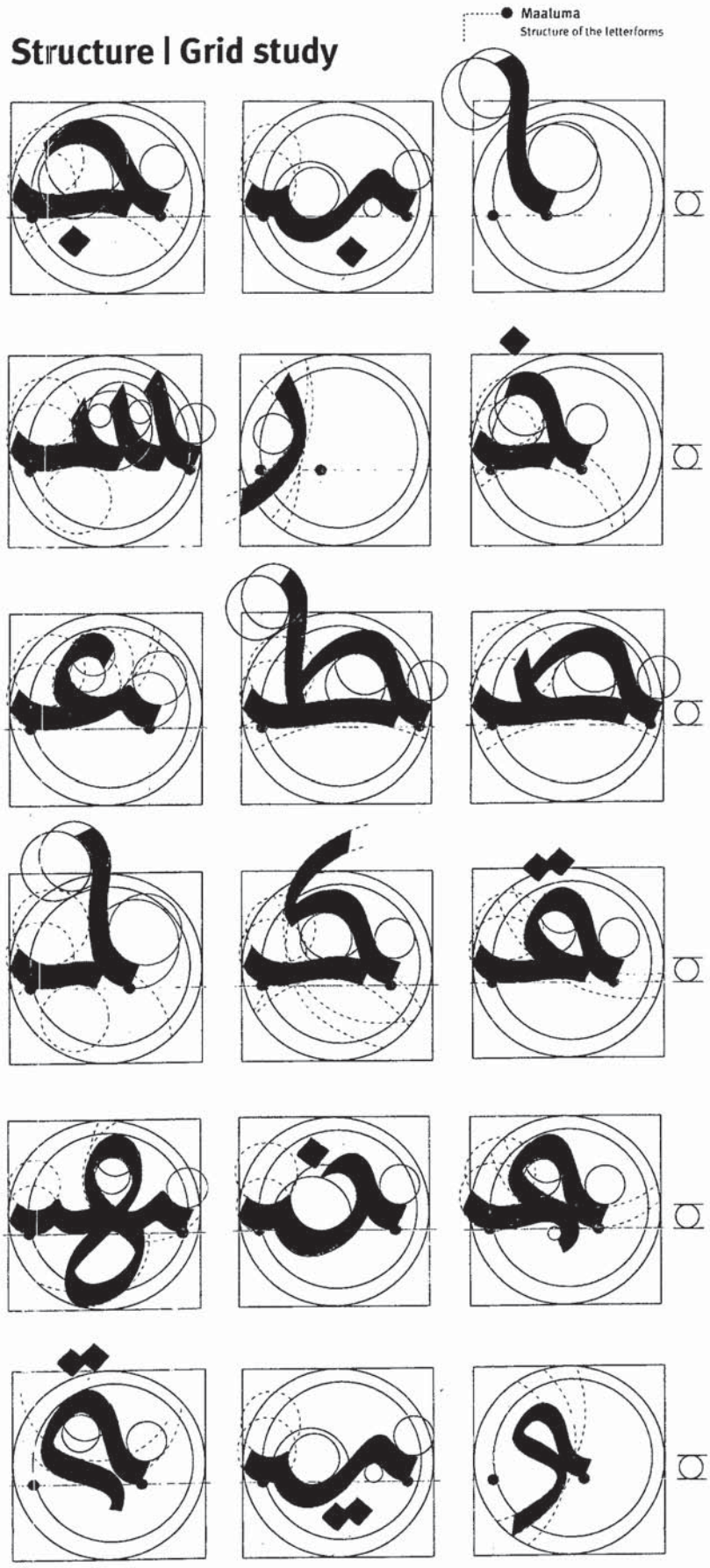
Circumferences interplay dynamics



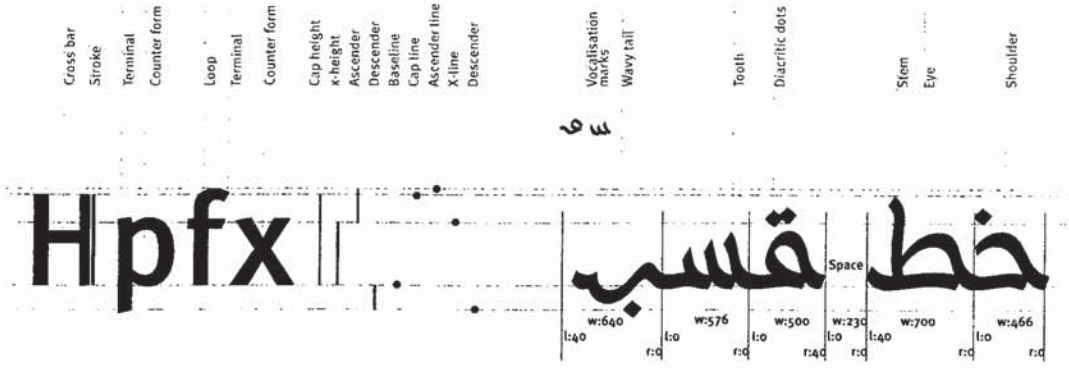
The grid is based on a series of circles build upon a multiple of patterns in diameter sequences observing closely the geometry rules that conveys coherence and consistency.

A final version was made manifest after several tryouts engaging into a fine structural combination: the leading stem, the seemingly uniform body shoulders, and the wavy tails, main building basic patterns of *Maaluma's* typeface, inferring congruency, harmony and coherence to almost 24 out of 28 characters of the Arabic alphabet, as the rā', zāy, mīm and hā', escape manifestly such coherence at a few key points.

Structure | Grid study



Script adhesion



Meta plus medium chosen Latin counterpart

Maaluma medium | System of proportions

The word space is common to latin and arabic
By default the space is the width of a lower case character
a | e | n | s | u except f | t | r | m | w | x

The arabic xheight is go to 95% of the latin one

All measurements are taken in FontLab and reduced to 60%

Consistency study

Maaluma's consistent design features and idiosyncrasies

Maaluma's isolated and quirky inconsistencies

Thus, *Maaluma* is based mainly on calligraphy, and its design remains strongly a display-writing tool, respecting the particularities of the complex graphic structure of the script adhesion, when the first sketches clearly showed very naïve comprehension of it.

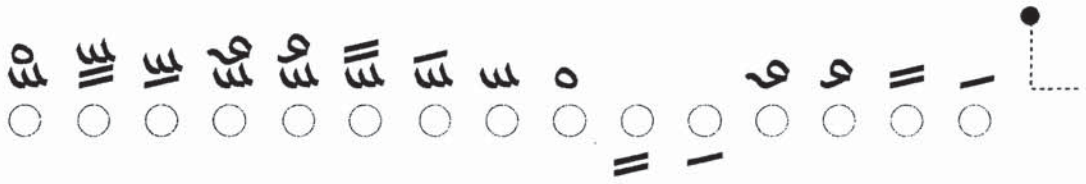
Beneath their details, *Maaluma's* letterforms share behaviours as they explore the key feature of the design. The characteristic modulation and low contrast are compensated by the way curves vary in thickness as they join to the stems, freely playing with construction without compromising their basic dynamics. The strong referencing of the baseline in *Maaluma's* letterforms is balanced by smooth heavy curves, often broken at subtle angles; its open counters and generous rounded shoulders and weight distribution gives *Maaluma* a strong horizontal flow enhancing the coherence of the word along a line consequently.

Maaluma is indeed a sturdy lively tool based on a unified display detached-attached alphabet concept, where all characters are carefully designed to preserve same width, which is the height of the Aleph equal to 100 as a unit, with some exceptions noted in the present letterforms hā' and tāh, that account for a maximum tolerance of 20% in width, vis à vis the initial module set up by the Aleph, whereas the Sīn accounts for a maximum of 15% on the other hand, observing a uniform visual for both detached and attached letterforms.

Maaluma medium

ء	آ	أ	ؤ	إ
ا	ب	ة	ت	ث
ج	ح	خ	د	ذ
ر	ز	س	ش	ص
ض	ط	ظ	ع	غ
ف	ق	ك	ل	م
ن	ه	و	ى	ي
ئ	لا	لإ	لأ	لآ
أ	پ	چ	ڤ	

Maaluma's vocalisation marks



From this manhood phase, onwards to planning a type family as its purpose compels, *Maaluma* italic version was devised along with the bold weight, and numerals as they also deviated from the same model and are provided in the expected variants illustrated in the following spread.

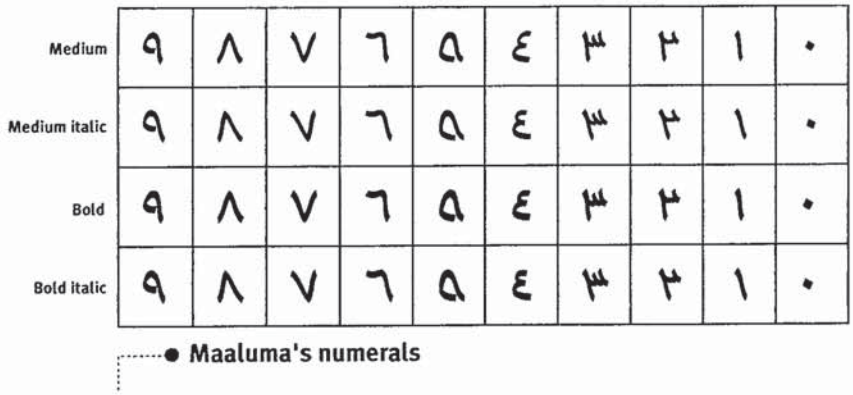
Maaluma bold

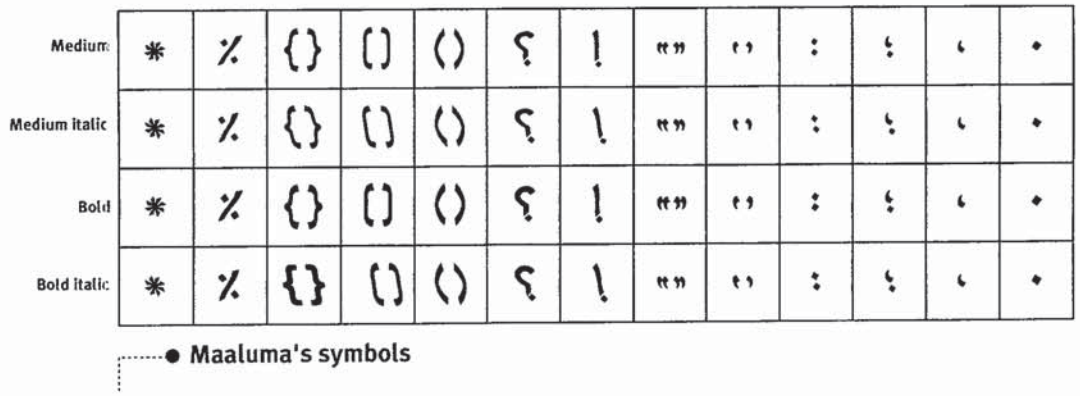
إ	ؤ	أ	آ	ء
ث	ت	ة	ب	ا
ذ	د	خ	ح	ج
ص	ش	س	ز	ر
غ	ع	ظ	ط	ض
ه	ل	ك	ق	ف
ي	ـ	و	ه	ن
لَ	لُ	لِ	لا	ئ
	ڤ	چ	پ	أ

As reading habits have encoded the italic with very precise functions and definitions, it gained more momentum. Much more than the slant angle, the "italic quality in *Maaluma* is underpinned by a greater cursiveness and allure, compelling its Latin matching chosen counter part '*Meta plus medium*' to follow the respective parallel oblique.

Maaluma medium italic

Maaluma bold italic





This new typographic undertaking of the writing system brings it to its calligraphic roots as well as opening contemporary routes for the design of Arabic typeface. The ability to write and draw shapes improves, evolves throughout the design process, but above all the eye becomes more critical and questioning; one of the turning points of *Maaluma* was experienced when I stopped focusing on isolated shapes, to consider the typeface as a system of proportions, just like in driving when you learn to overlook the short distance in order to transcend the overall course ahead for a better judgment. The relationship of the counters, the relative height of the extenders, the size and the width of the letters is much more important for the overall legibility of *Maaluma* typeface than a few calligraphic idiosyncrasies.

4.3.3 *Maaluma* phonemes' interpretations

My alphabet type design, *Maaluma* with its detached-attached display distinction follows— in its core incentive and out of respect for the Arabic cultural context— closely, the second abecedarian system called modern abecedarian that was largely in use in ancient times.

Carrying out the same referential academic clustering system of letters, assembling — letters of similar basic forms, but with a distinct phoneme, read according to the order and number of diacritics attributed to each respectively—in clusters of three to two and then to one, unlike their intrinsic numeric values, they add up in a crescendo of logics starting with the Aleph, followed by the Bā', pointing out their respective dominating sensory potential as highlighted previously by Abbas.

In tribute to the Arabic culture sacred connectives and according to Abbas' analysis, I chose one interpretation per phoneme retaining one image and its corresponding meaning, presenting my type design as an ensemble of the choir performing in the same cluster order or individually as connoted previously, poising the Aleph above the Horizon line as the maestro in charge of that choir. It unfolds as follows:

Aleph -- ا

The Aleph is well translated in this poised vertical masculine bending movement recalling the spiritual and majestic symbolism attributed to the maestro, the Lord, who marks the opening of the alphabet, and introduces from his high chair, the choir members by order, according to their ranking performance up and down the horizon line. Humbleness is equally manifest in the uprooting curve inherent to the Aleph lead position, as if in trans-state. Its allure evokes a slight ascending hissing sound emanating from one's soul. Its well-built height sets a fine visual match, compared with its type followers, the rest of the alphabet.

First cluster of three consecutive phonemes: Bā', Tā', Thā' along the horizon line

Bā'– بـ

As its shape clearly indicates, the Bā' is the first, yielding in awe before the Lord or the maestro, along the horizontal line, in the first cluster. Heavy but well balanced with its main bulging stature, it offers a welcoming shelter with its well or a water basin within a secure dwelling, worthy of the Aleph, marked by the engaging pressure latent, behind the lips, when pronounced, before its sudden explosive release.

Tā' – ت

Clearly lining up second in the queue, already yielding in awe before the aleph, the **tā** visual is supple and joyful with its two apparent volatile dots, dandling delicately over, as if conveying the timid rhythmical sound of tapping one's finger on the palm of one's hand, as in Abbas' peculiar tactile description of that motion.

Thā'- ث

Ranking third in the queue, yielding equally in awe before the aleph, the **thā'** however portrays the most glamorous feminine figure ever allowed to approach the master as described by Abbas. It owes it mainly to the playful three dots, a visual potential, adorning the dress, above the graceful cut around the shoulders, marking a similar intended seduction in its pronunciation as well, as it is uttered in a breath-like release, a volatile whisper, when engaging the three sexual organs, in the process—both, two lips and the tongue, at the same time.

Second cluster of three consecutive phonemes: Jīm , hā', Khā' on the horizon line.

In my endeavor to build as closely as possible on the modern abecedarian system, I found the following design of the second type cluster suitable for both my detached and attached *Ma'aluma* reformed concept.

Jīm – ج

With its poised upper bold rounded part, the Jīm, portrays as in Abbas' interpretation the humped back of a camel at rest. With this tiny dot at one corner lurking beneath the giant, its shape sounds intense and magnificent; but the explosiveness in the pronunciation is due to the great side-opening overhead.

ħā' – ح

Simple, elegant, the dynamic shape of the *hā,* infers delicates, speed and allure, suggesting an aristocratic flying bird, a pigeon soring gracefully backward to the master, flapping both wings high in the sky. It is soft and silky says Abbas, when uttered outwardly, emanating from the core of ones heart to reflect transparency of the soul.

Khâ – خ

Apparently similar in its basic form to its predecessor, the dot position above its upper opening is quite evocative; it infers pressure, tension, outwardness, an urge to dispose of or evacuate the contents, sustaining however, as Abbas puts it, contradictory suggestions of either disgust and filthiness, or purity and delicacy, noted as we engaged with full power the guttural potential during its pronunciation, and the pig figure, sustains, generally such values.

Third cluster of two consecutive phonemes: Dāl and dhāl on the horizon line.

Dāl – د

With its seemingly triangular static outline, relating to the bear, in shape and sound blind effect, held within the void, engaging full strength, of the jaws, in the pronunciation process, I chose the teddy bear visual for its similar heavy pace as in the analogy of Abbas.

Dhāl – ذ

With that smart dot overhead, the dhal appears stylish and handsome, with a manliness plus, a neck plus ultra, strolling proud like a rooster, as pictured by Abbas, boosting its cute crest, great visual potential translating the volatile stinging process of the tongue when engaged between the teeth, softly and with delicateness.

Fourth cluster of two consecutive phonemes: Rā' and Zāy along the horizon line.

Râ'– ر

Clearly dynamic, it is related to the articulation of the human body as approved by Abbas, its speed and strength when vocalized, as in my suggestive picture of a running child.

Zāy – ز

With that dot overhead, the **Zāy** relates to the strength in the biceps usually for the display of power when contracting the muscles of one's upper arm. It is well suggested in the picture of the mighty iron knight, symbol of chivalric spirit ready to strike, engaging in the vocals the jaws and the tongue, with contraction in a squeezing attempt to zip the air outwards.

Fifth cluster of two consecutive phonemes: Sīn and Shīn on the horizon line

Sīn – س

Quite evocative of the sharp smoothness in a crescendo release of the sound of air, when squeezed between the two rows of teeth, upper and lower, when pronounced as described as a tooth image by Abbas.

Shīn – ش

Pastoral, with its bold conspicuous outlines, when one murmurs it, the **Shīn, according to Abbas,** translates the warmth and harmony of a bird's nest, with a mother face hushing her little cheeks which are represented by the three dots lurking above.

Sixth cluster of two consecutive phonemes: Sād and dād on the horizon line

ŝâd– ص

Bulging like the rear molars with its bold rounded outlines, the Sād conveys the image and function of the sound amplifier on the previous dental sharp Sīn phoneme, building an inner echo within a full mouth, and impacting the silence with utter purity and innocence (*safaa*) pictured at best in the cheek image as described by Abbas.

Dād – ض

Incredibly energetic, the dād, relates visually and vocally to the rhythmic, beating pulse in a muscle throttle, enhanced by the dot overhead as if ejected and bouncing like a frog with its bulging belly and eyes. It engages muscles of the jaw and the tongue in full pressure against the upper maxillary in the process.

Seventh cluster of two consecutive phonemes: Tāh, Thāh, on the horizon line

***tâ'*– ط**

It has a most appealing shape, with its poised vertical end, portraying the bird's silhouette, in its fullness, as in Abbas' description, urging, with such visual potential one's desire to possess it or hunt it at any cost, engaging the full strength of the jaw muscles along with the tongue for pressure to convey a noisy echo and impact the loud call for the hunting ritual.

Zâ' – ظ

Clearly victorious, with that dot overhead as a distinguishing star, the image of the little energetic dear with its poised nose combines both visual as well as auditory potentials, impacting further the Arabic vocalization, as it amplifies in volume and sonority the intense Zāy phoneme, trapping the air tract with the tongue, before jutting it between the inner upper lip and the front teeth.

Eighth cluster of two consecutive phonemes: Ayn, Ghayn, on the horizon line

***ξayn* – ع**

It is one of the rare visceral phonemes in the overall language repertoire, distinguished in Arabic by its peculiar circular acoustic physiological contraction properties experienced during severe convulsions as described by Abbas, pictured in a knot or a noose.

Ghayn – غ

Here is indeed a puzzling concave shape for a peculiar guttural phoneme, with an ambiguous puzzling acoustic that titillates the palate, during the vocalization process, asserted Abbas, with a smart dot juggling overhead as in a baby's babble during sleep.

Kāf – ك individual phoneme above the horizon line

Apparently chaotic, the kāf with its multiple broken angles and irregular corners, translates incredibly, the irregular intermittent crackling sound, as described by Abbas of the jaws' audible fricative contraction of a hungry dog, crunching bare bones, in full strength when vocalized.

Lām – ل individual phoneme above the horizon line

Apparently loose, with a malleable outline, the Lām shape according to Abbas, relates to the tongue's fluidity, and its multifunctional purpose, audibly noted as the tongue flips up and down the palate with great ease when vocalized.

Ninth cluster of two consecutive phonemes Fā' and Qāf on the horizon line

Fā' – ف

Full of meaning, the Fā' shape portrays vigorously the swift snake poise as described by Abbas, inferring danger, with that dot overhead as if it were spitting out its deadly poison in attack. It mimics the mouth contraction when releasing air during vocalization, forcing the upper teeth to bite on the lower lip, as if out of fear or cold.

Qâf – ق

The Qāf shape is equally intense and translates great energy, in the monkey strategic crouching position, ready to jump swiftly like little soldiers on the master's call (the aleph). The two dots lurking overhead intensify the visuals and the sound echo, like distinct shining stars, as a reward on their sacred mission, as described in Abbas' allegory.

Mīm — م individual phoneme on the horizon line

Undulating in its overall shape, the Mīm relates to the smooth mellow motion of the waves, created by the falling raindrops on the floor, faintly audible with a mimic, when both lips, upper and lower, hold warmly together in the vocalization process, well illustrated in an aquatic wavy-like-pattern recalling Abbas' interpretation.

Nūn — ن individual phoneme along the horizon line

Despite its flow inwards, inferring spirituality and negation, it is overwhelming with its soothing emanation, sensed softly, during the vocalization, with the tip of the tongue warming up the center of the palate in the process, well illustrated in the candlelight illustration (*nour* in Arabic) as described by Abbas.

Hā'- ه individual phoneme crossing the horizon line

As its shape indicates clearly, the Hā' phoneme sustains contradictory evocative suggestions relating to the bizarre figure as it crosses the horizontal line, conveying clumsiness or idiocy refer to by Abbas, when another time it conveys radiance or an aura. Such undue dynamism is quite audible as the mouth opens fully in a bizarre breathing mimic, like the clown figure or *moharrej* in Arabic.

***Wāw* — و individual phoneme crossing the horizon line**

It rolls and unrolls to join, secure, and hold like a joining shingle, separate vehicles, as in Abbas' peculiar description; its seemingly triangular head top stamp, allows for circular and sideways smooth 3 D motion, with audible ease and warmth in the vocalization.

Yā' — ي individual phoneme along the horizon line

Quite evocative with its laying posture, like a hen brooding over its eggs as alluded at, by Abbas, in his allegories, waiting for these eggs to hatch, with a conspicuous proof of fecundity inferred by the two dots beneath, translating clearly the possessive notion and grammatical case attributed to that phoneme in particular, claiming out loud its lawful rights, with a sinking strident shriek conveyed with the nagging facial mimic.

Having viewed Maaluma individual phonemes' interpretation as elaborated on by Abbas, retaining only one respective image and its corresponding meaning per phoneme, they ought to be put into trial systematically within a supportive methodology.

4.4 Soft system methodology employed

4.4.1 Justification

The purpose of this study model was to test for the bouba/kiki phenomenon in young children and thus to test whether it is present early enough in development that it may indeed influence the learning of language. Although by age 2.5 years, mappings from oral sounds to object shape may have been influenced by language-learning, children at this age have far fewer words in their vocabulary from which to generalize; they have not yet mastered the correspondence between the sound of letters and their grapheme, and they are still at the age when influences among contiguous brain areas appear to be even stronger than in adults (Neville, 1995). Between ages 2–2.5 and 3 years, spoken language stops eliciting event-related responses over visual cortex (Neville, 1995) and language comprehension begins to alter visual-visual mappings (Smith & Sera, 1992; see Discussion for elaboration).

To test the bouba/kiki phenomenon in children learning language, four pairs of shapes were chosen, such that in each pair one shape was round and the other one was angular. In addition to the pair of shapes used by Ramachandran and Hubbard (2001), three pairs of contrasting shapes were also used that are optimal for stimulating V4v, the area active during forms of synesthesia that involve language (hearing sounds or seeing graphemes) (Gallant, Connor, Rakshit, Lewis & Van Essen, 1996; Kobatake & Tanaka, 1994).

4.4.2 Procedure

For each shape pair, a pair of two- or three-syllable words were constructed, of which one word contained rounded vowels (e.g. bouba, pronounced 'boo-bah') and the other, non-rounded vowels (e.g. k[ej]ki, pronounced 'keh-key') (see Figure 1). The word pairs were constructed to emphasize the vowel difference between the two members of each pair both in sound and in the appearance of the experimenter's lips as she (the experimenter) pronounced the nonsense words. The game was designed to allow the assessment of whether 2.5-2.8 year-old children consistently map words with rounded vowels to rounded shapes, and words with non-rounded vowels to angular shapes, in *Maaluma*, the game consists of matching a picture with one phoneme between two visual representations: the current Arabic letterform Naskhi, and *Maaluma* detached-attached display letter put into the trial; when Naskhi (Axt Salwa), is an easy to read, simplified Arabic letterform favored among children's educational books that has been in use for over twenty years now. The game will include four validation trials, in which a known mapping is tested: a coloured drawing to match with either one of those two letterforms beforehand.

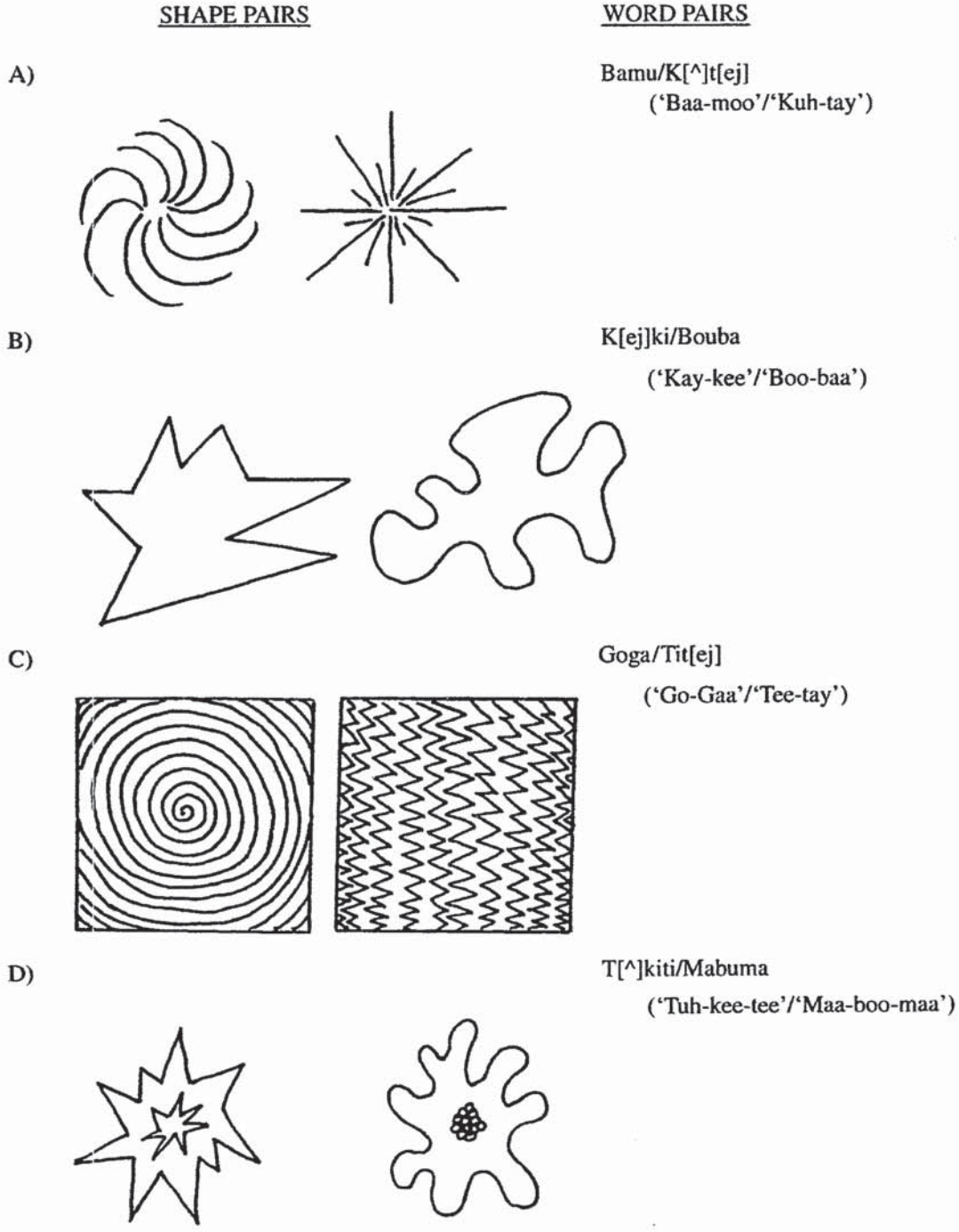


Fig. 10

The pairings of shapes used for the four experimental trials and the choice of words that accompanied them. In order to match the storyline, the shapes in pair A were drawn on construction paper; the shapes in pair B were cut to form holes in the top of a cardboard box; the shapes in pair C were drawn on separate sheets of white paper and glued onto Bristol board; and the shapes in pair D were made into three-dimensional objects using red clay. The shapes in pair B are those used by Ramachandran and Hubbard (2001). The words in parentheses indicate the pronunciation for each word pair.

4.4.2.1 Stimuli

Inspired by such a constructive game with multi-dimensional facets, the stimulus was devised and proved rewarding in the bouba/kiki experiments. With their contrasting match-up exercise—rounded versus non-rounded—as in (fig.5 p. 82), especially when tied up to a live active psychological story-line stimulus to maintain the children's interest and so to assess the generality of the phenomenon.

The stimuli format proved that toddlers could easily identify four pairs of cut-out drawings of colored dogs and rabbits with visual specifics (with or without polka dots) that corresponded to the chart in (fig.10). Both the game and its stimuli are equally manifest in *Maaluma* story-telling psychological cognitive strategy.

The experimenter, a female, will play with the child with stuffed toys called 'Mr Arnoub' and 'Mr Dabdoud' for a while to familiarize with the child participant before she begins with the story-building intrigues (psychological stimuli), saying "Hi, Mr. Arnoub! My name is Mr. Dabdoub. I can't see that well. Would you be my helper today? You would? Yayy!" This pre-test play, which lasts from 15 to 50 minutes, will continue until the child consistently brings the experimenter's dolls when asked and appears comfortable with the task.

The study consists of eight forced-choice trials (four experimental trials and four validity check trials). On the first validity trial the experimenter says: "This is fun. But I'm a little sad because I can't find my other friends. Mr. Arnoub, can you help me find them? OK let's look! I have a friend, he is a white bird (tayer)." The experimenter will show the child the pictures of the white and green birds (tayer) and continues "Do you see him? Can you bring me my friend, the white bird? He has white silky feathers on him." If the child picks the correct one, the experimenter will say, "Yayy! I'm so happy that you found my friend", or if the child picks the incorrect picture, the experimenter will say, "Are you trying to trick me? You're funny!" Scripts along similar lines will be used for the other three validity trials. At the first

experimental trial, the experimenter continues the story, "My friend the little white bird (tayer) drew pictures of his favorite friends. He calls them funny names. One is called tāh and looks like me." The experimenter will show the child the drawings labeled 16 in Fig. 7.b where the new designed phoneme under trial contrasts with the current one, before asking, "Which one do you think is tāh and looks like me?" Regardless of how the child responds during the experimental trials, the experimenter will respond with "good job!" The three other experimental trials follow a similar script.

Trials will be presented in the same order to all children –experimental / validity– whereas a validity trial is to follow the experiment, and to confirm the first choice made by the child. The experimenter will make sure the child is looking at her face when she recites the Arabic phonemes considered nonsense words for the children. During the experimental trials, half the children are asked to pick the shapes of four respective selected phonemes, while the other half are asked to pick the shapes of four other phonemes. To be included in the final analysis, participants need to correctly answer three out of four validity check trials.

4.4.2.2 Participants

Since Daphne Maurer, Thanunjeni Pathman, and Catherine J. Mondloch, a handful of psychologists dealing with brain and behavior sciences applied their methodology demonstration on 42 participants in 2006, relating to the shape of boubas/sound-shape correspondences in 2.5-2.8 year old toddlers and adults as well, *Maaluma* chose to follow in the same strategy, whereas the participants I will be concerned with, are limited to only children of 2.5-2.8 years old, among boys and girls, selected upon each preschool directory request as sound subjects with no neurological disorder or psychiatric disease present, as required by the bouba/kiki experiments. The preschools we visited follow a schedule order documented in a paragraph reserved especially for the experiments and preschools selected for that purpose.

4.4.2.3 Protocol

The protocol and procedures I shall follow have been already approved by the McMaster Research Ethics Board. After the procedures are explained and the

concerned personnel has given written consent, the child and the experimenter will sit facing each other, with no other interference. In order not to distract the child's attention or overcrowd his space and affect his behavioral response. Nevertheless, for a better objectivity, a resident psychologist will supervise the overall process.

A full instrumental package is submitted in advance to the four coordinators of each of these preschools selected previously. It is a complete document tool, offering an instructive colored manual reference, along with seven separate booklets containing each four matching correspondences formats, relative to each Arabic Naskhi (Axt Salwa) and *Maaluma's* letterforms with their corresponding images as in (fig. 6) down below. Attached as well a copy of the methodology part, tackling the stimuli factor and the protocol terms to be observed by both parties during the initiation.

Fig.6 / All the drawings used in the experiment are taken from children books "Educative cards of images" and "Read in Arabic"

The props will be constructed skillfully so that the children will feel at ease with the experimenter during the process. As is normal in *Maaluma* soft system methodology, no audiovisual stimuli will be used in the proceedings, which are congruent even on a

subtle level, as they can significantly modulate decision processes and child behavioral performance, a conclusion already advanced by Doehrmann. No F.M.R.I scanning exposure is allowed during the experiment, as the protocol of ethics obliges.

4.4.3 Experiments | Preschools visited

According to statistics obtained by both the Syndicate of Education and the syndicate of nurseries, the Metn accounts for approximately less than 1/4 a quarter of the overall 160 legally approved preschools and nursery facilities dispersed throughout Lebanon. In other words there are about 26 to 30 legally acknowledged nurseries located in the Metn along the littoral to start with Zalka, Jdeideh, New Rawda, up to Saloumeh, Dekwaneh, Sin el fil, and on to Mkalles, Mansourieh and finally Ain Saadeh and Fanar. Taking 10% out of 40, I suppose, four nurseries chosen from within the Metn sector would serve *Maaluma's* purpose. As there a few nurseries located in Mansourieh and its suburbs alone, I chose to visit the closest to my residency premises called *Mamina*, after *Le petit monde* in Jdeideh, a well-known preschool establishment, reputed for the variety of its classe-bourgeoise, that could be valuable in assessing the early brain influence of its children, followed by Bébé Roya in New Rawda, and last but not least Alice Nerguezian's nursery in Fanar that reflects the overall Armenian cultural assets valuable in appraising *Maaluma*'s potentials.

On the premises, coordinators of the preschool respective sections, manifested great concern and offered technical concrete assistance in the overall set up as to providing a somewhat quite environment, when in the latter preschool establishment we noted some disturbing commotion outdoors as some children were going on a summer colony. After briefing, the experimenter commissioned for the test observed closely the protocol of ethics as convened.

The time schedule was reserved to morning time between 8:30 and 11:00 hours. a.m. because children seem to be more vigilant and less disturbed. Experiments were set up upon classes of ten to twelve children by class, requiring a maximum time schedule of

10 minutes per child based on a cross model teaching method applied in preschools and schools in general, assessing four matchings in the process, a margin for familiarizing and introducing the puzzle within a story line.

Irrespective of the final results and out of simple curiosity, pretests were conducted previously among willing neighbors and acquaintances with 2.5-2.8 year-old children, and adjustment of strategies were made upon as of abandoning set up letter shapes to changing directives as in the case of the aleph (Fig. 6) that oscillated between right and left before flipping it finally to the left following the hand leading motion.

Fig.7

4.4.4 Results

when pairing up both the experiments and validity trials data in columns of black and white as in (fig.9) marking the respective score generated by each age group and number of participants as it occurred in each of the respective preschools or nurseries, the results were condensed, analyzed and reported in a display table of correspondences shown down below in (fig.8), where each of the 28 letterforms of Maaluma's overall score balance figures first in full with their varied pitch level results.

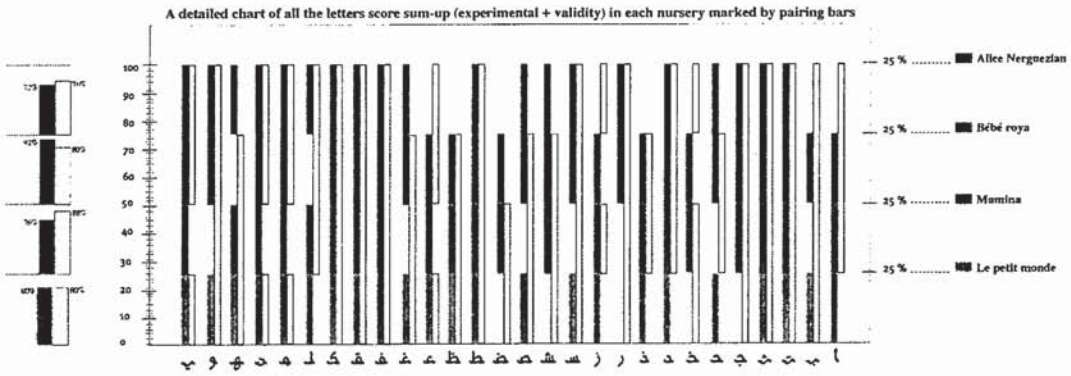


Fig.8

Divided upon classes either of 7 or 14 participants depending first on the number of children available in the 4 preschools, and second as a multiple of 28/number of the alphabet, in order to have an equitable division of the letters among children.

This detailed chart, is about the score sum up of all the letters in each nursery, each hue represents the score of the experimental trials, per nursery/per letter, whereas, The white bars represent the score of the validity trials, when the void means no score at all. Considering 100% the expected overall score, and 25% a unit base scale indicator per nursery in both bars, when shown, means 3 correct answers out of four passing, Then we can read clearly the track of all the letters per nursery. When in here, compressed on the scale of 1/75, we read the results according to each respective nursery.

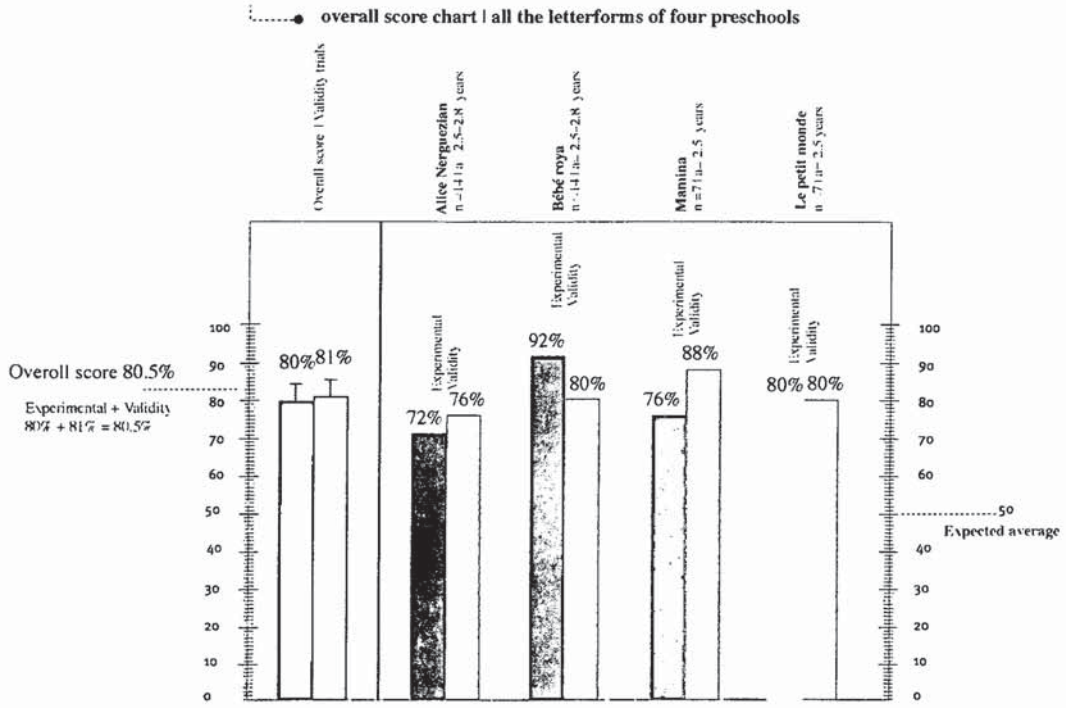


Fig.9

Reporting these results from the small scale into a final chart, we can read the varied pitch level scope of both the experimental & validity trials marked by Maaluma for all the letterforms in each of the four nurseries leading to final overall score for all the nurseries, which is 80%, a significant result ratio, when 50% is considered in here the expected average.

Graphically, the main effect of *Maaluma's* mapping potential success is quite apparent in the high recurrent pitch scores, marked by the matching correspondence perceptive strategy, clearly drawn in the table above whereas the bar tool results indicator soars significantly off, beyond the expected average with an overall ratio of 80.5% when the given results of the overall score of the experimental trials read 80% and the overall score of the validity trials read 80%. Quite significant, and rewarding as each letterform success average rate reads individually or within its respective cluster, proved greater than chance thus feasible; especially the *aleph* after oscillating from left to right and then to the left, when the *ta'*, the thā', and the fā'considered in particular a mimic phoneme by excellence, scored the highest preceded by the bā', the jīm, the sīn, as well as the *ṭâ'*, the qâf and the kāf that excelled unquestionably.

4.4.5 Discussion

Such high achievement in the results score, if not accurate is considered quite satisfactory in the valorization of *Maaluma's* main strategy and incentive as well. However, some observations noted by the experimenter and the concerned personnel ought to reflect upon, in the following discussion.

These observations are valid for all the trials of matching up letterforms and pictures within a time reaction ratio and error rates. Nevertheless if some consonants scored lower as noted by many, especially the experimenter and the assistant personnel, it was not due to the similarities of the basic shape within their cluster, because the mapping did not observe the abecedarian order but letters were picked up at random from different clusters to avoid such confusion. Both, The fatigue factor along with each respective toddler I.Q, often, account for such mismatching especially when the letters tested overlap the time margin.

In almost positive answers, the interaction of time responses of the child is confounded with hand effect, giving out a live and concrete proof of *Maaluma's* effect conducive affect success, whereas mismatching entailed incongruency reaction, and use of both hands at random or at the same time.

In pretests conducted individually on neighboring children where both the articulatory theory and mimic stimuli were observed closely, I noticed great incentive and behavioral reciprocity between the participants (toddlers) and the interlocutor, as she proceeded with a smart story line to capture their attention. A rewarding exercise that allowed us to reshuffle some outlines without disengaging the structure directives as justified in the example of the *aleph (*see fig.7 p.114).

Another peculiar observation was noted during the pretest experiments run individually on 2.5-2.8 year-old children of Syrian and Egyptian labor class whose Arabic speaking parents are either displaced or serving as caretakers (concierges) in office blocks in the vicinity, and who are alleged to have already familiarized with Arabic preliminary visuals in order to prove the bouba/kiki and thus *Maaluma's*

potential; it was a relief when we found out that children's brain of Arabic-speaking parents and background at the age of 2.5 or 2.8 is almost virgin, if not blank and the current Arabic letter shapes are not embedded in his mind yet proving Ramachandran and Hubbard right indeed.

This thorough discussion if not totally objective, is nevertheless fairly argumentative and far from being biased which brings us to conclude upon the collective data that the results land support to *Maaluma's* justifiable success, bound to influence and boost the development of Arabic language in the individual child and motivate its learning incentives onwards.

4.5 Conclusion

The goal of our study was to explore the *Maaluma* conducive induction model on pre-linguists infants, to prove that learning Arabic, considered most difficult so far, may become through "sound symbolic association" stimulating, not only to children and beginners but to all, facilitating in the process the whole educational curriculum system.

In fact, that 2.5-2.8 year old children responded non-randomly to the test, mulling over the correspondence between the consonants' respective shapes, and their acoustic properties as highlighted by *Maaluma* proved rewarding.

4.5.1 Implications

Indeed, it is quite satisfactory as it demonstrates that language is not completely arbitrary. On the contrary, the reshaped detached-attached *Maaluma* display letterforms with their handsome diacriticals, finely grounded in inherent sound-meaning relationship, are obviously stimulating as they engage mimetic sounds into mimicked actions in the process for a better dynamic communication.
Besides typographic knowledge, and the study of phonetics or phonology and vocalization, *Maaluma* engages in the psychological and neurological fields.
In observing closely *Maaluma's* conceptual methodology and its experimental live performance conducted indoors on pre-linguists infants to test "the articulatory"

theory and the "low-features" theory adopted and replicated previously in the bouba/ kiki study, we note a general mimic frenzy, a natural stimulus of encouragement for a better response and reciprocity of both attendants, the child and his caregiver. According to the "articulatory theory", this effect could be the consequence of links between speech perception and shape perception, mediated by hand and mouth and motor areas. The "low features" theory however asserts that shapes and pseudo-words associations, in here Arabic phonemes, are driven by links existing in the real world such as the one between frequency and size, as it is believed that there is cross-modal integration between auditory and visual stimuli.

There is further evidence that *Maaluma* can play an important role in reshuffling the Arabic language's dull old learning methods, to serve even more efficiently older children's apprenticeship, or simply beginners who are reluctant to follow.

4.5.2 Learning | Arabic stimuli

It can also generate more enthusiasm among people who already know Arabic towards rediscovering the potential insight of the language and its Islamic sacred roots. Adults will recognize with ease sound obsolete words/versus obsolete words that are not sound symbolic (Parault & Schwanenflugel, 2006). Since words are in constant flux (Clark & Roberts 1993), they are more easily learned and retained when they are sounded symbolically suited to their referent than their conventional synonyms which are not. Further, words which are more effective in inducing affect may be particularly stimulating to retain (Murdock 1959). Thus "Sound symbolism" in general, may be an example of a cross-linguistic universal" (Parker 2008, p.73). A secure appealing path for the Arabic word specifics survival when *Maaluma* actual detached-attached letterforms will augment the specifics of their relationships, with its mimicked conducive visual strategy and mastery, overlapping the timid attempts of early Neolithic sound patterns and the ancient forms of speech, engaging in the process one behavioral response to a sound that coincides with the affect induction model upon the acoustic startle response (Koch 1999).

If sound symbolism is as old as humanity's early cross-linguistic boundaries, why does Arabic remain strategically representationally obscure, and its alphabet still in

the 3rd millennium difficult to handle. *Maaluma* can certainly transit it pleasantly onwards into the future.

4.5.3 Future studies

Indeed, *Maaluma* effect should work as an incentive to delve further in the bouba/kiki study and try to explore its multi-facets cross-cultural dimensions and causes that remain mostly unknown.

Future studies should seek to examine brain activations in other neighboring cortical areas around the lateral occipital of the brain, identified as metamodal operator processing shape and color information referred to in my methodology as V4v, the visual pathway, and transcend the visual experiments encompassing colors and people to reach out for other cognitive dimensions such as the olfactory, the gustative and the tactile as recalled by Abbas, similarly to their already studied counterparts, the auditory and the visual, whatever the order of the input modality, and assess their entangled realities with phonemes.

Further, future investigation should focus on whether sound-shapes mapping adopted by *Maaluma* is evident even before infants begin to speak, as would be predicted by Ramachandran and Hubbard's model and our own postulation of neonatal synesthesia (Maurer & Mondloch, under press).

It may also involve the use of brain imagery, with the parents consent, as a way to bring conclusive evidence for one of these theories that *Maaluma* is built upon, the "articulatory" theory that would show activations in motor and premotor cortex sensitive to matching and the "low features" theory as it would predict activation in early sensory areas, favoring the proactive rather than the reactive. As the results were inconclusive and support a certain conflict of order, they bring more questions than answers, and do not really allow us to conclude about our theories. Since the first studies on the bouba/kiki effect were rather exploratory at first, much remains to be done in the field as it is thought that behavioral experiment and neurological behavior could help disentangle explanations. The use of soundless videos of articulated syllables or pure tone varying in frequency and amplitude with shapes as in Peter

Cho[1] sci-fi exploration, a Japanese interactive designer, would bring essential clues to what is going on when associating sound frequency and shape size and shapes. I wonder if you are finally convinced as I am just like Ramachandran and Hubbard that more explanations of the bouba/kiki effect could bring substantial insight into *Maaluma's* typographic future potential.

Perhaps a single phoneme could further transcend the word, or a cluster of phonemes, to convey the meaning as in coded or condensed language used by the navy, by the army, or even by special units, and now could serve as exclusive image brand identity? Saving considerable time, waste material, and costly medium of expression in the process.

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