

aaB: Strophic Design and Cognition

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This paper assesses the Galician-Portuguese aaB forms using philological analysis, the concept of cognitive "chunk" (Miller 1956), a theory of expectation (Huron 2006), and a link between metrical asymmetry and working memory (Fabb, forthcoming). It argues that aaB corresponds to the needs and limits of cognition. With three to six cognitive chunks, aaB would have satisfied a set of metrical, para-metrical, verbal and semantic-pragmatic predictions and provided positive limbic evaluations. The whole strophe would have served as a unit of memory thanks to these *energy saving operators*.

Rushing in metricas res, let us consider this aaB strophe, with only 16 syllables:1

Enas verdas ervas vi anda-las cervas, **meu amigo.** (Pero Meogo 6, vv. 1-3)

[In the green grasses I saw the deer running, My friend.]

The strophe below has the same overall aaB form, but each *verse* has 16 syllables.

Pois mi dizedes, amigo, | ca mi queredes vós melhor de quantas eno mundo son, | dizede, por Nostro Senhor, se mi vós queredes gran ben, | como podedes ir daquen? (Bernal de Bonaval 4, vv. 1-3)

[Since you tell me, friend, that you love me more

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¹ Numbering and (except where indicated) texts are taken from Cohen 2003, but colometry has been corrected (Cohen, forthcoming). Angle brackets are omitted and tils supplied where necessary. For the history of aaB, see Cohen 2005; 2011: 637-39, 646-47; on external responsion, Cohen 2010a. Translations are from Cohen 2010c (modified). Tavani (1967) often analyzes aaB forms incorrectly (see Cohen 2003: 43). I do not discuss the music for six *cantigas d'amigo* of Martin Codax; see Ferreira (1986; 1998; 2005: 227, 252, 282-84).

Than all the girls in the world, tell me, by Our Lord, If you love me so much, how can you go away from here?]

Both strophes are classed under the same heading, aaB. But while a child could repeat the first, how could a listener process the second—48 syllables—at one go?

Galician-Portuguese aaB is not as well understood, formally or cognitively, as it could be.² Found mainly in the *cantigas d'amigo*, aaB and kindred forms dominate the earliest datable section of texts in this genre in our manuscripts (Cohen 2005) and may hold a formal key to its origins.³ Here I analyze aaB using the concept of a cognitive "chunk" (Miller 1956), a theory of expectation (Huron 2006), and a connection between metrical asymmetries and working memory (Fabb, forthcoming), arguing that aaB was shaped by cognition.

Structurally, aaB consists of two periods, the body of the strophe and the refrain. This can be represented as: aa \parallel B. In the simplest variant of this strophe, the colon is coextensive with the verse, so the ratio between periods is 2:1. If the verses of the first period, but not those of the second, are divided into cola, the ratio between periods becomes 4:1. If there are two cola per verse throughout, the ratio is 4:2.

The a-verses rhyme with each other, and their rhyme-sound can change with each strophe (cobras singulars), alternate by groups of two strophes (cobras alternantes), or remain the same throughout the composition (cobras unissonans). The refrain rhymes with itself from strophe to strophe (interstrophic rhyme). The maximum verse length is 16 syllables; the minimum is six syllables for the first period, three for the refrain.

A period with inner cola need not have internal rhyme. If there is internal rhyme in only one period, it will be the second, and the rhyme is horizontal: the rhyme-sound at the inner colon boundary matches the rhyme-sound at verse-end. If there is internal rhyme in the first period, it is vertical: the inner cola rhyme with each other, not with verse-end. If internal rhyme occurs in the first period, it always occurs in the second period. And when there is external rhyme in both periods, the normal pattern is: vertical rhyme in the first period; horizontal rhyme in the second (see Appendix 1 and Cohen 2010b).

Corresponding to the overall structure of the strophe is a sequence of basic cognitive processes. The first *a* leads listeners to expect a second *a*, so after two such verses *B* will be a surprise. Once the first strophe has been heard, listeners come to expect *B*. And in repetitions of the strophic form, the verbal content of the first period varies, while *B* remains uniform throughout.

Listeners' formal and linguistic expectations and evaluations of aaB would depend on their ability to recognize that "this is that" (Aristotle, *Poetics* 1448b17), and then that "this is not that;" and then to understand that the words of the second period are fixed, while those of the first

² Galician-Portuguese metrics *seems* to be based on syllable count, with regular stress patterns only at the end of a verse. But the paucity of stress patterns elsewhere may be a way of creating cognitive uncertainty—resolved at the cadence (the position of final stress is indifferent for syllable count, e.g. 6′=7; Cohen 2003: 44-47; Parkinson 2006: 21-23, 34-36). The stress patterns that some (Prieto Alonso 1991, Parkinson 2006, Piera 2008) detect in a few poems are epiphenomena, however. In aaB, a template can be worked out by counting backwards in binary alternation from the cadence, whether strong-weak (e.g. *migo*) or strong (e.g. *ei*), at the *end* of the colon or verse. Strong positions and stressed syllables generally clash—but regularly coincide towards the end of a unit, whether colon, verse, period, strophe or *cantiga*.

³ By my count, aaB appears in roughly 100 texts (20% of the corpus of 500 *cantigas d'amigo*). Any exact number would assume the correctness of strophic analysis in all cases. The number of texts with aaBB and aaBBB is not calculated here.

vary, and so to expect an exact repetition of the refrain at the end of each strophe.⁴ A cognitive imperative requires that listeners would have perceived these two metrical periods in relation to each other and to the strophe. In practice, the general shape of aaB forms would have been part of the listeners' schematic expectations (they already knew these schemata), but at each hearing of an aaB song the length (in syllables) of cola and verses could vary, and also the system of rhyme-sounds, the patterns of verbal repetition, and the rhetoric and pragmatics of the text (Cohen 2013).

A number of para-metrical phenomena, such as assonant rhyme and traditional rhyme pairs used in alternating strophes (Cohen 2012), which have come to characterize the genre in the minds of many (since the texts where they occur are among the most widely anthologized), appear almost exclusively in songs with aaB strophes. The effect of these techniques depends on multiple expectations, accurate prediction, and positive evaluation of expected outcomes (Huron 2006).

Historically, it is probable that aaB builds on an earlier distich (or tristich; see Appendix 2).⁵ That would have developed into aaB with two cola per verse, but without internal rhyme; then evolved further into aaB; and so to aaB, with internal and end-rhyme throughout (bold here represents a verse with internal rhyme). Other forms, like ababCC and aaaBB, can be derived from aaB (Cohen 1996: 20-23; Cohen, forthcoming). It seems, then, a pivotal form in the history of European rhymed strophic song. Let us consider some relevant aspects of its structure.

There are two rhymed cola per verse, with four in the first period, and two in the second: $\mathbf{aa} \parallel \mathbf{B}$. Inner colon boundary and verse-end are triply marked: by cadence, rhyme, and word-break (pause, absence of voice). In any aaB form, after a pattern has been established in the first period, the second marks a contrast by being invariable and often by using a different verse length. In \mathbf{aaB} the refrain also changes the direction of internal rhyme from vertical to horizontal.

For the listener, aaB without internal cola contains three cognitive chunks in the first strophe, two in all others—since the refrain need not be reprocessed after the first hearing. aaB with two cola per verse in the first period, without internal rhyme, and with one undivided verse in the refrain, has five chunks, but only four after the first strophe. aaB with two cola per verse throughout but no internal rhyme has six chunks (four after the first strophe). There each inner colon boundary is marked by both a stress pattern and a word-break. In **aaB**, rhyme is added to these markers at the inner colon boundary. Since internal rhyme links vertically in the first period, horizontally in the second, **aaB** creates six chunks grouped in two periods, both bound by rhyme, but each in a different "direction." If we assume a historical development from aaB to **aaB** we could say by way of analogy that the three original cells have divided.

There is no unconditioned transmission or reception of language or song. Performances of *cantigas d'amigo* would have varied with time, place, and social context. The audience, with varying cognitive abilities, would have expectations based on genre, composer, performer and performance conditions. The audience of a *trobador* in a royal court would not have the same

⁴ Variation in the refrain is extremely rare (see Cohen 2009).

⁵ Federico Corriente (personal communication, 2009), referring to Andalusi Arabic, thinks "old zajals must have evolved from couplets (aa), to inner rhymed couplets (abab), to more complicated structures." The argument here applies this logic to Romance strophic forms. Corriente comments: "It probably takes more work to demonstrate that Galician-Portuguese aaB(B) is not a parallel separate invention, but it is at least no less likely that it was borrowed by emigrated Mozarabs who settled in the Northern Christian areas." See below, note 7.

abilities or expectations as those hearing a *jograr* in a public square. An account of strophic form in Galician-Portuguese must consider these variables.

Still, five kinds of response—imagination response, tension response, prediction response, reaction response, and appraisal response (Huron 2006)—appear to be reflected in metrical and musical forms, and aaB is no exception. This strophic form would have triggered these responses and stimulated frequent positive limbic evaluations. As an audience heard an aaB song, the text would have satisfied a complex set of already conditioned metrical, para-metrical, verbal and semantic-pragmatic predictions, and done so within three to six cognitive chunks two to four chunks after the first strophe, since the refrain, whether of one or two cola, needs no reprocessing.

Linguists tend to study the line (verse) as the metrical unit of memory, considering a strophe to be a mere conglomeration of lines. But in aaB, the whole strophe may often be the memory-unit. If this is true, how can it be explained?

The entire 16 syllable aaB strophe in Pero Meogo 6 (with which we began) falls within the normal limits of working memory (Willett 2002). So too do the longest individual verses of aaB, such as those in Bernal de Bonaval 4. There the verse consists of two cola, so cognitive processing is made easier by the division into chunks. It seems unlikely that the memory unit in Galician-Portuguese lyric was extended from a verse or brief strophe (such as Meogo 6) to a far more ample strophe such as Bonaval 4 (it seems the form outgrew its cognitive origins). But the grouping of information in chunks must have contributed to the widespread use of aaB. And its efficacy may also have been due to techniques designed to save the working memory work.

The end of each inner colon, the end of the verse, and each refrain (since it ends the strophe) has a special function in the form: each is pre-programmed—not free. Building on a proposal made by Fabb (forthcoming), I suggest that each of these helps working memory during reception. Fabb explains this at the level of the verse, arguing that the relatively fixed end of the line, by not taxing the working memory, allows it to handle the initial part better. Assuming this is correct, at the end of each colon and verse in aaB the cadence, rhyme (where it occurs) and regular word-break or pause, since they are fixed relative to the initial part of the colon, free up a bit of working memory. If at verse-end there are alternating sets of rhyme-sounds (such as io/a-o) in alternating pairs of strophes, the pattern is even more predictable, so even less processing is required. When corresponding verses in successive strophes end in synonymous paired rhyme-words (for instance, amigo/amado; rio/alto; ferido/fossado), working memory is spared yet more work. In cantigas with leixa-pren (which excludes internal rhyme) where only the end of the verse changes and each set of paired verses (except first and last) repeats, shifting from the second line of the strophe to the first in a predictable order, the working memory is freed from a significant amount of work in relation to the quantity of text, since text that needs no processing allows the brain to economize.

Let us look at an example of leixa-pren (literally, "leave off, take up").6 The fixed parts of the meter and the para-metrical rules allow the working memory to rest in energy-saving mode. After the first strophe, new information is limited to one verse and three rhyme-words (all new information is marked below in red).

Martin de Giinzo 1

aaB (x4): 13' [6'+6'] | 7'

⁶ This and most of the examples in Appendix 1 are taken from unknown or obscure Galician jograres who are not documented in any court. For information on the poets, see Oliveira (1994: 303-440).

Como vivo coitada, | madre, por meu amigo, ca m' enviou mandado | que se vai no ferido, e por el vivo coitada.

Como vivo coitada, | madre, por meu amado, ca m' enviou mandado | que se vai no fossado, e por el vivo coitada.

5

Ca m' enviou mandado | que se vai no ferido, eu a Santa Cecilia | de coraçon o digo e por el vivo coitada.

Ca m' enviou mandado | que se vai no fossado, eu a Santa Cecilia | de coraçon o falo e por el vivo coitada. 10

[How sad I am, mother, for my friend 'Cause he sent a message that he's going to war And I am sad for him.

How sad I am, mother, for my boy Who sent me a message that he's going to fight. And I am sad for him.

'Cause he sent me a message that he's going to war, And with all my heart I say it to Santa Cecilia, And I am sad for him.

'Cause he sent me a message that he's going to fight, And I tell it to Santa Cecilia with all my heart, And I am sad for him.]

Leixa-pren reinforces memory by systematic repetition. But it should perhaps also be seen as a technique designed to conserve the capacities of working memory throughout a text. Leixa-pren involves precise verbal repetition with variation and often uses paired rhyme-sounds and paired rhyme-words (some semantically archaic, some with phonologically archaic intervocalic n [Cohen 2012]). The timed release of information about situation and action, withholding key material until the end of the text (Cohen, 2013), is measured out by the morphosyntactic, lexical and semantic repetitions of leixa-pren. These aspects of the technique stimulate perception and facilitate cognitive processing.

aaB, repetition with variation, alternating rhyme-sounds and rhyme-words, the refrain, and *leixa-pren* can be explained, in part, as mechanisms that lighten the load of working memory.⁷

⁷ The three-verse refrain (aaBBB) may have begun like those in Martin de Giinzo (3, 5, 6), where the first and third verses are identical—another way of sparing working memory. So too the use of two-verse refrains ending on the same rhyme-word (Cohen 2009); and the doubling of the same rhyme-words at the

Used along with the concept of chunking and a theory of expectation, this approach helps make sense of formal, linguistic and rhetorical aspects of aaB forms that might not otherwise seem so closely interrelated.

Working memory is usually limited to a few seconds, and when it is working it is being used up quickly. Anything that spares it labor allows it to attend to other tasks. Each element that is programmed and predictable or repeats something just heard lets working memory rest. We can think of these elements as working memory energy savers. The working memory spends almost no time processing them. Each such element conducts working memory through poetic material with minimal expenditure. Let us call them *energy saving operators*. These can be metrical, para-metrical, phonological, lexical, syntactic, or pragmatic.

The appeal of *cantigas d'amigo* in aaB forms may have resulted as much from the easy ride they gave working memory—thanks to the use of chunks and energy saving operators—as from the strategically positioned stimuli that programmed and rewarded multi-dimensional expectations. In a culture where song transmission is oral, the evolution of forms over time would favor those that were divided into chunks, lightened the load of working memory and provoked positive limbic responses. If in the *cantigas d'amigo* the forms and language of song can be said to be the product of replication, variation and selection, aaB may have been selected in part for what are, strictly speaking, biological reasons: the brain prefers forms and rhetoric that let working memory function more efficiently and that liberally provide positive limbic evaluations.

The design of aaB corresponds to the capacities of working memory, largely due to the division into cognitive chunks. Repetition with variation, *leixa-pren*, and the variants aaB and aaB extend those capacities using energy saving operators that fulfill programmed expectations. In its simplest form and in some of its more complex variants, aaB appears to have functioned as a unit of memory.⁸ It was a strophic technology shaped by the needs and limits of cognition.

Appendix 1

Texts that illustrate the variations of aaB in the *cantigas d'amigo*, in the order:

- a. simple (one colon per verse in both periods);
- b. two cola per verse in the first period, without internal rhyme;
- c. two cola per verse throughout, without internal rhyme;
- d. two cola per verse throughout, with internal rhyme in the second period;
- e. internal rhyme throughout.

a. Simple (one colon per verse in both periods):

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JOHAN DE CANGAS – 3
9'/10 || 9'
edes er ar || igo cobras singulars
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inner colon boundary and verse-end in both verses of the refrain in **aaBB** forms (Gonçal' Eanes do Vinhal 1, Pero de Berdia 4, Bernal de Bonaval 5).

⁸ These conclusions suggest that this strophic form developed in the same language, society and geographic area over a considerable period of time. This has repercussions for the history of European rhymed strophic song (see Cohen 2012): how could Galician-Portuguese aaB plausibly be derived from an Andalusi Arabic strophic form?

Amigo, se mi gran ben queredes, id' a San Momed' e veer m' edes; oje non mi mençades, amigo.

Pois mh aqui ren non podedes dizer, id' u ajades comigo lezer; 5 oje non mi mençades, amigo.

Serei vosc' en San Momede do mar na ermida, se mho Deus aguisar; oje non mi mençades, amigo.

[Friend, if you really love me a lot, Go to San Momede and you can see me. Friend, don't break your word to me today.

Since you can't say anything to me here, Go where you can have pleasure with me. Friend, don't break your word to me today.

I'll be with you in San Momede of the Sea In the chapel, if God guides me there. Friend, don't break your word to me today.]

b. Two cola per verse in the first period, without internal rhyme:

PERO DE BERDIA – 3 13 [6'+6'] || 7' ia asse isse || igo cobras singulars

Deu-lo sabe, coitada | vivo mais ca soía, ca se foi meu amigo, | e ben vi, quando s' ia, ca se perderia migo.

E dissera lh' eu, ante | que se de min quitasse, que se võesse cedo, | e, se alá tardasse, ca se perderia migo.

E dissera lh' eu, ante | que se de min partisse, que, se muito quisesse | viver u me non visse, ca se perderia migo.

[God knows I'm sadder than I used to be Because my boyfriend went away, and I saw, when he was going That he would lose me.

And I'd said to him, before he took his leave of me, That he come right away, and if he lingered there, That he would lose me. And I had said to him, before he parted from me, That if he was going to live where he couldn't see me That he would lose me.]

c. Two cola per verse throughout, without internal rhyme:

PERO MEOGO – 5 11' [5'+5'] i-a / a-a || igo cobras alternantes; with leixa-pren (new information is marked in red)

Levou s' aa alva, | levou s' a velida, vai lavar cabelos | na fontana fria leda dos amores, | dos amores leda.

Levou s' aa alva, | levou s' a louçana, vai lavar cabelos | na fria fontana 5 leda dos amores, | dos amores leda.

Vai lavar cabelos | na fontana fria; passou seu amigo, | que lhi ben queria leda dos amores, | dos amores leda.

Vai lavar cabelos | na fria fontana; 10 passa seu amigo, | que a muit' amava leda dos amores, | dos amores leda.

15

Passa seu amigo, | que lhi ben queria; o cervo do monte | a augua volvia leda dos amores, | dos amores leda.

Passa seu amigo | que a muit' amava; o cervo do monte | volvia a augua leda dos amores, | dos amores leda.

[She arose at dawn, the lovely girl arose and goes to wash her hair in the cool fountain, Happy in love, in love and happy.

She arose at dawn, the beautiful girl arose and goes to wash her hair in the fountain's cool Happy in love, in love and happy.

She goes to wash her hair in the cool fountain And along came her boy, who really loved her Happy in love, in love and happy.

She goes to wash her hair in the fountain's cool And along comes her boy, who truly desired her Happy in love, in love and happy.

And along comes her boy, who really loved her The stag of the hills was stirring the water Happy in love, in love and happy.

And along comes her boy, who truly desired her The stag of the hills set the water astir Happy in love, in love and happy.]

d. Two cola per verse throughout, with internal rhyme in the second period:

JOHAN DE REQUEIXO – 1 15′ [7′+7′/8] || 15′ [7′+7′] igo ei on || (ia) ia *cobras singulars*

Fui eu, madr', en romaria | a Faro con meu amigo e venho del namorada | por quanto falou comigo, ca mi jurou que morria | por mi, tal ben mi queria.

Leda venho da ermida | e desta vez leda serei, ca falei con meu amigo | que sempre muito desejei, ca mi jurou que morria | por mi, tal ben mi queria.

Du m' eu vi con meu amigo, | vin leda, se Deus mi perdon, ca nunca lhi cuid' a mentir | por quanto m' ele diss' enton, ca mi jurou que morria | por mi, tal ben mi queria.

Mother, I went on a pilgrimage to Faro with my boy And I've come back in love with him, for what he said to me, 'Cause he swore that he was dying for me, so much does he love me.

I've come back happy from the chapel and this time I'll be happy Since I talked with my boy, whom I've always loved so much, 'Cause he swore that he was dying for me, so much does he love me.

I've come back happy from where I was with him, so help me God, And I won't ever break my word, because of what he told me then, 'Cause he swore that he was dying for me, so much does he love me.

e. Internal rhyme throughout:

JOHAN DE REQUEIXO – 2 14/13' [5'/6+8/7'] | 14 [6+8] (ia) er (eu) igo (er) ada | (on) on cobras singulars

A Faro un dia | irei, madre, se vos prouguer, rogar se verria | meu amigo, que mi ben quer, e direi lh' eu enton | a coita do meu coraçon.

5

Muito per desej' eu | que võesse meu amigo que m' estas penas deu | e que falasse comigo e direi lh' eu enton | a coita do meu coraçon.

5

Se s' el nembrar quiser | como fiquei namorada e se cedo veer | e o vir eu ben talhada, e direi lh' eu enton | a coita do meu coraçon.

[I'll go to Faro one day, mother, if you please, To ask if my boyfriend who loves me will come there, And I'll tell him then the sorrow in my heart.

Boy did I desire that my boyfriend come who gave me these sorrows—and that he talk with me, And I'll tell him then the sorrow in my heart.

If he just remembers how I fell in love And comes quickly and I see him, lovely me, I will tell him then the sorrow in my heart.]

Appendix 2

There are two rare forms, *aa* and *aaa*, that seem to represent earlier stages in the development of strophic forms than does aaB. These are the only examples in the genre.

PERO MEOGO – 3

aa: 13 [6'+6] (internal [vertical] assonant rhyme in I-III) (i-o) ei (i-o) or (i-o) ar i/in al/ar *cobras singulars*

– Tal vai o meu amigo, ∣ con amor que lh' eu dei, come cervo ferido ∣ de monteiro del rei.

Tal vai o meu amigo, | madre, con meu amor, come cervo ferido | de monteiro maior.

E se el vai ferido, | irá morrer al mar; si fará meu amigo, | se eu del non pensar.

5

– E guardade vos, filha, ∣ ca ja m' eu atal vi que se fezo coitado ∣ por guaanhar de min.

– E guardade vos, filha, ∣ ca ja m' eu vi atal que se fezo coitado ∣ por de min guaanhar.

10

[– My boyfriend goes fleeing, for love of me, Like a wounded stag from the hunter of the king.

Mother, my friend goes fleeing, for my love, Like a wounded stag from the king's own hunter. And if he wanders wounded, he'll go to the sea to die, And so will my boyfriend do, if I'm not kind to him.

– Be careful, daughter, 'cause I've seen a boy like that, Who made out that he was sad, when he was wooing me.

Be careful, daughter, 'cause I've seen such a boy, Who made out that he was sad, when he was out to woo.]

BERNAL DE BONAVAL - 1

aaa: 13 [6'+6']

igo / ado *cobras alternantes; dobre* [repetition of same word in symmetrical positions] in vv. 1 and 3 of each strophe

Fremosas, a Deus grado, | tan bon dia comigo, ca novas mi disseron | ca ven o meu amigo; ca ven o meu amigo, | tan bon dia comigo.

Tan bon dia comigo, | fremosas, a Deus grado, ca novas mi disseron | ca ven o meu amado; ca ven o meu amado | fremosas, a Deus grado.

5

Ca novas mi disseron | que ven o meu amigo e and' end' eu mui leda, | pois tal mandad' ei migo; pois tal mandad' ei migo | ca ven o meu amigo.

Ca novas mi disseron | ca ven o meu amado e and' end' eu mui leda, | pois mig' ei tal mandado; pois mig' ei tal mandado | que ven o meu amado. 10

6 hemistichios transposuit Lorenzo Gradín

[Lovely girls, thanks to God, it's such a good day for me, Because they told me the news, that my boyfriend is coming; Since my boyfriend is coming, it's such a good day for me.

It's such a good day for me, lovely girls, thanks to God, Because they told me the news, that my darling is coming; Lovely girls, thanks to God, since my darling is coming.

Because they told me the news, that my boyfriend is coming, And so I go around happy, since I have that message, Since I have that message, that my boyfriend is coming.

Because they told me the news, that my darling is coming, And so I go around happy, since I have that message, Since I have that message, that my darling is coming.] JOHAN AIRAS DE SANTIAGO - 41

aaa: 13' [6'+6']

ade ente cobras singulars

Amei vos sempr', amigo, | e fiz vos lealdade: se preguntar quiserdes | en vossa puridade, saberedes, amigo, | que vos digo verdade.

Ou, se falar ouverdes | con algun maldizente e vos quiser, amigo, | fazer d' al entendente, dizede lhi que mente, | dizede lhi que mente.

[I always loved you, friend, and I was true to you, And if you want to ask in utmost secrecy You'll find out, friend, that I'm telling you the truth,

Or if you should have to talk with some slanderer And he should try to make you, friend, believe something else, Tell him that he lies, oh tell him that he lies.]

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