A QUANTITATIVE AND STYLO-STATISTICAL APPROACH TO THE PHONO-SEMANTIC STRUCTURE OF TWO COMPANION-PRAYERS OF THE QURʾĀN: *AL-FALAQ* AND *AL-NĀS*

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Abstract

This paper is a linguistic investigation of *al-Falaq* and *al-Nās*, two companion-prayers in the Qurʾān. Although both prayers exhibit a marked symmetry on both lexical and phonological levels, this symmetry has not been extensively studied by scholars due to the highly familiar nature of these two short prayers. Immediately noticeable on the phonological scale is the highly cacophonous and staccato rhythms of *al-Falaq*, which appear to be produced by a profusion of fricatives (/f/, /kh/) and plosives (/q/, /b/, /d/), combined with a scarcity of nasals and glides. In contrast, *al-Nās* has a much smoother sound patterning as a result of the profusion of nasals and sibilants. This striking numerical difference in the phonological configuration of these two companion-prayers leads us to suspect the presence of phonosymbolism or a correlation between phonological patterning and subject matter. In other words, this variation can be accounted for by shifts in subject matter from the dynamic process of "splitting" in *al-Falaq* to the movements of the Hisser (Satan) in *al-Nās*. Subjecting the phonological data in both texts to simple statistical checks will allow us to be sure that these observed patterns are indeed statistically significant and not attributed simply to chance variability. The perspective that I am adopting here is stylo-statistical, where the main purpose is to devise a measure that is not only statistically satisfactory but stylistically interesting as well.

1. Introduction

This paper is part of a larger linguistic investigation of *al-Falaq* and *al-Nās*, two companion-prayers in the Qurʾān that constitute chapters 113 and 114, respectively. Collectively, they are known as *al-muʿawwidhatān* (the two givers of refuge) and are considered to be highly familiar prayers, commonly recited by all Muslims and the first to be memorized by school children at a very early age. It is this very familiarity that somehow hinders us from perceiving the highly symmetrical patterning that is present in these companion prayers on both lexical and phonological levels. Immediately noticeable on the phonological scale is the highly cacophonous and staccato rhythms of *al-Falaq*, which appear to be produced by a profusion of fricatives (/f/, /kh/, /gh/) and plosives (/q/, /b/, /d/), combined with a scarcity of nasals and glides. In contrast, *al-Nās* has a much smoother sound patterning as a result of the profusion of nasals /n/, glides /w/ and sibilants /s/. My previous studies of these prayers focused on high-lighting the componential process needed to translate non-core lex-emes such as *falaq*, *waqab* and *waswās* and on revealing the pho-netic iconicity operative in the texts through the intricate use of frica-tives and plosives (Fatani, 2006; 2004; 2002a; 2002b). By mobilizing the results of these previous studies and by conducting an exhaustive quantitative analysis, this present contrastive investigation hopes to reveal the two-way phonological symmetry that binds both prayers together and to contribute to current research in language universals by providing new data on phonosymbolism from a non-Indo-European language, i.e., from the Arabic language system. (A rudi-mentary outline of this quantitative approach to the phonosymbolism of the prayers was first presented in 2005 at the Fifth Conference of Iconicity in Language & Literature in Krakow, Poland, where the sub-stantiation of this concept in medieval Arabic was received with en-thusiasm.) It must also be noted at the outset that the concept of phonetic iconicity (*dalālāt al-ṣawt* or *muḥākāt al-ṣawt li-l-maʿnā*) has been studied by many medieval scholars of the Qurʾān, such as Ibn Jinnī (d. 393/1002), al-Zamakhsharī (d. 538/1143) and Abū Ḥayyān (d. 745/1355). The concept can also be found scattered in

fragmented form in various exegeses of individual chapters of the Qurʾān. Modern Arab commentators (al-ʿAbd, 1984; Bū ʿUmāma, 2002; Abū Mūsā, 1987; al-Rāfiʿī, 1990; Ḥassān, 1993; al-Ṣaghīr, 2002) have also contributed extensively to the domain. However, most studies focus on the phonosymbolical structures of individual iconic words. To date, no attempt has been made to reveal phonosymbolism in a whole sūra or to compare the phonosymbolism operative in two sūras or companion texts.

It is taken as axiomatic that semantic significance of various kinds underlies such variation in language use. Hence, this striking numerical difference in the phonological configuration of these two companion-prayers leads us to suspect a correlation between phonological patterning and subject matter. In other words, this variation in the way consonant types are used can be accounted for by shifts in subject matter from the dynamic process of "splitting" (*falaq*) in *al-Falaq* to the movements of the Hisser (*al-waswās*) in *al-Nās*. I contend that these two dynamic processes are mapped onto the phonological structures of the prayers, hence producing two texts that are quite similar in syntax but strikingly different in terms of phonological construction. In this paper, my main objective is to subject the observed phonological data in both texts to thorough quantitative analyses and simple statistical checks that will allow us to be sure that the observed phonological patterns prevalent in both texts are indeed statistically significant and not attributed simply to chance variability. In more technical terms, these statistical checks will allow us to reject the null hypothesis, which states that any variation between the observed numbers in groups and what one would expect is due to chance. If there is a significant difference, the variation is more than is expected by chance, which suggests that some other factor is involved. The perspective that I am adopting here is *stylo-statistical* (Crystal, 1997), where the main purpose is to devise a measure that is not only statistically satisfactory but stylistically interesting as well.

2. Primary Observations

Primary quantitative results reveal a significant difference between the data of obstruents (stops, fricatives and affricates) and sonorants (nasals, liquids and glides), reflecting a shift away from fricatives and stops in *al-Falaq* (Text 1) in favor of nasals, glides and liquids in *al-*

Nās (Text 2). By making use of statistics, I have attempted in this paper to substantiate the initial impression of word-position choices and to provide quantitative evidence to prove the presence of a pervasive fricative-plosive word patterning in Text 1 and a nasal-sibilant word patterning in Text 2. It is my hypothesis that the sequential ordering of phonemes in these two adjacent texts are meant to mimic and re-enact the external processes and experiences referred to on the lexical or semantic levels. Both prayers should therefore be perceived as *iconic diagrams* (Fischer & Nänny, 2001) in which the form iconically mirrors the content in the same way that charts, maps and graphs are motivated and governed by their real-world data. To test the validity of this phono-iconic structuring, a statistical comparison will be made between both adjacent texts. The striking numerical differences in their semantic and phonological configuration should sensitize us to the pivotal role that stylo-statistical studies can play in revealing layers of hidden meanings in Qur'ānic texts. Although this paper seeks to suggest that there are semantic constraints governing the use of obstruents and sonorants, no attempt will be made to provide an extensive analysis of the subject matter or the lexico-semantic structure of the texts; for that, the reader must look at the numerous exegeses of these highly familiar prayers.

3. Methodology

As Crystal (1997: 67) observes, stylo-statistics investigates matters of frequency and distribution in three main areas:

1. Formal characteristics that do not relate directly to the meaning of a text, such as parts of speech, and the length of words, sentences or lines.

2. Characteristics that relate directly to meaning, such as the size and diversity of an author's vocabulary.

3. The detailed study of single words, or small sets of words, such as *and*, or the use of *on* vs. *upon*.

This paper deals with the second area of investigation, that is, with characteristics that relate directly to meaning. However, the main focus is not on vocabulary but phonology. It is my contention that the consonantal structures of the content words (i.e., verbs, nouns and adjectives) in both texts, in particular the positional distribution of

plosives, fricatives and nasals in word-initial and word-final positions, function as an important instrument of disambiguation. Four basic steps are followed: (1) identifying the most-frequently occurring consonant types in content words, (2) devising a frequency and positional preference by counting all the instances of plosives, fricatives and sonorants and identifying the preferred position of each consonantal class, (3) placing these consonant classes in descending rank order of frequency and (4) comparing and contrasting the phonological structures of *al-Falaq* and *al-Nās* in terms of frequency, rank and preferred word-position of consonant types.

To check the reliability of the data, two simple statistical checks of significance known as the *preference test* and the *distinctiveness ratio* (DR) are used (Kenny, 1982: 69-72). These are extremely versatile techniques applied to many different kinds of quantitative work where the basic problem is to compare the scatter of scores. They are employed here to look at differences in the way the phoneme classes are distributed among the content words in both texts. The results show that there is in fact a real and reliable relationship between the patterning of obstruents and sonorants and the variation in subject matter. With this limited amount of linguistic features and with such a small language sample, the analysis should corroborate the motivated use of the fricative-plosive pattern in *al-Falaq* and the nasal-fricative pattern in *al-Nās*. Before presenting the texts, it is important to note from the outset that highlighting the interrelationship between form and subject matter necessitated a new translation of both prayers. Reliance on an existing English translation was not possible because no single published translation can answer the purposes of an article such as this. This is basically because most translators aim at rendering the communicative meaning of the text rather than the denotational meaning of individual lexemes. Crucial words to our analysis, such as 'splitting,' 'sputterers' and 'Hisser,' even though they represent a corresponding one-to-one equivalency, have not been incorporated into any existing translation to date.

4. Stylo-statistical Analysis of *al-Falaq* (T1)

4.1 The Text

1. Say I seek refuge with the Lord of the splitting
   qul aʿūdhᵘ bi-rabb al-falaq

2. From the evil of what (He) creates
   min sharr^i mā khalaq

3. And from the evil of a plunger when it flows
   wa-min sharr^i ghāsiq^in idhā waqab

4. And from the evil of the female-sputterers in the knots
   wa-min sharr al-naffāthāt fī l-ʿuqad

5. And from the evil of an envier when he envies
   wa-min sharr^i ḥāsid^in idhā ḥasad

4.2. Content Words and Function Words in *al-Falaq* and *al-Nās*

Content Word List		Function Word List	
qul	say	*bi-*	with
aʿūdh^u	i-seek-refuge	*al-*	the
rabb	lord	*min*	from
falaq	splitting	*mā*	what
sharr	evil	*wa*	and
khalaq	creates-3MS	*min*	from
sharr	evil	*idhā*	if
ghāsiq	plunger	*wa*	and
waqab	flows-3MS	*min*	from
sharr	evil	*al-*	the
naffāthāt	female-sputterers	*fī*	in
ʿuqad	knots	*al-*	the
sharr	evil	*wa*	and
ḥāsid	envier	*min*	from
ḥasad	envies-3MS	*idhā*	if

4.3. The Dynamic Process of "Splitting"

Although this paper deals exclusively with stylo-statistics and does not offer the reader an extensive semantic interpretation of the text, one specific semantic issue should be borne in mind when examining the companion-prayers. The title-word *al-Falaq* contains the central idea advanced by the text and is thus crucial to our analysis because it allows us to decode the prevalent iconicity of the text. A precise definition of the term is thus necessary from the outset of the study.

As evident from the word "splitting," the English equivalent I have used, *al-Falaq* is derived from the verb *fa-la-qa* the primary sense of which is "to split," "to cleave," or "to break." Both the Arabic term and its English equivalent are commonly associated with physics and biology and are used to refer to the dynamic process of "fission" (Fatani, 2004: 174). The dynamic meaning of the word is all important to our analysis.

4.4. Frequency Distribution of Obstruents & Sonorants

There are 15 content words (nouns and verbs) and 15 function words (prepositions and conjunctions) in the text. Within content words, there are a total of 40 phonemes, 30 obstruents (fricatives and plosives) and 10 sonorants (trills, liquids, nasals and glides), distributed as follows:
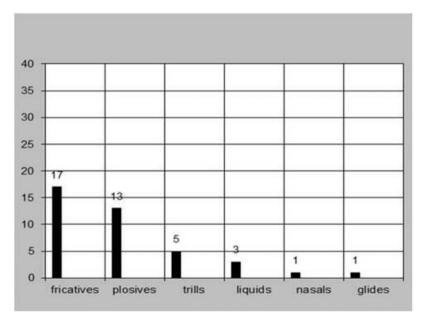

Fig. 1. Frequency of distribution of obstruents & sonorants in *al-Falaq*

From this chart, we can see that the most popular values on the X-axis are the fricatives and the plosives, i.e., the obstruents. Together, these two high-frequency consonant classes account for 75% of all consonants in the lexical category of words (or display a 0.75 rate of occurrence). In terms of consonantal distribution, the two high points

of frequency represented by the fricatives and plosives indicate the bimodal nature of the text. In contrast, the sonorants have an extremely low rate of distribution, making up only 25% of the consonants. The ratio of obstruents to sonorants is thus 3:1. It is important to note at this stage that the sonorants almost always occur in monosyllabic words like *qul*, *rabb*, and *sharr*, which have less communicative value than the polysyllabic words. Within the polysyllabic category, we find that nasals and glides have a statistically significantly low rate of occurrence because they occur only once in the corpus. They are thus *minus-words*, which mark genuinely discriminating phonological characteristics of the text. In other words, the sonorants are strikingly less prevalent but nevertheless quite significant statistically by virtue of the fact that both nasals and glides occur only once in the whole text. In terms of percentage, the obstruent/sonorant data are as follows:
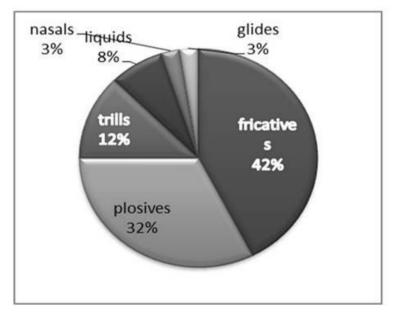

Fig. 2. Distribution of obstruents & sonorants by percentage

4.5. Positional Frequency of Obstruents and Sonorants

Obviously, the most crucial question to our study is what proportion of the text is made up of occurrences of the fricatives in word-initial position and plosives in word-final position. To use Lyons'

(1977: I, 43) terminology, what is the positional frequency of the occurrences of obstruents? The relevant data are as follows. Of the 17 fricatives, 10 are in word-initial position, 6 in word-medial and 1 in word-final position. Within the plosive category, 9 of the 13 plosives are in word-final position, 2 in word-medial and 2 in word-initial position. There are thus 10 words that have fricatives in word-initial position as opposed to 2 words that feature plosives. In word-final position, there is only one word that ends with a fricative as opposed to 9 words that end with plosives. Two words, *waqab* and *naffāthāt*, retain the final stops but substitute the fricatives with the approximates /w/ and /n/. Of the total number of content words (15), 6 start with fricatives and end in stops. Only one word reverses this phonological pattern, the matrix verb *aʿūdhᵘ*, which starts with a plosive and ends with a fricative. The positional frequency of the occurrences (Lyons, 1977: I, 43) of obstruents and sonorants may be presented more clearly in graphical form:
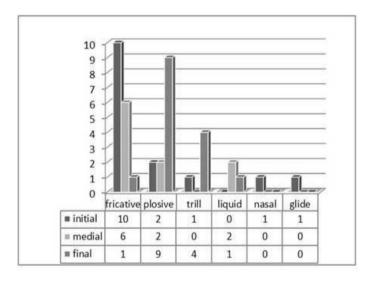

	fricative	plosive	trill	liquid	nasal	glide
■ initial	10	2	1	0	1	1
▨ medial	6	2	0	2	0	0
■ final	1	9	4	1	0	0

Fig. 3. Positional frequency of occurrence of obstruents & sonorants.

4.6. Positional Frequency of Occurrence in Polysyllabic Content Words (PCW)

If we exclude the 6 monosyllabic words *qul, rabb* and the 4-times repeated *sharr* and count only the 9 polysyllabic words, an even

more striking patterning is revealed. We find that the 28 phonemes that make up the polysyllabic category of words are divided into 13 fricatives, 11 plosives, 2 liquids, 0 trills, 1 nasal and 1 glide. Hence, the obstruents (24 occurrences) now control 85% of the words. The following chart outlines the positional frequency of occurrence of obstruents and sonorants in the polysyllabic category:
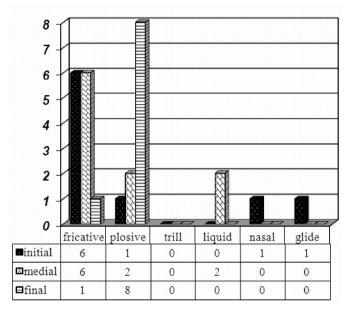

	fricative	plosive	trill	liquid	nasal	glide
■initial	6	1	0	0	1	1
▨medial	6	2	0	2	0	0
☐final	1	8	0	0	0	0

Fig. 4. Positional frequency of obstruents & sonorants in polysyllabic words

As is evident from the chart, plosives in the final position represent the highest category in the scale (8 occurrences), followed by fricatives (6 instances) in both the initial and medial positions. The fact that sonorants are now reduced almost to a minimum and totally blocked from word-final position is evident; the trill is reduced to zero instances. Hence, we can conclude that the preferred phonological pattern in the text is that of a fricative-fricative-plosive structure. The following pie chart highlights this striking phonemic distribution in terms of percentages.
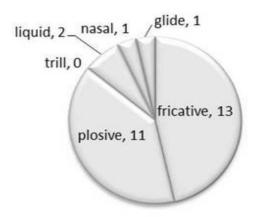
**Fig. 5. Percentage of obstruents & sonorants in
polysyllabic content words**

4.7. Phonemic Patterns of Combination

To highlight the prevalence of fricative and plosives in the text further, we examine 9 phonological features, all to do with plosives, fricatives and sonorants in polysyllabic content words (PCW). The results reveal 9 possible combinations of fricatives, plosives and sonorants in word-initial and word-final positions. The following table shows these phonemic combinations, the number of occurrences of each combination in the 9 polysyllabic words, their value in percentage and their rank.

	Number of occurrences	Percentage	Rank
Fricative-plosive	6	66 %	1
Fricative-sonorant	0	0 %	4
Fricative-fricative	0	0 %	4
Plosive-fricative	1	11 %	3
Plosive-sonorant	0	0 %	4
Plosive-plosive	0	0 %	4
Sonorant-fricative	0	0 %	4
Sonorant-plosive	2	22 %	2
Sonorant-sonorant	0	0 %	4

Fig. 6. Ranking of phonemic combinations

In terms of ranking, we find that the highest rank is allotted to (1) the fricative-plosive combination, followed by (2) the sonorant-plosive combination, (3) the plosive-fricative combination represented by the matrix verb *aʿūdh^u* and finally (4) a group that includes 6 combinations that were never lexicalized in the text, i.e., zero percentage.

Equally important is the fact that all the polysyllabic words make use of three voiced plosives, /q/, /b/ and /d/, which can all be grouped under the Arabic *qalqala* group, a category of five consonants that includes all the voiced plosives, namely, /q/, /ṭ/, /b/, /d/ and /j/. Of these, the phoneme most frequently used is /q/, which appears in all three word-positions: word-initial (*qul*), word-final (*falaq-khalaq*) and word-medial (*waqab-ʿuqad*). In terms of distribution, [q] alternates between 1 and 2 instances per line until its final reduction to vanishing point in line 5. In other words, /q/ is repeated in various phonological combinations in each of the rhyming words, except in the final word, where it is replaced by the fricative /s/ in *ḥasad*. It is also significant to note that /q/ is the strongest of the voiced plosives and has a phonological structure that consists of the following articulatory features: +voiced, +back and also +emphatic; it is the most powerful when placed in final position where it immediately acquires aspiration. As such, it functions as an important marker of dynamic action in the text and can be seen as a phonetic metaphor of the sheer energy involved in the process of splitting. Because the /q/ appears to migrate in a sequentially decreasing order from final to medial to zero position, we can safely assume that there is an attempt to decrease the acoustic intensity of the text. This phonological decrease is meant to accommodate a semantic shift to a new form of supplication in *al-Nās*, where the subject matter is not the kinetic turbulence of splitting but the continuant and slithering movements of the *waswās* (the Hisser) as he hisses and incites people to sin.

4.8. Word-position Preference & Distinctiveness Ratio (DR)

As researchers in stylometry explain, to study word-position-preferences, counting the number of occurrences of each of the word-positions is a sufficient substitute for counting the consonants in the entire text (Kenny: 68). A good place to start is by calculating the texts *preference* between fricatives in word-initial position A

(henceforth WIP) and fricatives in word-final position B (henceforth WFP). We can give numerical expression to the text's preference between word-position A and B by calculating the proportion as follows:

$$\frac{\text{number of occurrences of A}}{\text{number of occurrences of A + number of occurrences of B}}$$

Obviously, if the text prefers A to B, then this proportion will be greater than 0.5; otherwise it will be equal to or less than 0.5. If we make use of this simple statistic, we find the following proportions.

$$\frac{10 \text{ (fricatives in WIP)}}{10 \text{ (fricative in WIP) + 1 (fricatives in WFP)}}$$

The proportion of fricatives in initial position is 0.9, an extremely high rate of occurrence that reveals the text's preference for fricatives in WIP in comparison to WFP. If we define the proportion of fricatives from the point of view of WFP, we find that it is $1 \div (1 + 10) = 0.09$, an extraordinary low-frequency position that further emphasizes the fact that fricatives are more common in WIP, and that this preference is a distinctive characteristic of the text.

If we wish to calculate the text's preference between plosives in WFP and plosives in WIP, the proportion is as follows:

$$\frac{9 \text{ (plosives in WFP)}}{9 + 2 \text{ (plosives in WIP)}} = 0.8$$

The proportion of plosives in WFP is 0.8, again an extremely high rate of occurrence that is almost identical to the high-frequency distribution of fricatives in WIP. By contrast, the proportion of plosives in WIP is 0.1, an extraordinary low number.

We use proportions again to illustrate how essential these word-positions are for fricatives and plosives. For instance, we can compare the proportion of fricatives in initial position with the proportion of plosives in initial position by applying a simple statistic called the distinctiveness ratio (DR). If we have the rates of occurrence for both fricatives and plosives in WIP position, we can calculate the ratio:

$$\frac{0.9 \text{ (rate of occurrence of fricatives in WIP)}}{0.1 \text{ (rate of occurrence of plosives in WIP)}} = 9$$

The distinctiveness ratio of the fricatives in WIP is 9, a high DR that is indicative of the text's preference. (The consonants that have a DR greater than 1.05 are *plus-consonants*; those that have a DR less than 0.67 are *minus-consonants*.) To calculate the DR of plosives in WIP, we simply reverse the rate of occurrences. The calculation for this word-position is 0.1, an extremely rare occurrence for plosives:

$$\frac{0.1}{0.9} = 0.1$$

In terms of WFP, the ratio is as follows:

$$\frac{0.8 \text{ (rate of occurrence of plosives in WFP)}}{0.09 \text{ (rate of occurrence of fricatives in WFP)}} = 8.8$$

The DR of plosives in WFP compared to fricatives is an extraordinarily high 8.8, indicating a preferred position for plosives in the final position. If we reverse the rate of occurrences, we will find that fricatives in WFP are minus-consonants with a low DR of $0.09 \div 0.8 = 0.1$. There is a significant difference between plosives in WFP and fricatives in WFP, indicating that the preferred position for positives is the final position and the preferred position for fricatives is the initial position. Subsequently, these phonological patterning figures do not represent chance variability.

5. Stylo-statistical Analysis of *al-Nās* (T2)

5.1. The Text

1. Say I seek refuge with the Lord of the people
   qul aʿūdhᵘ bi-rabb al-nās

2. the King of the people
   malik al-nās

3. the God of the people
   ilāh al-nās

4. from the evil of the retreating Hisser
   min sharr al-waswās al-khannās

5. who hisses in the hearts of the people
    alladhī yuwaswis^u fī ṣudūr al-nās

6. from among the Jinn and the people
    min al-jinnat^i wa-l-nās

5.2. Content Words & Function Words in *al-Nās*

Content Words		Function words	
qul	say	*bi-*	with
a'ūdh^u	i-seek-refuge	*al-*	the
rabb	lord	*al-*	the
nās	people	*al-*	the
malik	king	*min*	from
nās	people	*al-*	the
ilāh	god	*al-*	the
nās	people	*alladhī*	who
sharr	evil	*fī*	in
waswās	hisser	*al-*	the
khannās	retreating	*min*	from
yuwaswis^u	hisses-3ms	*al-*	the
ṣudūr	hearts	*wa*	and
nās	people	*al-*	the
jinnat^i	jinn		
nās	people		

5.3. The Dynamic Process of "Hissing"

In terms of semantics, *al-Nās* follows the same formulaic pattern used in *al-Falaq*: *Say: I seek refuge with the God of X from the evil of Y.* However, the supplicant here is seeking the protection of God not in His capacity as "lord of the splitting" but rather in His capacity as "lord of the people." In contrast to T1, the supplicant is not seeking the protection of God from a diversity of "evils" but rather from one major evil, namely the Hisser (*al-waswās*), a familiar and iconic epithet for Satan. This more or less subtle change in subject matter is accompanied by a dramatic change in the phonetic configuration of the text that mimics the basic activity referred to in the text, i.e., the incessant hissing of Satan in the hearts of man. Thus, the repetitive use in word-final position of the fricative /s/, a phoneme low in fre-

quency and high in susurration, comes close to being a direct transcription of the devil's repetitive and secret incitements to evil (for a comprehensive componential analysis of the verb *waswās* see Fatani, 2006: 662-664; 2002a: 51-70). There thus appears to be an attempt to introduce a new controlling phoneme, namely the /s/ versus the /q/, which figured so predominately in T1. The /s/ grapheme in Arabic /س/ is significantly an acrophonic sound (i.e., a picture of an object) that originally referred to a pillar or column. It thus corresponds closely with the text's classification of God's authority and power in ascending order, from the "Lord" of the people, to the "King" of the people and finally to the "God" of the people. This classification also implies a hierarchical division of people into "families," "nations" and "races." This iconic stacking image contrasts with the circular image predominant in T1 and curiously inherent in the Arabic /q/ or /ق/ grapheme, an acrophonic sound originally referring to a knot or cavity.

5.4. Frequency Distribution of Obstruents & Sonorants

As further evidence of the semantically motivated use of plosives and fricative in *al-Falaq*, a quick phonological analysis of its companion-prayer, *al-Nās*, is warranted in an attempt to confirm the pivotal roles that obstruents and sonorants play in the text and to validate the hypothesis that both texts must be viewed as complementary iconic diagrams. One must keep in mind that both prayers are companion-pieces or adjacent texts and that, therefore, any striking statistical deviation from the fricative-plosive pattern outlined in *al-Falaq* should be viewed as being motivated by constraints of subject matter.

If we compare both texts in word-list style, three facts become immediately clear. First, both texts are composed of 30 words, but the distribution of content words and function words in *al-Nās* is less symmetrical; there are now 16 content words and 14 function words. Second, *al-Nās* features the use of an adjective, *al-khannās* (*the retreating*), a word-class completely excluded from *al-Falaq*. Third, and most striking, the end-rhyme word *al-Nās* repeats except in line 4, where the word is embedded within the highlighted adjective *al-khannās*. This apparent phonological difference between both texts is highly significant to our study. Of particular importance is the difference between the data of obstruents and sonorants, which reflect a

shift away from the fricative-plosive combination in *al-Falaq* in favor of nasal-fricatives or glide-fricative combinations in *al-Nās*. There are a total number of 43 consonants within the category of content words. These are distributed as follows: 18 sonorants, 17 fricatives and 8 plosives. (Note that the affricate /j/ in *jinnat[i]* is classified as both a plosive and a fricative because the production of this sound involves both consonant types.) Collectively, the sonorants and the fricatives now make up 81% of the content words rather than the fricatives and plosives. The sonorants, which represented only 26 percent of the content words in T1, are now the highest ranking phoneme in T2 representing 41%. (Note that the phoneme /j/ in *yu-waswis[u]* is also classified as a glide.) By contrast, the plosives made up 32% of the content words in T1 but now ranks lowest among the consonants with only 8 occurrences (18%) placed most often in word-initial rather than in the emphatic word-final position. The /q/ featured prominently in T1 but now occurs only once in the monosyllabic verb *qul* that is shared by both texts. We also find that within the sonorants, the nasals that had only been used once in T1 in the word *naffāthāt* now total 7 in number and are placed in word-initial position in all of the rhyme words represented by the repetitive *al-nās*. This number is actually much larger because many of the nasals are doubled or duplicated in pronunciation (e.g., *khannās* and *al-nās*). T2 also has a high percentage of fricatives in the final position, whereas the reverse is the case in T1 with fricatives never occurring in word-final position, except in the shared matrix verb *aʿūdh[u]*. The following graph makes clear this variation between T1 and T2 in term of distribution of obstruents and sonorants.
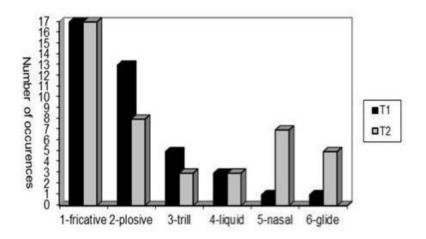
Fig. 7. Contrastive distribution of obstruents & sonorants in T1 & T2.

The above chart shows that the fricatives and the liquids represent constant variables in both language types; their numbers are fixed at 17 and 3, respectively. The plosives, nasals and glides succeed in bringing about this phonological variation between both texts. The above chart reveals the sudden rise of nasals and glides in T2 accompanied by the marked decrease in plosives. To further highlight the constant and variable elements in values, here is a XY chart of all 6 phonemic variables in both texts:
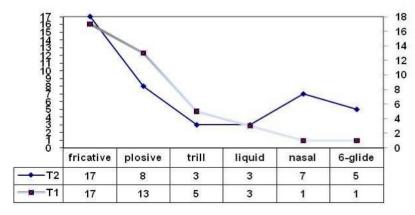

	fricative	plosive	trill	liquid	nasal	6-glide
T2	17	8	3	3	7	5
T1	17	13	5	3	1	1

Fig. 8. XY chart of obstruents & sonorants in T1 & T2

As the preceding table reveals, the most striking variation occurs in the nasal category. Indeed, one of the defining criteria of T2 is its high frequency of nasals that occur 5 times more frequently than in T2. In turn, this nasal prominence succeeds in placing strong emphasis on the word *naffāthāt* in T1 and also sensitizes us to the crucial role that the /n/ phoneme plays in both texts. It is significant to note that nasals are acoustically the opposite of obstruents because they represent a radical rerouting of airflow from the oral cavity to the nasal cavity. The fact that this rerouting occurs as soon as the feminine principle is introduced could be seen as an iconic means of foregrounding a contrastive male/female principle operative in the text. Does the text use nasality as an index of femininity? An additional interesting observation is that, morphologically, *naffāthāt* represents a turning-point because it is the only word in T1 that is both structurally feminine (through the use of feminine plural morpheme *–āt*) and semantically feminine in terms of gender (i.e., female-sorcerers). For one thing, the nasals have universally been acknowledged as representing the maternal principle lexicalized by the word "mother" as opposed to the plosives /p/ or /b/, which are commonly used to lexicalize the paternal element. The use of the nasal might thus metaphorically be seen as an acoustic representation of the female gender.

As for the variation in plosive values in T1 and T2, the following chart of the number of plosives per verse-line better reveals this dramatic difference in frequency distribution:
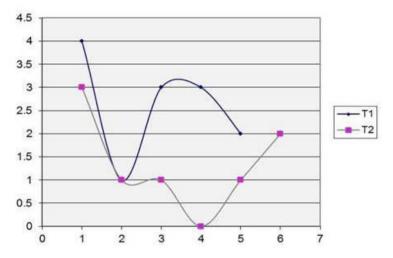
Fig. 9. Frequency distribution of plosives per line in T1 & T2

Line 4 stands out as representing both a relatively high score or peak in terms of plosives in T1 and the lowest point in T2, which means that the plosives in T1 correlate negatively with plosives in T2. We can conclude, therefore, that the plosives are meant to be seen as diametrically opposed values in T1 and T2.

5.5. Phonemic Combinations in *al-Nās*

A comparison of *al-Falaq* and *al-Nās* in terms of the distribution of fricatives, plosives and sonorants further augments the striking difference in the phonological configuration of both texts. There are a total of 37 consonants divided among 13 polysyllabic words in *al-Nās* compared to the 28 consonants and 9 polysyllabic words in *al-Falaq*. The following table provides a contrastive distribution of obstruents and sonorants in polysyllabic content words (PCW) in T1 and T2:
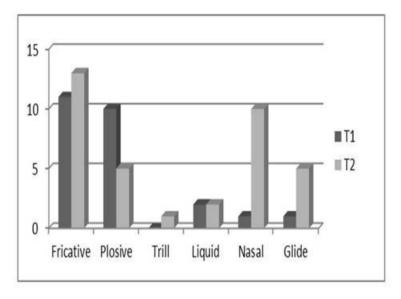
Fig. 10. Contrastive distribution of obstruents & sonorants in PCW in T1 & T2

As the preceding table reveals, both texts are bimodal because they are dominated by two high peaks represented by the fricatives and plosives in T1 and by fricatives and nasals in T2. In T2, the plosives now exhibit a low rate of occurrence, dropping from 10 occurrences to 5 occurrences, but there is a sudden rise in nasals from 1 single occurrence to 10 occurrences. The table below provides all possible consonantal combinations within the polysyllabic category in T2. The word *nās* is included within this category not only because of its semantic significance as a rhyming word but also due to its use of the long vowel /aa/, which compensates in length for any lack in consonants.

	Number of occurrences	Percentage	Rank
Fricative-plosive	0	0 %	4
Fricative-sonorant	1	7 %	3
Fricative-fricative	1	7 %	3
Plosive-fricative	2	15 %	2
Plosive-sonorant	0	0 %	4
Plosive-plosive	1	7 %	3
Sonorant-fricative	7	53 %	1
Sonorant-plosive	1	7 %	3
Sonorant-sonorant	0	0 %	4

Fig. 11. Consonantal combinations within polysyllabic category in T2

If we compare the above table with the corresponding one of *al-Falaq*, we can calculate how far the rank order of scores for each variable is similar to the rank order of scores in T2. The aim here is to measure how closely the rank order of these phonemic combinations match. A quick analysis reveals that the ranking is now completely reversed, with the highest ranking now allocated to the sonorant-fricatives that ranked last in *al-Falaq*. In addition, the plosive-fricative combination, which was number 1 in *al-Falaq*, is now relegated to final rank with zero percentage.

Pattern	Ranking T1	Ranking T2
Fricative-plosive	1- 66%	4- 0%
Fricative-sonorant	4- 0%	3- 7%
Fricative-fricative	4- 0%	3- 7%
Plosive-fricative	3- 11%	2- 15%
Plosive-sonorant	4- 0%	4- 0%
Plosive-plosive	4- 0%	3- 7%
Sonorant-fricative	4- 0%	1- 53%
Sonorant-plosive	2- 22%	3- 7%
Sonorant-sonorant	4- 0%	4- 0%

Fig. 12. Comparison of ranking order of phonemic combinations in T1 & T2

A contrastive analysis of T1 and T2 in terms of consonantal word-positions (WIP and WFP) in polysyllabic content words provides us with the following results for the 4 major consonantal classes, fricatives (WIP and WFP), plosives (WIP and WFP), nasals (WIP) and glides (WIP):
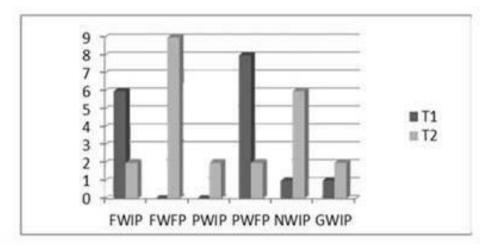

Fig. 13. Contrastive analysis of T1 and T2 in terms of consonantal WIP & WFP in PCW

The preceding phonemic combinations and word-position chart points to a significant degree of phonological modification taking place in T2. Foremost is the shift away from the plosive-fricative pattern that is prevalent in T1 to a nasal-fricative pattern. Additionally, we notice the following phonological restructuring:

- A decrease in plosives in word-final position (WFP),
- The devoicing of plosives in WFP (*malik - jinnat*),
- The introduction of /j/ as a phonological unit representing the merging of fricatives and plosives,
- The absence of /q/,
- A rise in the number of occurrences of /s/ in all positions, especially WFP,
- A shift in fricatives to word-final position,
- The prevalence of nasals and sonorants as opposed to obstruents, and

• The mobilization of the words /*waqab*/ and /*naffāthāt*/, which represent the only occurrences of sonorants in word-initial position in T1, to foreshadow the strikingly new phonological configuration in T2.

5.6. Word-position Preference & Distinctiveness Ratio (DR) in *al-Nās*

If we look at the word-position preferences of content words in T2, we find that the fricatives have a low proportion in WIP (0.2) and a high proportion in WFP (0.7), suggesting that T2 prefers fricatives in word-final position. The plosives in WIP and WFP have nearly equal proportions because there are 4 instances in WIP (0.57) and 3 instances in WFP (0.42). The nasals only occur in word-initial position (6 occurrences) with zero instances in word-final position. They thus have a high 1.0 proportion in WIP and a zero proportion in WFP. Using the above proportions, we can calculate the DR of fricatives, plosives and nasals, keeping in mind that a plus ratio is greater than DR 1.05 and a minus ratio is less than DR 0.67. For fricatives, the DR in WIP is a minus 0.4 :

$$\frac{\text{0.2 rate of occurrence of fricatives in WIP}}{\text{0.5 rate of occurrence of plosives in WIP}}$$

In WFP, the DR of fricatives is a plus 1.4 (0.7 ÷ 0.5 = 1.4).

For plosives, because of the low number of occurrences of fricatives in the initial position, we need to calculate using the ratio of both fricatives and nasals. Thus, the DR of plosives in WIP is 0.6 (0.5÷ 0.2 (rate of fricatives) + 0.6 (rate of nasals) = 0.6). In WFP, the DR of plosives is a low 0.6 (0.42 ÷ 0.7 (rate of fricatives) = 0.6). For nasals, the DR in WIP is a plus rate of DR 2.0 (0.6 ÷ 0.2 (rate of fricatives) = 3.0. The following table provides a comparison of the DR for T1 and T2:

	DR of T1	DR of T2
Fricatives in WIP	2.02	0.4
Fricatives in WFP	0.1	1.4
Plosives in WIP	0.1	0.6
Plosives in WFP	8.8	0.6
Nasals in WIP	0.1	3.0

Fig. 14. Comparison of DR for T1 and T2:

6. Conclusion

By making use of statistics, I have attempted to substantiate the initial impression of word-position choices and to provide quantitative evidence to prove the presence of a pervasive fricative-plosive patterning in T1 and a nasal-fricative patterning in T2. The fact remains significant that, of the 9 polysyllabic words in *al-Falaq* that constitute the so-called materials of the argument, 6 follow the fricative-plosive pattern (a high proportion rate of 6 ÷ 8 = 0.75). The two occasions of unfulfilled patterning, *waqab* and *naffāthāt* (both of which retain final plosives but substitute sonorants for fricatives), are highly significant variations because they are statistically mobilized to foreshadow the strikingly new phonological configuration in *al-Nās*, where there is a marked increase in nasals and glides. The comparison of scores would suggest that there is a motivated attempt to alter the phonological configuration of *al-Nās* so as to correspond to the new subject matter.

To summarize, when we compare the frequency of obstruents and sonorants in T1 with that of T2, four facts become immediately clear. First, the variables show a shift away from plosives in end-position, a patterning that appears to be obligated by the subject matter of T2. Second, this shift also includes an absence of the /q/ phoneme that was an integral part of the phonetic configuration of T1. Third, the fricative scores show a striking uniformity in terms of frequency of occurrence; they seem equally at home in T1 and T2. This result suggests that it is the plosives and sonorant classes that feature instances of variability. However, these fricative scores also point to a shift to word-initial position combined with a prevalence of the /s/ phoneme. Fourth, the distribution of nasals rises significantly in T2, again reflecting the shift away from the fricative-plosive pattern in favor of a nasal-fricative pattern. The differences in the scores of T1 and T2 for the plosives and the nasals lead us to conclude that plosives function as important markers of the splitting process in T1, just as nasals and the strident /s/ function as markers of the movements of the Hisser. The application of the preference and DR tests to both texts indicates the extremely low probability of the fricative-plosive pattern and the nasal-strident pattern occurring as a result of chance. There seems therefore to be a real and reliable relationship between these phonological scores and the subject matter of each text. In addition, be-

cause the phoneme /q/ is used at higher levels than other plosives, it can be seen as the most dominant phoneme in T1. The clear tendency for the level of /s/ in T2 to increase with the introduction of *waswās*, the Hisser, is equally important. The variable /s/, occurring 11 times in all, emerges as the dominate phoneme of T2 correlating with the hissing of Satan.

In the final analysis, it is important to note that these statistical tests confirm the validity of our impressions; they do not tell us why the pattern should occur. To find motivation or reasons behind these contrasting phonetic prominences, we need to link these results to the controlling image of both texts. As linguists have indicated, sound prominence alone is not sufficient, which poses the interesting question if T1 would be just as iconic and powerful if the fricative-plosive sequence appeared in the reverse order or if it would lose much of its force and mimetic quality. I think we may have concluded that "splitting" was a less turbulent and violent activity if it had started with a sudden eruption of plosives that dwindled into friction or a smoother continuant flow. Similarly, T2 would have lost much of its iconic dynamism had it not been saturated with the hissing phoneme in word-final position and the smooth gliding movements of the Hisser represented by the sonorants /n/ and /w/ strategically placed in word-initial position.

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