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台灣閩南語童謠之節律與變調

The metrical structure and tone sandhi of
Taiwan Southern Min nursery rhymes

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1. Introduction

This paper engages in a theoretical, corpus-based analysis of the metrical structure of nursery rhymes in Taiwanese Southern Min.   The nursery rhymes are such an intermediate linguistic art that retains much of the neatness of poetry without sacrificing the natural vigor of ordinary speech; traditionally they are passed down by way of children's oral recitations in streets and alleys, and the rhythm follows from the children's clapping.   A cycle of clapping consists of eight moves, as illustrated in (1a) through (1h).   R1 and L1 represent the first child's right hand and left hand, while R2 and L2 represent the second child's.   In (1a) the children clap their own hands, and in (1b) the hands open.   In (1c) the first child's left hand (L1) claps on the second child's left hand (L2), and in (1d) the left hands are drawn back.   In (1e) and (1f) the children again clap their own hands and then open them.   In (1g) the first child's right hand (R1) claps on the second child's right hand (R2), and in (1h) the right hands are drawn back.   The cycle of clapping repeats through a line of a nursery rhyme, and each line initiates a fresh cycle.
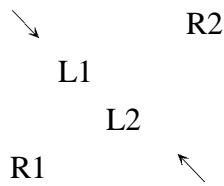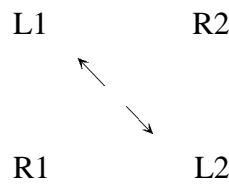
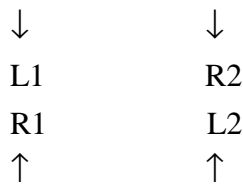(1) a.   Downbeat: clap   b.   Upbeat: open

↓	↓		L1	R2
L1	R2		↑	↑
R1	L2		↓	↓
↑	↑		R1	L2

c.   Downbeat: clap   d.   Upbeat: open

   ↘   R2   L1   R2
  L1   ↖
    L2   ↘
R1   ↖   R1   L2

e.   Downbeat: clap   f.   Upbeat: open

↓   ↓   L1   R2
L1   R2   ↑   ↑
R1   L2   ↓   ↓
↑   ↑   R1   L2

g.   Downbeat: clap   h.   Upbeat: open

L1   ↙   L1   R2
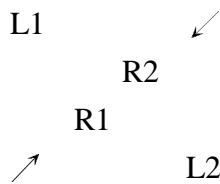   R2   ↗
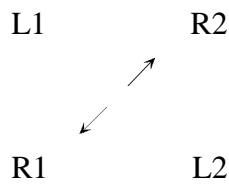 R1   ↙
↗   L2   R1   L2

The present analysis is based on a corpus of 3155 lines, in which five types of information are focused:[1]

> The count of beats
> The count of syllables
> Word categories
> Syntax tree
> Simplified tree

Beats and syllables are counted in the corpus since the mapping between the two constitutes the basic rhythm of the nursery rhymes. As mentioned earlier, the recitations of nursery rhymes are rhythmically accompanied by children's clapping (downbeats and upbeats).

Liberman & Prince (1977) and Hayes (1983) observe in English that content words, but not function words, have priority in grid-marking.   Chen (1991) shows in

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[1] There are many considerations in the corpus, but this paper concentrates on these five aspects.

Wunzhou Chinese that function words are invisible to intonational phrasing at an initial stage. In this corpus, word categories are coded to examine whether the categorical distinction between content words and function words may affect the assignment of metrical beats.

Following Duanmu (2002), I include also the coding of syntax tree and simplified tree in the corpus, but for a different reason.[2] Chen (1984) and Shih (1986) indicate that syllable grouping has access to syntactic information such as c-command, immediate constituency; I also show in a series of works (Hsiao 1991b, 1994, 1995) that the relevant syntactic relations have effects on beat assignment. The coding of syntax tree and simplified tree in this corpus is to see how syntax may facilitate beat sharing.

The rest of this paper is organized as follows. Section 2 offers a brief survey of some previous studies of generative metrics and rhythm. Section 3 introduces the nature of the corpus. Section 4 proposes a metrical template, which yields the lines of the nursery rhymes. Section 5 addresses the particular patterns where an asymmetry between syllable and beat occurs. Section 6 provides an Optimality Theory account for the metrical patterns of the nursery rhymes. Finally, section 7 is the conclusion.

2. Some Relevant Studies

Chao (1968) indicates that stress is not intuitively clear for Chinese speakers, and Selkirk and Shen (1991) conclude that there is no stress in Chinese. Taking a similar stand, Shih (1986, 1990) and Chen (1990) develop a concept of "syllable foot" with no reference to relative prominence; namely, foot formation results from the grouping of syllables.

On the other hand, Chen (1979), Yip (1980) and Wright (1983) have portrayed the metrics of Chinese regulate verse (Jue and Lu) as having an iambic meter. A metrical template can be summarized from Chen's works (Chen 1979, 1980, 1984), as in (2), for deriving the metrics of regulated verse.

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[2] In Duanmu (2002), syntax tree and simplified tree are coded for the examination of stress assignment.

(2)   L   Metrical line

                   /   \

              H   H   Hemistich

            /\   /\

         (f) f   f f   Foot

        /\ /\   /\ /\

      s S s S s S s <u>S</u>   Syllable

        S = stressed position   s = weaker position   <u>S</u> = vacant position

A metrical line consists of two hemistiches. A hemistich contains two feet. A foot then is made of two syllables, or one syllable in the final foot; that is, the final metrical position of the template is vacant. This template yields two kinds of regulated verse: namely, 5-Jue/5-Lu, the pentasyllabic pattern if the parenthesized (f) is omitted, and 7-Jue/7-Lu, the heptasyllabic pattern otherwise.[3]

Hsiao (1990, 1991a,b) observes that folk songs in Taiwanese Southern Min reflect metrical patterns of both regulated verse and irregulated verse (Chang Duan Ju),[4] and proposes a trochaic template to yield the rhythm. Duanmu (1999, 2002) considers the trochaic meter as part of Universal Grammar. He suggests that Chinese verse, like English verse, displays a system of stress and should be reanalyzed under trochaic meter. In this paper, I show that the nursery rhymes also instantiate a case of trochaic meter: the stress falls on a clap (a downbeat), while a weak position follows as the hands open (an upbeat). (Detailed discussions will be given in sections 4-6.)

Some prosodic phonologists suggest that a metrical beat may be assigned according to syntactic junctures (Selkirk 1984) or prosodic junctures (Shih 1986). In various linguistic forms across Chinese dialects, beat assignment is sensitive to the categorical distinction between content words and function words (Hsiao 1991, 1994, 1995). A set of beat addition principles are reproduced as follows:

(3) <u>Beat Addition</u>   (Hsiao 1995: 144)

    (a) Lexical Beat (LB): every lexical syllable is assigned a metrical beat.

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[3] 5-Jue has four pentasyllabic lines, while 5-Lu has eight lines. Similarly, 7-Jue has four heptasyllabic lines, while 7-Lu has eight lines.

[4] Chang Duan Ju refers to the verse of Song Dinasty, where the length of a verse line is variable. A line of such verse can be as short as two syllables, or as long as nine syllables (or longer.).

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(b) Functor Beat (FB): a phrasal functor syllable is assigned a beat or adjoined to a neighboring beat of a syntactic sister.

(c) Suffix Beat (SB): a suffix syllable is adjoined leftwards to a neighboring beat within the same phonological word.

To paraphrase, a lexical syllable (a syllable of a content word) is usually assigned a single beat, while a functor syllable (a syllable of a function word) or a suffix syllable tends to share a beat with a preceding syllable.   In this paper, two relevant observations are in order.   First, directionality does not matter in terms of beat sharing, but either a preceding syllable or a following syllable may be involved. Second, beat sharing is also sensitive to syntactic relation such as immediate constituency.   These points will become clear in the following sections.

3. The Corpus

This corpus contains a collection of nursery rhymes in Taiwan from two major sources: (1) the nursery rhymes on the net (http://www.taiwan123.com.tw/index.htm), and (2) the book and CDs edited by Yang (2000).   There are 515 nursery rhymes in this corpus, with a total of 3155 lines, which are serially numbered, as in (4-5).

(4)   Serial #
       TN001-012

(5)   Serial #
       TY005-003

The prefixal abbreviations "TN"and "TY". The former represents the traditional nursery rhymes on the net, while the latter represents the traditional nursery rhymes in Yang (2000). The following numbers "001"and "005" respectively indicate the first and the fifth nursery rhymes, and the next following numbers "012" and "003" respectively indicate the twelfth line and the third line of the relevant nursery rhymes (hereafter, NR line).

The nursery rhymes are structured with lines of both regulated verse and irregulated verse.   A NR line may range from two syllables to fifteen syllabls.   As shown in (6), the trisyllabic, pentasyllabic and heptasyllabbic lines constitute 80.85the corpus.

(6) Length of the Nursery Rhymes

Syllables per line	Total # of lines	Percentage
1	1	0.03%
2	13	0.41%
3	852	27.00%
4	252	7.99%
5	999	31.66%
6	199	6.31%
7	700	22.19%
8	72	2.28%
9	52	1.65%
10	10	0.32%
11	2	0.06%
12	2	0.06%
13	1	0.03%
TOTAL	3155	100.00%

The rhythm of the nursery rhymes is based on clapping. A downbeat falls on a clap, and an upbeat follows as the hands open. What is of interest is that a beat may include one or more syllables. Comparing (6) and (7), we can see that the number of syllables in a NR line does not always match the number of beats.

(7) Metrical Beats

Demibeats per line	Total # of lines	Percentage
1	1	0.03%
2	13	0.41%
3	940	29.79%
4	166	5.26%
5	1116	35.37%
6	82	2.60%
7	776	24.60%
8	12	0.38%
9	44	1.39%
10	1	0.03%
11	4	0.13%
TOTAL	3155	100.00%

Over 91.59% of the NR lines have an odd number of beats, while the rest of the

lines are frequently parsed into smaller units that contain an odd number of beats. As shown in (8), a six-beat line often contains a pair of three-beat units, and an eight-beat line is often combined from a five-beat unit and a three-beat unit; there is only one ten-beat line, which contains a seven-beat unit plus a three-beat unit.[5]

(8) Beat Grouping

Demibeats per L"	Demibeat Grouping	Total # of L"s
6	3+3	63
	6	19
8	5+3	4
	8	8
10	7+3	1

The syllable-beat asymmetry arises largely from categorical distinction. The corpus thus distinguishes content words and function words.   The content words are coded as V (verb), N (noun) and A (adjective or adverb).   The function words are coded as F.   The F category is intended to be an extended class that includes classifier, conjunction, directional marker, complementizer, pronoun, suffix, particle, auxiliary, as well as the so-called coverb[6] and be-verb.   Metrically speaking, coverbs and be-verbs behave quietly differently from regular verbs, but, like other functors, they often share beats with adjacent syllables, and thus are labeled as F.   Numerals are rhythmically like nominals and thus are labeled as N, in contrast to classifiers.   A sample of the nursery rhymes is given in (9):

(9) Syntax and word category

Serial #	Syntax Tree	Symplified Tree
TN070-001	[A A A]	[3]
TN070-002	[V [NN F]][V NN]	[1 [2 1]][1 2]
TN070-003	[AA [V WA]]	[2 [1 2]]
TN070-004	[AA [V [N F]]	[2 [1 2]]
TN070-005	[[N F] V]	[2 1]
TN070-006	[N F][V NN]	[2][1 2]

As the line in (10) shows, the numeral *tsit* 'one' is coded as N, while the classifier *bue* as F.   V represents a monosyllabic verb, and NN is a disyllabic noun.

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[5] The parsed "units" will be referred to as metrical lines.   In other words, a NR line may consist of one or more metrical lines (See section 4 for further discussions).
[6] A coverb is a controversial term, but in this paper simply refers to a semantically bleached verbial, such as *ka*, 'have', etc.

Likewise, VV will be a disyllabic verb (e.g., *kiantang* 'frozen'), and AA a disyllabic adjective or adverb (e.g., *siosio* 'warm').

(10) TN070-006

    [NF]   [V   NN]

    tsit bue   ko   bok-tsiu

    one CL   glue eye

  'One (fish) glues the eyes.'

Syntax tree is needed with the assumption that prosody is related to syntactic structure. A summary of the syntactic tree frequencies is given in Appendix 1, where only a few lines have identical bracketing. The large variety of syntactic patterns explicitly trims down the possibility of a global match between prosodic and syntactic structures. Hence, I focus on the correspondence between more local syntactic constructions and smaller prosodic units (cf. sections 5 and 6). In fact, Chen (1984) and Shih (1986) have suggested earlier that foot formation may be affected by local syntactic relations such as immediate constituency and branching direction; in Hsiao (1990, 1991) I have also observed that a pair of immediate constituents may share a single beat. I adopt Duanmu's (2002) coding system, where both [AN] and [NN] are labeled as [NN], as many have indicated that in Chinese dialects the combination of a monosyllabic adjective followed by a monosyllabic noun is actually a noun compound or is lexicalized into one (Shih 1986; Dai 1992; Duanmu 1998; Hsiao 2000). The distinction between [A NN] and [N NN] is made when possible, but [A NN] is preferred when the distinction is not clear. The choice is not critical, since both A and N are content words. A NR line in the corpus may sometimes exhibit a flat structure, where no internal bracketing is made, as in (11-12).

(11) TY003-001

    [NNN]

    tsit neng saN

    one two three

  'One, two, three'

(12) TN070-001

    [A A A]

    tshiu tshiu tshiu

    shame shame shame

  'Shame on you.'

In addition, the simplified tree of (11-12) is coded as [3].   The simplified tree is included to facilitate an overview of syllable distribution and syntactic variety.   A summary of the simplified tree frequencies is given in Appendix 2, which reveals a tendency that the final three syllables of a NR line constructed either under a right-branching tree [1 2] or under a left-branching tree [2 1], as shown in (13).

(13) Final three syllables

Simplified tree	Total # Line	Percentage
…[1 2]	1941	61.52%
…[2 1]	815	25.83%
[2] (shorter than trisyllabic)	14	0.44%
others	385	12.20%
TOTAL	3155	100.00%

Note in particular that 61.52% of the NR lines end in a [1 2] tree.   Interestingly, I find no instance where the final two syllables share a beat.   What this means is that metrical units do not necessarily match syntactic units.   I will discuss this mismatch in section 6.

4. Template Mapping

An essential difference between the regulated verse and the nursery rhymes is that the numbers of syllables and beats always match in the former but not in the latter. In spite of the fact that a NR line may have a wide range of length, the rhythm of the nursery rhymes is substantially indebted to the regulated verse.   Given the fact that the recitations of the nursery rhymes are based on clapping, I assume here that the meter can be better captured by the count of beats.   I propose (14) as the basic template, from which various metrical patterns can be generated.

(14)   L   Metrical line
                        /   \
                   H   H   Hemistich
                  /\   /\
                 f   f   f   f   Foot
                /\ /\   /\   /\
               X x X x X x X x   Beat

          X = strong position   x = weak position
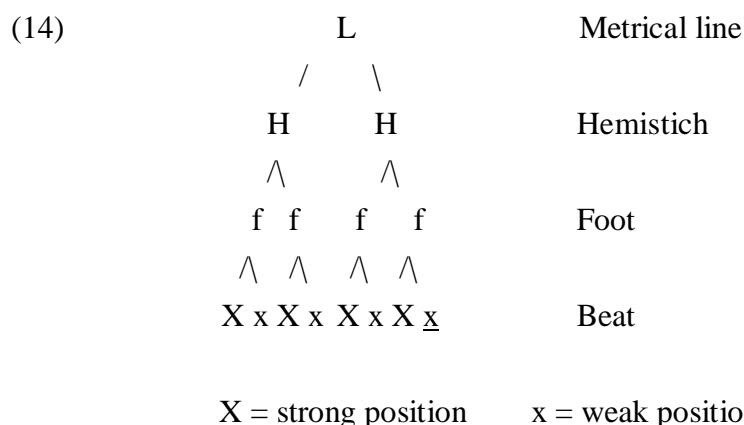
Several patterns are observed in the corpus.   First, the NR line prefers an odd number of beats.   I refer to a line of this type as a **masculine** line, which may consist of three audible beats, five audible beats, seven audible beats, or nine audible beats, etc.   Based on the template in (14), I consider a seven-beat line the basic pattern. As in (15), there are seven audible beats followed by a silent beat.

(15) TN073-001   seven-beat line

```
                     L
               /           \
           H                   H
         /    \             /      \
       f         f        f          f
      / \      / \      / \        / \
    X    x   X    x   X    x     X    x̲
    o   niao tsheng kun bo tsheng  kho
  black  cat  wear skirt not wear  pant
```
'The black cat wears a skirt but wears no pants .'

A five-beat line is then generated in the absence of the first foot, as in (16), and a three-beat line leaves out the entire first hemistich, as in (17).

(16) TY013-013   five-beat line

```
                  L
             /          \
         H                H
        /    \          /    \
     (f)       f      f        f
            / \      / \    / \
          X    x   X    x  X    x̲
          ke-kang  lang ke-nua
           cock      tease hem
```
'The cock teases the hem.'

10

(17) TN017-001   three-beat line

```
              L
         /         \
      (H)           H
                /      \
            f            f
          /  \         /  \
        X    x       X    x̲
        gue  keng   keng
        moon bright bright
```
'The moon is bright.'

When the final silent beat becomes audible, the NR line will have an even number of audible beats.   I refer to this a **feminine** rhythm.   In terms of the metrical template, a four-beat line fills the second hemistich, as in (18), and a two-beat line fills only the final foot, as in (19).

(18) TY223-001   four-beat line

```
              L
         /         \
      (H)           H
                /      \
            f            f
          /  \         /  \
        X    x       X    x
        si   kha    neng hinn
        four leg    two  ear
```
'Four legs and two ears.'

(19) CH-35-01-01   two-beat line

```
                    L
                 /      \
             (H)          H
                       /    \
                   (f)        f
                           /  \
                          X    x
                         tai-lin
                         Lord
                       'My Lord.'
```
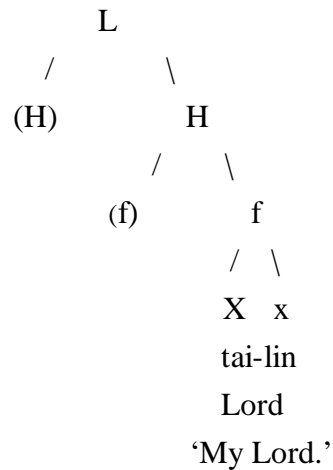
There is only one one-beat line in the corpus.   When a NR line contains more beats than the metrical template can accommodate, it is made of multiple metrical lines.   The template will look like (20).

(20)   L'   NR Line
                     /   \
                 L   L   …   Metrical Line
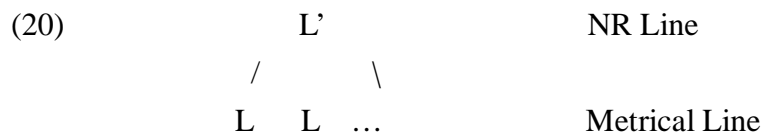
A feminine NR line also has a tendency to break into smaller metrical lines, particularly masculine ones, as have been shown in (8).   There are 31 six-beat NR lines in the corpus.   20 of them are parsed as 3+3, as in (21), where a NR line is made of two consecutive three-beat metrical lines; the rest are parsed as single six-beat lines, with the absence of the first foot of the template, as in (22).

(21) TY010-004   six-beat line: 3+3

```
                         L'
                  /                 \
              L                        L
            /     \                  /      \
        (H)         H           (H)            H
          /  \                    /    \
         f      f                f        f
       / \   / \                / \     / \
      X  x  X  x               X   x   X   x
      sen-sinn niu             tua    pak-to
      teacher wife             big    belly
      'The teacher's wife is pregnant.'
```

12
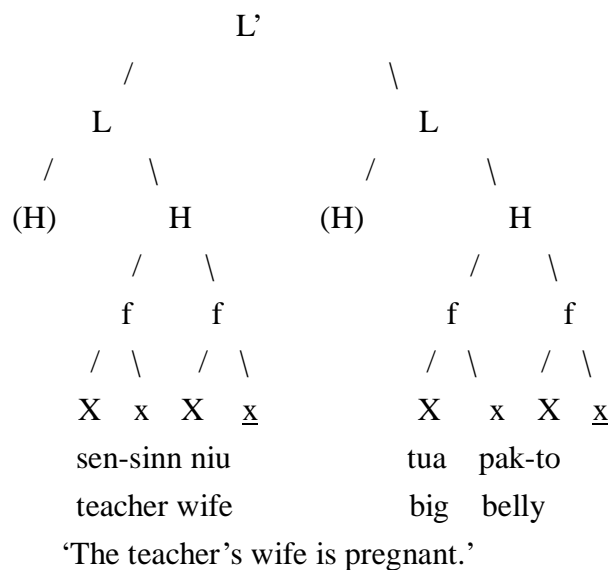
(22) TY371-002   six-beat line: 6

```
                L
             /      \
          H            H
        /   \        /    \
     (f)    f      f       f
     / \   / \    / \
     X  x  X  x   X  x
    tiong-ng  neng lui  bak-tsiu
    center    two CL    eye
```
'Two eyes are in the center.'

The eight-beat NR lines are parsed in two ways: four are parsed as 5+3, as in (23), and eight are parsed as a single feminine NR line, as in (24).   There are twelve eight-beat NR lines in total.

(23) TY007-012   eight-beat line: 5+3

```
                      L'
                  /          \
              L                  L
           /      \           /      \
         H          H       (H)         H
       /   \      /   \              /    \
     (f)   f    f      f           f        f
     / \      / \    / \         / \      / \
     X  x    X  x   X  x         X  x    X   x
    ue  khi  ke-neng teng       a-neng   tua
    dig out  chicken-egg long   duck-egg big
```
"Dug out long chicken-eggs and big duck eggs.'

(24) TY404-001   eight-beat line: 8

```
                        L
                 /             \
              H                   H
            /    \              /    \
          f        f          f        f
         / \      / \        / \      / \
        X   x    X   x      X   x    X    x
       tsih hang   mi-a     si  si    kak  kak
       one CL      thing   four four  angle angle
      'one square thing'
```
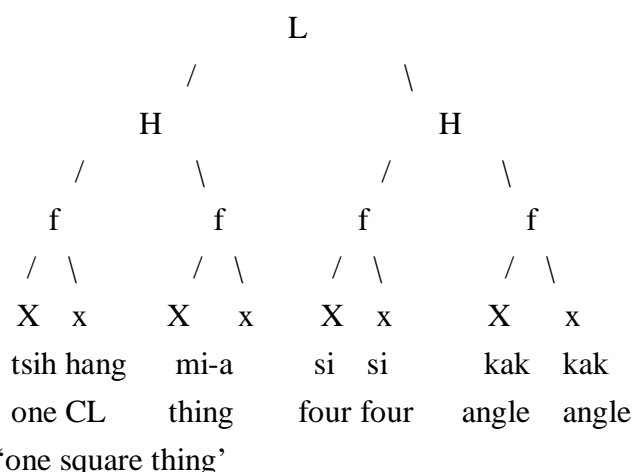
As have been shown in (21) and (23), a NR line may consist of more than one metrical line.   This facilitates analyses of longer lines.   There is one ten-beat NR line in the corpus, parsed as 7+3.

One problem arises as to how to determine the masculinity or femininity of a NR line that consists of multiple metrical lines.   In particular, when a NR line is formed by a feminine metrical line and a masculine metrical line, e.g., 2+7, is it a feminine or masculine NR line?   The answer to this problem can again appeal to clapping.   That is, a masculine NR line ends in a clap, an audible downbeat, while a feminine NR line ends in an audible upbeat.   The list in (25) shows all the combinations found in the corpus: each ends in an audible downbeat, followed by a silent beat.   They are all masculine NR lines.

(25) Masculine NR lines

3+3	six-beat line
5+3	eight -beat line
2+7	nine-beat line
7+3	ten-beat line

In other words, the combination in which a feminine metrical line is followed by a masculine metrical line results in a masculine NR line.   An opposite combination is not found in the corpus.   In fact, the corpus shows an impressive high percentage of masculine NR lines, as given in (26):

(26) NR Lines

Line types	Total # of lines	Percentage
Masculine	2953	93.59%
Feminine	202	6.41%
TOTAL	3155	100.00%

The corpus shows that masculine rhythm is the prevalent pattern in the nursery rhymes; 93.59% of the NR lines are masculine, while only 6.41% are feminine. The following sections will thus work toward an analysis of the preference of masculine rhythm.

5. Beat Sharing

We have mentioned earlier that the number of syllables in a NR line does not always match the number of beats. The question then is how the beats are assigned to syllables in the case of syllable-beat asymmetry. In the corpus, such an asymmetry does not occur in feminine NR lines, but in masculine ones. The first pattern observed in this paper is that an F category shares a beat with an adjacent syllable. The F category includes classifier, conjunction, directional marker, complementizer, pronoun, suffix, particle, as well as coverb and be-verb. The be-verb falls on the F category because it is metrically less salient. Consider the three readings in (27):

(27) TY112-006   'The most worried is being poor.'

 *a. X x X x X x X x
    te-it huan-lo si ka-lai san
    first worry be home poor

 b. X x X x X x X <u>x</u>
    te-it huan-lo si ka-lai san
    first worry be home poor

 c. X x X x X x X <u>x</u>
    te-it huan-lo si ka-lai san
    first worry be home poor

In (27a), each syllable (including the be-verb *si* is assigned a beat, and the line results

in a feminine rhythm.   However, the reading is unmetrical.[7]   The be-verb shares a beat with a preceding syllable in (27b) and with a following syllable in (27c).   Both readings are metrical.

Beat Sharing is a means to avoid a feminine rhythm.   The fact that a NR line prefers a masculine rhythm prevents an F category from sharing al beat if beat sharing will result in a feminine NR line, as illustrated in (28).

(28) TY092-021   'My boss told me to wrap the grass.'
   a.   X x X x X x   X   x
        thao-ke kio gun khi tsang tshao
        boss   tell me DIR wrap grass

   *b. X x   X   x   X   x
        thao-ke kio gun khi tsang tshao
        boss   tell me DIR wrap grass

   *c. X x X x   X   x
        thao-ke kio gun khi tsang tshao
        boss   tell me DIR wrap grass

There are two F categories in the NR line above: the pronoun *gun* and the directional marker *khi*.   In (28a), each syllable is assigned a single beat, rendering a metrical masculine rhythm.   Both *gun* in (28b) and *khi* in (28c) share a beat with an adjacent syllable, and both create a feminine but unmetrical rhythm.

A second observation of beat sharing is attributed to syntactic structure.   In particular, immediate constituents (hereafter, ICs) share a beat to create a masculine line, as in (29)

(29) TN072-002   'Come out to look.'
   *a. X   x   X   x
        tsao tshut-lai khuaN
        run DIR-DIR look

---

b. X   x   X   <u>x</u>

    tsao tshut-lai khuaN

    run DIR-DIR look

One may notice that the pair of ICs *tshut-lai* consists of two directional markers, i.e., F categories, and thus they must share a beat. This is true, but (30) shows that morphosyntactic ICs indeed play a role in beat sharing. In (30a) the non-ICs *tsao tshut-* share a beat, and in (30b) *–lai khuaN* share a beat; although both derive a masculine line, both are unmetrical.

(30) TY056-003 'Come out to look.'

  *a.   X   x   X   <u>x</u>

      tsao tshut-lai khuaN

      run DIR-DIR look

  *b. X   x   X   <u>x</u>

      tsao tshut-lai khuaN

      run DIR-DIR look

The effects of morphosyntactic IC are further revealed in lines like (31), where no F category is involved. The members of the disyllabic adjective *tsa-bo* share a beat to render a masculine line, as in (31b). Without the beat sharing, a feminine line would be derived, as in (31a).

(31) TN021-004 'On 11th, invite the daughter.'

  *a. X x   X   x X x

      tsap it   tshiaN tsa-bo kiaN

      ten one invite female kid

  b. X x   X   x   X   <u>x</u>

      tsap it   tshiaN tsa-bo kiaN

      ten one invite female kid

6. Constraint Ranking

The emergence of Optimality Theory has provided new insights apart from the derivational approaches (Prince and Smolensky 1993, McCarthy and Prince 1994).

Linguists like Rice (1997, 2000), Hayes (2000) and Kager (2001), among others, have pursued the generative metrics from the constraint-based perspective, and characterized poetic meter by virtue of constraint reranking.   In this section, I develop an OT account of the rhythm of the nursery thymes.   Several comments are summarized.   First, the basic metrical template posited in (14) preferentially map syllables and beats on a one-to-one basis.   Second, a masculine NR line is preferred over a feminine one.   A pair of constraints can thus be formalized as follows.

(32) NoShare: every syllable is assigned a single beat.
(33) Masculinity: a masculine rhythm is preferred.

NoShare conflicts with Masculinity in the event that the one-to-one beat assignment results in a feminine NR line, which would sound less metrical or unmetrical, as have been shown in (27).   Due to the fact that a masculine rhythm is preferred, Masculinity must rank above NoShare.   In other words, beat-sharing is inevitable in cases like (34):

(34) TY112-006   te-it   huan-lo *si* ka-lai san   = (27)
　　　　　　　　　　first   worry   be   home poor

	Masculinity	NoShare
a. 　x　x 　　　-lo si	*!	
☺ b. 　　x 　　　-lo si		*
☺ c. 　x 　　　si ka-		*

In (34a) each syllable receives a beat such that a feminine rhythm is created (= 27a), in violation of Masculinity.   In (34b,c), *si* shares a beat either with a preceding syllable or with a following syllable; both render a masculine rhythm (= 27b,c), and thus both are selected as optimal outputs (shown by the happy face, ☺).

(35) TY112-006   te-it   huan-lo   *si*   ka-lai san   = (27)
      first   worry   be   home poor

	Masculinity	NoShare
☹ a. x huan-lo		*
☺ b. x -lo si		*
☺ c. x si ka-		*
☹ d. x ka-lai		*

Note that not any syllable is subject to beat sharing.   A third observation is as follows: to prevent a feminine rhythm, it is an F category that shares a beat with an adjacent syllable.   As shown in (35), if *si* does not share a beat with an adjacent syllable, candidates (a) and (d) would be incorrectly selected (indicated by the upset face, ☹).   The constraint in (36) is thus indispensable:

(36) FShare: an F category shares a beat with an adjacent syllable.

FShare should rank between Masculinity and NoShare.   This partial ranking allows the F category to share a beat with an adjacent syllable only if a feminine rhythm would be obtained otherwise.   In (37) FShare successfully eliminates candidates (a) and (d).

(37) TY112-006   te-it   huan-lo   *si*   ka-lai san   = (27)
      first   worry   be   home poor

	Masculinity	FShare	NoShare
a. x x -lo si	*!		
b. x huan-lo		*!	*
☺ c. x -lo si			*
☺ d. x si ka-			*
e. x ka-lai		*!	*

A fourth observation is that a pair of syllables that are morphosyntactic ICs shares a beat, when no F category is involved. The constraint in (38) serves to capture this insight.

(38) ICShare: two syllables that are morphosyntactic ICs share a beat.

The ranking of ICShare is also below Masculinity and above NoShare. ICs share a beat in order to achieve a masculine rhythm. In (39), candidates (c,d) are ruled out by ICShare, since the non-ICs share a beat. Candidate (a) has no beat sharing and derives a feminine rhythm, in violation of Masculinity. As a result, candidate (b) is chosen as the optimal output, where *tsa-bo* shares a beat.

(39) TN021-004   tsap it   tshiaN tsa-bo kiaN   = (31)
        ten one invite   female kid

	Masculinity	ICShare	NoShare
a. x x tsa-bo	*!		
☺ b. x tsa-bo			*
c. x tshiaN tsa-		*!	*
d. x -bo kiaN		*!	*

The next question lies in the interaction of Fshare and ICShare. Consider again (37), where the IC pairs *huan-lo* and *ka-lai* are not allowed to share beats, but the beat sharing must involve the F category *si*. It thus becomes clear that FShare is ranked higher than ICShare, as shown in the following tableau.

(40) TY112-006   te-it   huan-lo *si*   ka-lai san   = (27)

first   worry   be   home poor

	Masculinity	FShare	ICShare	NoShare
a. x x -lo si	*!			
b. x huan-lo		*!		*
☺ c. x -lo si			*	*
☺ d. x si ka-			*	*
e. x ka-lai		*!		*

When adjacent ICs are both F categories, FShare will be insufficient to prevent either member of the ICs from sharing a beat with an outsider. As shown in (41), candidates (c,d) are ruled out by ICShare but not FShare, whereby candidate (b) merges as the optimal output.

(41) TY056-003   tsao tshut-lai khuaN   (= 30)

run DIR-DIR look

	Masculinity	FShare	ICShare	NoShare
a. x x tshut-lai	*!			
☺ b. x tshut-lai				*
c. x tsao tshut-			*!	*
d. x -lai kuaN			*!	*

Before closing the discussion, I shall consider again the tables in (7) and (13); the former shows that 91.59% of the NR lines are masculine, but the latter shows that 61.52% of the NR lines end in a [1 2] tree. Assuming the basic template in (14), we can expect a mismatch between prosody and syntax. Specifically, the metricality is (43) can be comprehended in a gradient manner: (a) > (b,c) > (d,e).

(42) a.   f   f   ?b.   f   f
              / \   / \   / \   / \
         X   x   X   <u>x</u>   X   x   X   x
     … [σ [σ   σ]]   … [σ [σ   σ]]

  ?c.   f   *d.   f
              / \   / \
         X   <u>x</u>   X   x
     … [σ [σ   σ]]   … [σ [σ   σ]]

  *e.   f   f
       / \   / \
     X   x   X   <u>x</u>
   … [σ [σ   σ]]

The footing and syntax completely mismatch in (42a), which, however, is masculine and metrically preferred. (42b,c) are feminine readings, which sound less metrical. As to (42d,e), both are unmetrical. The reason for the unmetricality is that the final two syllables share a beat in both readings. In other words, the final syllable is not subject to beat sharing, and a more primitive member of NoShare can be singled out, as in (43):

(43) NoShareFi: the final syllable is assigned a single beat.

NoShareFi ranks higher than FShare, ICShare and NoShare. That is, the final syllable does not share a beat with a preceding syllable even if an F category or a pair of ICs is involved. NoShareFi does not conflict with Masculinity, and thus the constraint ranking is as follows:

(44)   Masculinity, NoShareFi   >>
    FShare   >>
    ICShare   >>
    NoShare

7. Summary and Further Objectives

This paper has offered an analysis of Chang Hua nursery rhymes based on a

corpus, in which five types of information are focused, namely, the count of beats, the count of syllable, word categories, syntax tree and simplified tree. The nursery rhymes prefer a masculine rhythm, which scales 90.67% of the data. A feminine line can be avoided by virtue of beat sharing. The essential factors governing beat sharing include a categorical distinction and syntactic immediate constituency.

In Chinese regulated verse, syllables are mapped to beats on a one-to-one basis. The nursery rhymes exhibit not only metrical patterns of regulated verse but also that of irregulated verse. In the nursery rhymes, the number of syllables and the number of beats do not always match, and the syllable-beat mapping may require beat sharing to achieve a masculine line. The corpus shows that the length of a NR line may range from two beats to fourteen beats. To account for this variety of length, I have proposed a basic template, in which there are seven audible beats followed by a silent beat. A shorter NR line may partially fill the template, while a longer NR line may contain more than one metrical line

In this paper, I posit a set of constraints to account for the various metrical patterns of the nursery rhymes, and put forth a partial constraint ranking: Masculinity, NoShareFi >> FShare >> ICShare >> NoShare. This ranking ensures that a masculine line has priority to surface, and that F categories and syntactic ICs are subject to beat sharing in the case of syllable-beat asymmetry, except that the final syllable must receive a single beat.

計畫成果自評

此項專題原本提出二年計畫，擬從事節律與變調分析。不過由於後來經費只核定一年，因此本研究著重於節律分析。

本研究之理論貢獻如下：
1. 首次建立一個大型的閩南語童謠電子語料庫，共計三千五百餘行，比原計畫預計之二千行超出近一倍，成果比預期佳
2. 此次建立之語料庫標注句法、詞類、音節與音板，並使用十分普及的 Excel 軟體建立語料庫，可方便流通。代本計畫之相關論文出版後，即可將語料庫掛於網頁上提供學者進一步利用。
3. 首次以優選理論分析閩南語童謠的節律，驗證一套普遍語法制約，從非派生角度提出一個新的理論分析模式。

本報告已有其完整性，擬投稿國外期刊。

本研究之階段性成果曾發表於以下三個研討會：

2004. "The Metrical Structure of Taiwanese Nursery Rhymes: A Corpus Study." Paper for the 2004 Poetics and Linguistics Association Annual International Conference. New York University, USA.
2005. "The Rhythm of Traditional and Creative Nursery Rhymes in Southern Min." Paper for the First Theoretical Phonology Conference. Taipei.
2005. "The Rhythm of Southern Min Child Verse: A Corpus Study." Paper for NACCL-17. Monterey, California , USA.

人才培育方面，參與碩士生包括吳耿彰，呂明昌，魏珮芝，陳奕文，王孝慈，廖珮筠及張碧純。在本計畫的薰陶下，吳耿彰及陳奕文的碩士論文分別從語料庫角度分析國台語口音，方智瑋的碩士論文則從語料庫角度分析漢語詩律；此外，碩士生黃婷亦正進行漢語手指謠之語料庫建立、頗具心得。

Appendix 1

Syntax tree	Lines	Percentage
[V NN]	169	5.357%
[NN [V NN]]	87	2.758%
[NN N]	52	1.648%
[N [V N]]	46	1.458%
[A NN]	41	1.300%
[M [V N]]	22	0.697%
[[NN S][V NN]]	20	0.634%
[NN A]	20	0.634%
[NN [AA V]]	19	0.602%
[V N][V NN]	19	0.602%
[[N Q] N]	19	0.602%
[V N][V N]	18	0.571%
[NN V]	18	0.571%
[NN [[N Q] N]]	16	0.507%
[NS [V NN]]	16	0.507%
[V [P [NN N]]]	16	0.507%
[NN [V N]]	16	0.507%
[AA V]	16	0.507%
[N AA]	16	0.507%
[NN [A AA]]	15	0.475%
[V [A N]]	14	0.444%
[[N N][V NN]]	13	0.412%
[[V N]][V NN]]	13	0.412%
[[N E] N]	13	0.412%
[N NN]	13	0.412%
[NS N]	13	0.412%
[NN AA]	12	0.380%
[A [V N]]	12	0.380%
[V [N Q]]	12	0.380%
[[N Q] V]	11	0.349%
[A AA]	11	0.349%
[NN [V AA]]	10	0.317%
[AA N]	10	0.317%
[N [A V]]	10	0.317%

[V AA]	10	0.317%
[NN [[N Q] V]]	9	0.285%
[A [V NN]]	9	0.285%
[[NN N][V NN]]	8	0.254%
[V NN][V NN]	8	0.254%
[[V K][NN N]]	8	0.254%
[N N][V NN]	8	0.254%
[NN [[V N][V [V N]]]]	7	0.222%
[[A N][V VN]]	7	0.222%
[NN [L NN]]	7	0.222%
[NN [NN N]]	7	0.222%
[NN [V [N Q]]]	7	0.222%
[NN [V [P N]]]	7	0.222%
[B [V N]]	7	0.222%
[[[N Q] NS][A AA]]	6	0.190%
[[V N][AA V]]	6	0.190%
[AA [V NN]]	6	0.190%
[N N][V [N Q]]	6	0.190%
[NN [A [B V]]]	6	0.190%
[NN [L [D V]]]	6	0.190%
[[A N] NN]	6	0.190%
[[NN S] N]	6	0.190%
[[NN S] V]	6	0.190%
[AN N]	6	0.190%
[N [W V]]	6	0.190%
[N N N]	6	0.190%
[NS V]	6	0.190%
[V [D N]]	6	0.190%
[V KK]	6	0.190%
[V WN]	6	0.190%
[[[N Q] NS][V NN]]	5	0.158%
[N [L [NN NN]]]	5	0.158%
[[A N][V [A N]]]	5	0.158%
[[VK][NN N]]	5	0.158%
[M V][D [V N]]	5	0.158%
[N [V [NN N]]]	5	0.158%
[NN [M VN]]	5	0.158%

[NN [V [A N]]]	5	0.158%
[NN [V [V N]]]	5	0.158%
[NN [V KK]]	5	0.158%
[NS][V NN]	5	0.158%
[NN][NN]	5	0.158%
[[V K] N]	5	0.158%
[A [A V]]	5	0.158%
[E E E]	5	0.158%
[N [B V]]	5	0.158%
[V [B A]]	5	0.158%
[V [K V]]	5	0.158%
[VN N]	5	0.158%
[[[N Q] NS][AA AA]]	4	0.127%
[[[N N][N N]][V NN]]	4	0.127%
[[[N Q] NS][V [A N]]]	4	0.127%
[AA [NN [V NN]]]	4	0.127%
[NN [[N Q][NN N]]]	4	0.127%
[NN [V [P [NN N]]]]	4	0.127%
[[NN S][V AA]]	4	0.127%
[[NS N][V NN]]	4	0.127%
[[N Q][NN N]]	4	0.127%
[[N Q][NN V]]	4	0.127%
[[V D][V NN]]	4	0.127%
[[V N][K [V N]]]	4	0.127%
[A [V [NN N]]]	4	0.127%
[M [V [NN N]]]	4	0.127%
[N [V [A NN]]]	4	0.127%
[NN [[N N] V]]	4	0.127%
[[NN [AA A]]	4	0.127%
[NN [V [B A]]]	4	0.127%
[NS [A [V N]]]	4	0.127%
[V [K [A AA]]]	4	0.127%
[V [M [V NN]]]	4	0.127%
[V [P [N NN]]]	4	0.127%
[V N][N VV]	4	0.127%
[[N N][N N]]	4	0.127%
[M [V NN]]	4	0.127%

[N A][N A]	4	0.127%
[N N][N N]	4	0.127%
[NN VV]	4	0.127%
[NS [V N]]	4	0.127%
[[A N] N]	4	0.127%
[[V E] V]	4	0.127%
[[V N] V]	4	0.127%
[[W D] V]	4	0.127%
[A VN]	4	0.127%
[C [V N]]	4	0.127%
[D [V N]]	4	0.127%
[D NN]	4	0.127%
[K [V N]]	4	0.127%
[N [A A]]	4	0.127%
[N VV]	4	0.127%
[V [B K]]	4	0.127%
[V [B N]]	4	0.127%
[V NS]	4	0.127%
[VV N]	4	0.127%
[NN]	4	0.127%
[[[N Q] NN][V NN]]	3	0.095%
[[[N Q] NS][AAA]]	3	0.095%
[[[N Q][A N]][A AA]]	3	0.095%
[[D N][V [P [NN N]]]]	3	0.095%
[[NN][NN][NN N]]	3	0.095%
[NN [[V N][P NN]]]	3	0.095%
[NN [VN][V NN]]	3	0.095%
[V [P NN]][AA V]	3	0.095%
[V [P NN]][V NN]	3	0.095%
[[[N N] S][V NN]]	3	0.095%
[[V NS][V NN]]	3	0.095%
[N [L [NN VV]]]	3	0.095%
[NN [VV NN]]	3	0.095%
[V [P [AN NN]]]	3	0.095%
[[N N][V [K A]]]	3	0.095%
[[N N][V [N Q]]]	3	0.095%
[[N Q][A NN]]	3	0.095%

[[N Q][AA V]]	3	0.095%
[[N Q][V NN]]	3	0.095%
[[NN S] VK]	3	0.095%
[[NN] C [NN]]	3	0.095%
[[V A][NN N]]	3	0.095%
[[V K][V NN]]	3	0.095%
[[VK][[N Q] N]]	3	0.095%
[N A][N AA]	3	0.095%
[N N][NN N]	3	0.095%
[N V][AA V]	3	0.095%
[NN [A [V N]]]	3	0.095%
[NN [B [A V]]]	3	0.095%
[NN [B [V N]]]	3	0.095%
[NN [M [V N]]]	3	0.095%
[NN [V [K V]]]	3	0.095%
[NN [V VV]]	3	0.095%
[NN [VK V]]	3	0.095%
[NN][NN N]	3	0.095%
[NS [[N Q] N]]	3	0.095%
[NS [A AA]]	3	0.095%
[V [D [V NN]]]	3	0.095%
[V [K [V NN]]]	3	0.095%
[V [P [NS N]]]	3	0.095%
[V D][B [V N]]	3	0.095%
[V K][[N Q] N]]	3	0.095%
[V N][A AA]	3	0.095%
[V N][V [K V]]	3	0.095%
[[N N][A V]]	3	0.095%
[[NN N] S]	3	0.095%
[A N][A N]	3	0.095%
[AN AA]	3	0.095%
[B [V NN]]	3	0.095%
[N V][AA]	3	0.095%
[NN [A V]]	3	0.095%
[NS VV]	3	0.095%
[V [A NN]]	3	0.095%
[V [NS N]]	3	0.095%

[V N][VV]	3	0.095%
[[P N] V]	3	0.095%
[[V A] N]	3	0.095%
[[V D] N]	3	0.095%
[[V K] A]	3	0.095%
[[V W] V]	3	0.095%
[A [P N]]	3	0.095%
[A A A]	3	0.095%
[AA A]	3	0.095%
[AN V]	3	0.095%
[B [N Q]]	3	0.095%
[BB V]	3	0.095%
[N [M V]]	3	0.095%
[V [B V]]	3	0.095%
[V [P N]]	3	0.095%
[[V K][V K]][[V K][D NN]]	2	0.063%
[NN [[V D]][N Q][N NN]]]]	2	0.063%
[NN [[V D]][V N][K [V N]]]]	2	0.063%
[NN [M [V [NN [V NN]]]]]	2	0.063%
[NN S][V [D [M [V NN]]]]	2	0.063%
[VV [NN [[M V][V NN]]]]	2	0.063%
[[[N Q] NS][NN NN]]	2	0.063%
[[NN N][[V K][V NN]]]]	2	0.063%
[[NN S][[AV][V NN]]	2	0.063%
[[V K][NN A][NN A]]	2	0.063%
[D [[V D][V N]]][D VN]	2	0.063%
[NN S][V [K [V NN]]	2	0.063%
[[[N Q] NN][AA V]]	2	0.063%
[[[V K][V K]][V NN]]	2	0.063%
[[[V N][V N]][BA V]]	2	0.063%
[[[V N][V N]][K [V N]]]	2	0.063%
[[[V N][V N]][K VV]]	2	0.063%
[[[V N][V N]][V NN]]	2	0.063%
[[AN VN][D [V A]]]	2	0.063%
[[B N][B N]][V [A N]]	2	0.063%
[[D N][[V D][B [V N]]]	2	0.063%
[[DS NN][L NN]]	2	0.063%

[[NN NN][[V D] V]]	2	0.063%
[[NN NN][V NN]]	2	0.063%
[[NN VV][N [V N]]]	2	0.063%
[[NN][NN][A VV]]	2	0.063%
[[NN][NN][AA V]]	2	0.063%
[[NN][NN][M [V N]]]	2	0.063%
[[NN][NN][V NN]]	2	0.063%
[[NN][NN]][AA V]	2	0.063%
[[NN][NN]][K [V N]]	2	0.063%
[[NN][NN]][N VN]	2	0.063%
[[NN][V N][N [V N]]	2	0.063%
[[P D][V [K [A AA]]]]	2	0.063%
[[V N][V N]][V NN]	2	0.063%
[[V NN][VV NN]]	2	0.063%
[AA [[V N][V NN]]]	2	0.063%
[AS [[N Q][[N N] N]]]	2	0.063%
[M [V NN][V NN]]	2	0.063%
[N N][N N][[N P] V]	2	0.063%
[NN [[N Q][A NN]]]	2	0.063%
[NN [[N V][B VV]]]	2	0.063%
[NN [[P N][V NN]]]	2	0.063%
[NN [[V D][NN N]]]	2	0.063%
[NN [B V]][N [B V]]	2	0.063%
[[NN [NN [V NN]]]	2	0.063%
[NN [V N]][M [V N]]	2	0.063%
[NN [VN [V NN]]]	2	0.063%
[NN VN][N [A V]]	2	0.063%
[NN][NN][AA V]	2	0.063%
[NN][NN][NN N]	2	0.063%
[NS [VK [V NN]]]	2	0.063%
[V [D [NN] C [N N]]]	2	0.063%
[V [D NN][AA V]]	2	0.063%
[V [D NN]][A AA]	2	0.063%
[V D [[N Q][AA B]]]	2	0.063%
[V D][[V N][V NN]]	2	0.063%
[VV NN][A NN]	2	0.063%
[[[N N] S][NN N]]	2	0.063%

[[NN N][[N Q] N]]	2	0.063%
[[NN N][A NN]]	2	0.063%
[[NN S][V [B A]]]	2	0.063%
[[NN S][V [K V]]]	2	0.063%
[[NN S][V AN]]	2	0.063%
[[V NN][V NN]]	2	0.063%
[D [V D][[N Q] N]]	2	0.063%
[N [L [NN VN]]]	2	0.063%
[NN [[N Q] NN]]	2	0.063%
[NN [V [[N Q] N]]]	2	0.063%
[[A N][A [B A]]	2	0.063%
[[D N][NN N]]	2	0.063%
[[D N][V KK]]	2	0.063%
[[N N][V [N N]]]	2	0.063%
[[N Q][[V N] V]]	2	0.063%
[[N Q][A [B V]]]	2	0.063%
[[N Q][K [V N]]	2	0.063%
[[N Q][L NN]]	2	0.063%
[[NN NN] N]	2	0.063%
[[NS][AA V]]	2	0.063%
[[NS][NS]] V]	2	0.063%
[[P N][V NN]]	2	0.063%
[[V D][V [K V]]]	2	0.063%
[[V K][NN Q]]]	2	0.063%
[[V N][[N Q] N]]	2	0.063%
[[V N][A [V N]]]	2	0.063%
[[V N][A AA]]	2	0.063%
[[V N][A NN]]	2	0.063%
[[V N][B [V N]]]	2	0.063%
[[V N][L NN]]	2	0.063%
[[V N][M [V N]]]	2	0.063%
[[V N][N NN]]	2	0.063%
[[V N][NN N]]	2	0.063%
[A [A [V [D V]]]]	2	0.063%
[A [B [[N Q] N]]]	2	0.063%
[A [L [NN N]]]	2	0.063%
[A [M [P NN]]]	2	0.063%

[A V][L NN]	2	0.063%
[A V][V NN]	2	0.063%
[AA [AA V]]	2	0.063%
[AA [L [V N]]]	2	0.063%
[AA [V [D V]]]	2	0.063%
[AA [V AA]]	2	0.063%
[D [P [B VV]]]	2	0.063%
[D [P [M VV]]]	2	0.063%
[D V][[V D] V]	2	0.063%
[M V][[P D] V]	2	0.063%
[M V][B [V N]]	2	0.063%
[N [V [AN N]]]	2	0.063%
[N A][N [V N]]	2	0.063%
[N N][N NN]	2	0.063%
[N V][N [P V]]	2	0.063%
[N V][V NN]	2	0.063%
[NN [[A N] V]]	2	0.063%
[NN [[V A] N]]	2	0.063%
[NN [[V N] V]]	2	0.063%
[NN [A [M V]]	2	0.063%
[NN [A AV]]	2	0.063%
[NN [A NN]]	2	0.063%
[NN [B [A N]]]	2	0.063%
[NN [B [D N]]]	2	0.063%
[NN [D NN]]	2	0.063%
[NN [K [V N]]]	2	0.063%
[NN [M VV]]	2	0.063%
[NN [N AA]]	2	0.063%
[NN [V [A B]]]	2	0.063%
[NN [V [A V]]]	2	0.063%
[NN [V [N N]]]	2	0.063%
[NN [VV N]]	2	0.063%
[NN][N [V N]]	2	0.063%
[NN][NN Q]	2	0.063%
[NS [AA V]]	2	0.063%
[NS [M [V A]]]	2	0.063%
[NS [V [A N]]]	2	0.063%

[NS][N NN]	2	0.063%
[NS][NN N]	2	0.063%
[V [[N Q] NN]]	2	0.063%
[V [D [A NN]]]	2	0.063%
[V [D [NN N]]]	2	0.063%
[V [K [A NN]]]	2	0.063%
[V [P [V NN]]]	2	0.063%
[V E][V NN]	2	0.063%
[V N][AA A]	2	0.063%
[V N][B [A V]]	2	0.063%
[V N][B [V N]]	2	0.063%
[V N][N [V N]]	2	0.063%
[V N][V [B A]]	2	0.063%
[VN][V NN]	2	0.063%
[VV [N [V N]]]	2	0.063%
[VV [NN N]]	2	0.063%
[VV][V NN]	2	0.063%
[[[N Q] N] V]	2	0.063%
[[N N][V N]]	2	0.063%
[[N Q] VK]	2	0.063%
[[N Q][V N]]	2	0.063%
[A [B [V N]]]	2	0.063%
[AA AA]	2	0.063%
[C [M [V N]]	2	0.063%
[D [M [V N]]	2	0.063%
[D [V NN]]	2	0.063%
[N [[N Q] V]]	2	0.063%
[N [[P D] V]]	2	0.063%
[N [NN S]]	2	0.063%
[N [V [A N]]]	2	0.063%
[N V][N V]	2	0.063%
[NN [L N]]	2	0.063%
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[V N][B V]	2	0.063%
[VV VV]	2	0.063%
[[B D] V]	2	0.063%
[[E E] V]	2	0.063%
[[N N] N]	2	0.063%
[[V D] V]	2	0.063%
[A [D V]]	2	0.063%
[A [M V]]	2	0.063%
[A [N N]]	2	0.063%
[A [N Q]]	2	0.063%
[A AN]	2	0.063%
[A C A]	2	0.063%
[A VV]	2	0.063%
[C [A V]]	2	0.063%
[D [B V]]	2	0.063%
[D [N Q]]	2	0.063%
[K [V D]]	2	0.063%
[M [V A]]	2	0.063%
[M VV]	2	0.063%
[N [A N]]	2	0.063%
[N [L V]]	2	0.063%
[N [V K]]	2	0.063%
[N C N]	2	0.063%
[N VN]	2	0.063%
[NN Q]	2	0.063%
[P NN]	2	0.063%
[V [A K]]	2	0.063%
[V [K A]]	2	0.063%
[V [M V]]	2	0.063%
[V [P B]]	2	0.063%
[V [V N]]	2	0.063%
[V AN]	2	0.063%
[VV V]	2	0.063%
[WW V]	2	0.063%
[D V]	2	0.063%
[[N Q] NS][VK [[V NS][K [V NS]]]]	1	0.032%

[[N Q] NS][V [[N Q] NS][K [N S]]]]	1	0.032%
[[V A][V A]][A [L [D [[N Q][A NN]]]]]	1	0.032%
[[NN S][P [L [V [N Q]][V [N Q]]]]]	1	0.032%
[[V K][AA NN]][P [AB VV]]	1	0.032%
[[NN S][NN][NN][A [B V]]]	1	0.032%
[A [B [V [NN [AA [V KK]]]]]]	1	0.032%
[C [[N Q] NS]][AA [V VV]]	1	0.032%
[NN [[V K][[N Q][NN N] S]]]]	1	0.032%
[NN [WN [VV [[P NN] V]]]	1	0.032%
[NS [V [P [[NN N] S]]]][AA V]]	1	0.032%
[V [[N Q][[NN S] N][K [V N]]]	1	0.032%
[V [D [[NN Q][NN [V NN]]]]]	1	0.032%
[V [M [V [[AN S] S][NN N]]]]]	1	0.032%
[V D][[D Q][AA NN]][V AA]]	1	0.032%
[[[N Q] NS][A [B [V NN]]]]	1	0.032%
[[[NN N] S][VK [V NN]]]	1	0.032%
[[AA NN][[V K][NN N]]]	1	0.032%
[[AA NN][V D][N NN]]	1	0.032%
[[AA NN][VK [V NN]]]]	1	0.032%
[[AN NN][V [K [A AA]]]	1	0.032%
[[AN S][[V N][VK [V N]]]]]	1	0.032%
[[N [NN S]][A N][B [A N]]	1	0.032%
[[N Q][[N NN] S]][A AA]]	1	0.032%
[[NN S] N][[V K][V NN]]]	1	0.032%
[[NN S][V [N Q]][AAA]]	1	0.032%
[[NN][NN][V D][B [VN]]	1	0.032%
[[NN][NN][V N][N NN]]	1	0.032%
[[NS][D V]][NS [P [B V]]]	1	0.032%
[[P D][V [K [NN [AA V]]]]]	1	0.032%
[[V [D NN][VK [V NN]]]	1	0.032%
[[V K] NN][NS [V [V N]]]	1	0.032%
[B [L [[D NN][L [V NN]]]]]	1	0.032%
[B [L [[NN][D NN][V K]]]	1	0.032%
[B [L [[NS][D NN]][V K]]]	1	0.032%
[B [V [D [D Q][AA NN]]]]	1	0.032%
[C [B [[N Q] NN][V NN]]]	1	0.032%

[D [B [M [V A]]][B [M [V A]]]]	1	0.032%
[D [V [P NN]]][AA [B A]]	1	0.032%
[D [V [P NN]]][BB VV]	1	0.032%
[N N][V [NN S][V NN]]	1	0.032%
[NN [[N Q] NN][V [P N]]]	1	0.032%
[NN [[N Q][NN [NN N]]	1	0.032%
[NN [[V N][[NN NN] N]]]	1	0.032%
[NN [[V N][NN [V NN]]	1	0.032%
[NN S][NN S][V NN]	1	0.032%
[NN][NN][[V N][AA V]]	1	0.032%
[NN][NN][[V N][N NN]]	1	0.032%
[V [[N Q] N] S][V [K [V N]]]	1	0.032%
[V [A [[NN][NN]][A VV]]	1	0.032%
[V [D [[NN N] S]][K VV]]	1	0.032%
[V [D [N NN] C [N NN]]]	1	0.032%
[V [D [NS][NS]][K [V N]]]]	1	0.032%
[V [K [NS AA][N AA]]]	1	0.032%
[WN [VV]][P [K [V NN]]]	1	0.032%
[[[N Q] NS][[V K][V K]]]	1	0.032%
[[[N Q][NN S]][A AA]]	1	0.032%
[[D NS][[V N][V NN]]]	1	0.032%
[[N N] S][B [V [A AA]]]	1	0.032%
[[N N] S][V [K [NS N]]]	1	0.032%
[[N N][V KK][A VV]]]	1	0.032%
[[N Q] N][V [P [NN N]]]]	1	0.032%
[[N Q] NS][VV NS]	1	0.032%
[[N Q][NN N]][A [V N]]]	1	0.032%
[[N Q][NS N]][[N Q] V]	1	0.032%
[[NN N][V [P [D NN]]]]	1	0.032%
[[NN N][VV [NN N]]]	1	0.032%
[[NN S][NN [A AA]]]	1	0.032%
[[NN S][NS [V NN]]]	1	0.032%
[[NN S][VV [V [B N]]]]	1	0.032%
[[NN][NS][A [V K A]]]	1	0.032%
[[NS N][V [P [A AA]]]]	1	0.032%
[[NS N][V [P [V AA]]]]	1	0.032%
[[V [D NN][V [K AA]]]	1	0.032%

[[V K][[D NN] S] NN]]	1	0.032%
[[V K][[NS N][NN Q]]]	1	0.032%
[[V K][A N]][K [[P D] V]]]	1	0.032%
[[W [N Q]][VA]][D [P A]]	1	0.032%
[A [B [L [V N]]]][C [V N]]	1	0.032%
[AA [VA [[D Q] NN]]]	1	0.032%
[B [[C [NN N]][V [P N]]]	1	0.032%
[L [M [V [[NN S][NN]]]]]	1	0.032%
[N [P [NN S][VV A]]]	1	0.032%
[N [P [P [V [K [A AA]]]]]]	1	0.032%
[N N][[NN N][VK V]]	1	0.032%
[NN [[N Q][[A N] NN]]]	1	0.032%
[NN [A [V [DS NN]]]]	1	0.032%
[NN [V NA][V NN]]	1	0.032%
[NN [V NN][[P N] V]]	1	0.032%
[NN [V NN][V VN]]	1	0.032%
[NN S][B [V [M [AA]]]]	1	0.032%
[NN S][NN [V [N Q]]]	1	0.032%
[NN S][V [P [V NN]]	1	0.032%
[NN][[V KK][P NN]]	1	0.032%
[NS N][V [K [A AA]]]]	1	0.032%
[P [B [L [[NN S] NN]]]]	1	0.032%
[P [L [D [[N Q][A NN]]]]]	1	0.032%
[[PP [V [K [AA AA]]]	1	0.032%
[V [[N Q] NN][A AA]]	1	0.032%
[V [D [[NN] C [NN N]]]]	1	0.032%
[V [D [K [[V N] C [V N]]]]]	1	0.032%
[V [D [NN S]]][A [L N]]	1	0.032%
[V [D N]][NN [[N N] N]]	1	0.032%
[V [N Q]][NN [V NN]]	1	0.032%
[V [P [[[NN S] S] NN]]	1	0.032%
[V [P [[D NS][NN N]]]]	1	0.032%
[V [P [NN N][V NN]]]	1	0.032%
[V [P [NN S][[N N] V]]]	1	0.032%
[V [P [NN S][N VV]]]	1	0.032%
[V NS][NN [V [B N]]]	1	0.032%
[VN [P [DS [NS N]]]]	1	0.032%

[[[[N Q] N] S][V AA]]	1	0.032%
[[[[N Q] S] N][V AA]]	1	0.032%
[[[[V K] N][L [NN S]]]]	1	0.032%
[[[A N][V N]][V NN]]	1	0.032%
[[[A V] NN]][B AA]]	1	0.032%
[[[A V] NS]][NN V]]	1	0.032%
[[[A V][A N]][B AA]]	1	0.032%
[[[B N] NN][A AA]]	1	0.032%
[[[D N] NN][A [A V]]]	1	0.032%
[[[D N] NN][AA V]]	1	0.032%
[[[D N] NN][B AA]]	1	0.032%
[[[DN S] N][NN Q]]	1	0.032%
[[[N A][N A]][V NN]]	1	0.032%
[[[N N][N N]][A VV]]	1	0.032%
[[[N N][N N]][V AA]]	1	0.032%
[[[N N][NN]][A [B A]]]	1	0.032%
[[[N Q] NN][[N Q] V]]	1	0.032%
[[[N Q] NN][[V K] N]]	1	0.032%
[[[N Q] NN][A AA]]	1	0.032%
[[[N Q] NN][AA A]]	1	0.032%
[[[N Q] NN][K [V N]]]	1	0.032%
[[[N Q] NN][V [A N]]]	1	0.032%
[[[N Q] NN][V [N Q]]]	1	0.032%
[[[N Q] NN][V KK]]	1	0.032%
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[[[N Q] NS][[N Q] A]]	1	0.032%
[[[N Q] NS][[N Q] N]]	1	0.032%
[[[N Q] NS][[V N] A]]	1	0.032%
[[[N Q] NS][A [V N]]]	1	0.032%
[[[N Q] NS][AA V]]	1	0.032%
[[[N Q] NS][L [V N]]]	1	0.032%
[[[N Q] NS][NN N]]	1	0.032%
[[[N Q] NS][NN V]]	1	0.032%
[[[N Q] NS][V [B A]]]	1	0.032%
[[[N Q] NS][V AN]]	1	0.032%
[[[N Q][A N]][V [B A]]]	1	0.032%
[[[N Q][B V]][P AA]]	1	0.032%

[[[N Q][V N]][A [N Q]]]	1	0.032%
[[[NN [V N]][A AA]]	1	0.032%
[[[NN N] S][[N Q] N]]	1	0.032%
[[[NN N] S][[V K] N]	1	0.032%
[[[NN N] S][A AN]]	1	0.032%
[[[NN N] S][NN A]]	1	0.032%
[[[NN N] S][NN N]]	1	0.032%
[[[NN N]S][A VV]]	1	0.032%
[[[NN S] N][V NN]]	1	0.032%
[[[NN] C [N]][A VV]]	1	0.032%
[[[NN] C [N]][AA A]]	1	0.032%
[[[NN][N Q][L NN]]]	1	0.032%
[[[NN][NN]][A [B V]]]	1	0.032%
[[[V A] NN][V [A N]]]	1	0.032%
[[[V A][V A]][V NN]]	1	0.032%
[[[V K] NN][V [N V]]]	1	0.032%
[[[V K] NN][V AA]]	1	0.032%
[[[V K][V K]][[V K] D]]	1	0.032%
[[[V N][V N]][A VV]]	1	0.032%
[[[V N][V N]][B [A N]]]	1	0.032%
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[[[V N][V N]][P NN]]	1	0.032%
[[[A A] NN]][D [A V]]]	1	0.032%
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[[A N][[V N][B [V N]]]	1	0.032%
[[A N][[V N][P [V N]]]	1	0.032%
[[A N][A N][[N Q] V]]	1	0.032%
[[A N][V [P [NN N]]]	1	0.032%
[[A NN] S][A NN]	1	0.032%
[[A V][A V][V [B K]]	1	0.032%
[[AA AA][D [N Q]]]	1	0.032%
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[[AA NN][B [L N]]]	1	0.032%
[[AA NS][V NN]]	1	0.032%
[[AN NN][A NN]]	1	0.032%
[[AN VN][[A N] V]]	1	0.032%

[[B A][B A]][K VV]]	1	0.032%
[[B N][B N]][N [B V]]	1	0.032%
[[B N][B N]][V AA]	1	0.032%
[[B V][[D N][VK V]]]	1	0.032%
[[B V][K [V [D NN]]]]	1	0.032%
[[D N] VV][D [A V]]]	1	0.032%
[[D N][[P N][V NN]]]	1	0.032%
[[D N][[V N][A VV]]]	1	0.032%
[[D N][[V N][V NN]]]	1	0.032%
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[[D N][[VV][P NN]]]	1	0.032%
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[[D N][V N]][N [V N]]	1	0.032%
[[DN S][K [V N]]	1	0.032%
[[DS NN][V VV]]	1	0.032%
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[[N [V NN]][V [V N]]	1	0.032%
[[N A][K [V [P [N A]]]]]	1	0.032%
[[N N] NN][[N N] N]	1	0.032%
[[N N] S][V [KK V]]	1	0.032%
[[N N][K V]][B [V N]]	1	0.032%
[[N N][N N]][AA V]	1	0.032%
[[N N][NN [V NN]]]	1	0.032%
[[N N][NN]][AA V]	1	0.032%
[[N N][V A]][AA V]	1	0.032%
[[N N][V D][V NN]]	1	0.032%
[[N N][V N]][[N N] V]]	1	0.032%
[[N N][VV [N [V N]]]]	1	0.032%
[[N NN] S][A [V N]]]	1	0.032%
[[N Q] [A [B [V NN]]]]	1	0.032%
[[N Q] NN][V [A V]]	1	0.032%
[[N Q] NS][V [N N]]	1	0.032%
[[N Q][[A N] S][A N]]	1	0.032%
[[N Q][[AV] C [AV]]]	1	0.032%
[[N Q][[V K][VV N]]]	1	0.032%
[[N Q][M [V [WA N]]]]	1	0.032%
[[N Q][NN [AA V]]]	1	0.032%

[[N Q][V [[NN S] N]]]	1	0.032%
[[N Q][VV]][VV N]	1	0.032%
[[N V][M [[P NN] V]]]	1	0.032%
[[NN [A K]][B VN]]	1	0.032%
[[NN [A V]][[N Q] N]]	1	0.032%
[[NN [B V]][A VV]]	1	0.032%
[[NN [P A]][V NN]]	1	0.032%
[[NN [V D][V NN]]	1	0.032%
[[NN AA][[V N] V]]]	1	0.032%
[[NN AA][M VV]]	1	0.032%
[[NN AA][NN N]]	1	0.032%
[[NN N] N][[N Q] N]]	1	0.032%
[[NN N] S][AA V]]	1	0.032%
[[NN N] S][V NN]]	1	0.032%
[[NN N] V][V AA]	1	0.032%
[[NN N] V][V [B A]]	1	0.032%
[[NN N][[N Q][V A]]]	1	0.032%
[[NN N][L [D NN]]	1	0.032%
[[NN NN][[P D] V]]	1	0.032%
[[NN NN][B [D N]]]	1	0.032%
[[NN NN][L VV]]	1	0.032%
[[NN NN][V [N Q]]]	1	0.032%
[[NN NN][V AA]]	1	0.032%
[[NN NN][VV K]]	1	0.032%
[[NN NS][L NN]]	1	0.032%
[[NN VA][A VV]]	1	0.032%
[[NN VN][A VV]]	1	0.032%
[[NN VV][[B N] V]]	1	0.032%
[[NN VV][M VV]]	1	0.032%
[[NN][[N Q][A NN]]]	1	0.032%
[[NN][A V][D [V A]]	1	0.032%
[[NN][AA]][A AN]	1	0.032%
[[NN][N N][NN N]]	1	0.032%
[[NN][NN][A AA]]	1	0.032%
[[NN][NN][B [V N]]]	1	0.032%
[[NN][NN][B AA]]	1	0.032%
[[NN][NN][B VK]]	1	0.032%

[[NN][NN][L [V A]]]	1	0.032%
[[NN][NN][P [M V]]]	1	0.032%
[[NN][NN][P VK]]	1	0.032%
[[NN][NN][V [A N]]]	1	0.032%
[[NN][NN][V VV]]	1	0.032%
[[NN][NN]][[V N] V]	1	0.032%
[[NN][NN]][B [D N]]	1	0.032%
[[NN][NN]][D [B V]]	1	0.032%
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[[NN][NN]][P [A V]]	1	0.032%
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[[NN][NN]][V KK]	1	0.032%
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[[NS [V A]][A AA]]	1	0.032%
[[NS [V K]][NN A]	1	0.032%
[[NS [V N]][A [V N]]	1	0.032%
[[NS [V N]][V AA]	1	0.032%
[[NS NN][C [B V]]	1	0.032%
[[NS NN][V NN]]	1	0.032%
[[P [D NS]][V NN]]	1	0.032%
[[P D][[A V][P [B A]]]]	1	0.032%
[[P D][[V K][B [V N]]]]	1	0.032%
[[P D][[VK][AAA]]	1	0.032%
[[P D][NN [V [A N]]]]	1	0.032%
[[P D][NN [V NN]]]	1	0.032%
[[P D][V [K [N [M V]]]]	1	0.032%
[[P D][V [K [NN N]]]]	1	0.032%
[[P D][V B]][D [B V]]	1	0.032%
[[P N] VV][A AA]	1	0.032%
[[P N] VV][NN A]	1	0.032%
[[P N] VV][V NN]	1	0.032%
[[P N][V [P [NN N]]]]	1	0.032%
[[P N][V [V [V NN]]]]	1	0.032%
[[P N][VK]][BB V]	1	0.032%
[[V A] NN][L [B A]]	1	0.032%
[[V A] NN][V NN]	1	0.032%
[[V A][B N]][A VN]	1	0.032%

[[V A][NN [B DS]]]	1	0.032%
[[V D] NN][B AA]	1	0.032%
[[V D][[AA S] AN]]]	1	0.032%
[[V D][[AA S] NN]]]	1	0.032%
[[V D][[M V][V AA]]]	1	0.032%
[[V D][[NN][AA V]]]	1	0.032%
[[V D][[V A][A VV]]]	1	0.032%
[[V D][[V N][K VV]]	1	0.032%
[[V D][[V N][V NN]]	1	0.032%
[[V D][N Q][AA V]]	1	0.032%
[[V D][N Q]][A VN]	1	0.032%
[[V D][NN [K VV]]]	1	0.032%
[[V D][NN [V NN]]]	1	0.032%
[[V D][NN B]][P A]	1	0.032%
[[V D][P D][K VV]]	1	0.032%
[[V D][V N]][V WA]	1	0.032%
[[V K] NN][[N Q] V]	1	0.032%
[[V K] NN][AA V]	1	0.032%
[[V K] NN][N AA]	1	0.032%
[[V K] NN][NN S]	1	0.032%
[[V K] NN][P VV]	1	0.032%
[[V K] NN][V NN]	1	0.032%
[[V K] VV][B [V N]]	1	0.032%
[[V K][[N Q][NN V]]]	1	0.032%
[[V K][A N][AA V]]	1	0.032%
[[V K][A N]][A VV]	1	0.032%
[[V K][A N]][BA B]	1	0.032%
[[V K][A N]][N [P V]]	1	0.032%
[[V K][A N]][NN V]	1	0.032%
[[V K][B A]][[V K] V]	1	0.032%
[[V K][D N]][A C A]	1	0.032%
[[V K][N Q [NN N]]]	1	0.032%
[[V K][N Q]][AA A]	1	0.032%
[[V K][NN [AA N]]]	1	0.032%
[[V K][NN][NN Q]]	1	0.032%
[[V K][NS [VV N]]]	1	0.032%
[[V K][V K][[V K] N]]	1	0.032%

[[V N] VN][N [V N]]	1	0.032%
[[V N][[V N][BB V]]]	1	0.032%
[[V N][A V]][A [N V]]	1	0.032%
[[V N][A V]][A [V N]]	1	0.032%
[[V N][A V]][B [A N]]	1	0.032%
[[V N][BA [AA V]]]	1	0.032%
[[V N][NN [B [N N]]]]	1	0.032%
[[V N][V N]][[V A] N]]	1	0.032%
[[V N][V N]][[V N] V]	1	0.032%
[[V N][V N]][A NN]	1	0.032%
[[V N][V N]][DD V]	1	0.032%
[[V N][V N]][N [P V]]	1	0.032%
[[V N][V N]][NN A]	1	0.032%
[[V NN][P [V NN]]]	1	0.032%
[[VK [D N]][V NN]]	1	0.032%
[[VK][NN [L [V N]]]]	1	0.032%
[[VV AA][M VV]]	1	0.032%
[[VV NN][[P N] V]]	1	0.032%
[[VV][P N]][N AA]	1	0.032%
[A [A [[N A][V [N N]]]]]	1	0.032%
[A [A [[N Q][V AA]]]]	1	0.032%
[A [A [[V A][V [N N]]]]]	1	0.032%
[A [B [NN [V [A N]]]]]	1	0.032%
[A [K [[P N][V NN]]]	1	0.032%
[A [L [NN [N NN]]]]	1	0.032%
[A [M [NN [K [V N]]]]]	1	0.032%
[A [M [NN [V NN]]]]	1	0.032%
[A [M [VV [V NN]]]]	1	0.032%
[A [V [[NN S] NN]]	1	0.032%
[A [V [NN [[V N] V]]]]	1	0.032%
[A [V [NN [V [D N]]]]]	1	0.032%
[A [V NN]][A [A V]]	1	0.032%
[A N][VV [AN N]]	1	0.032%
[AA [[D N] S] NN]]	1	0.032%
[AA [[DD S] NN]]	1	0.032%
[AA [[N A] C [N A]]]	1	0.032%
[AA [[V N] C [V N]]]	1	0.032%

[AA [[V N][A [V N]]]	1	0.032%
[AA [[V N][K [V N]]]	1	0.032%
[AA [[V N][V [B N]]]	1	0.032%
[AA [[V N][VV D]]	1	0.032%
[AA [A N][D [N Q]]	1	0.032%
[AA [AA [AA N]]	1	0.032%
[AA [B [V [NS N]]]	1	0.032%
[AA [NN [[V A] N]]	1	0.032%
[AA [NN [[V B] N]]	1	0.032%
[AA [NN [B NN]]	1	0.032%
[AA [NN [L VV]]	1	0.032%
[AA [P [L [D [L V]]]	1	0.032%
[AA [VV [D NN]]	1	0.032%
[AA [WN [[P D] V]]	1	0.032%
[AN [V N]][BA V]	1	0.032%
[AS [[VK][[V N] V]]	1	0.032%
[AS [[VK][V NN]]	1	0.032%
[B [A [[V A][K [V N]]]]	1	0.032%
[B [V [NN [[V D] V]]]	1	0.032%
[B [V [NN [V [A N]]]]	1	0.032%
[B [V [NN [V NN]]]	1	0.032%
[B [V NN]][P [K V]]	1	0.032%
[B N][[V [NN S]] V]	1	0.032%
[BA [[A V][AA V]]	1	0.032%
[BA [[M [[P D] VV]]]	1	0.032%
[BA [[V B][N NN]]	1	0.032%
[BA [[V N][D NN]]	1	0.032%
[BA [NN [V NN]]	1	0.032%
[BA [VV [NN N]]	1	0.032%
[BB [[P N][A NN]]	1	0.032%
[BB [NN [A [B A]]]	1	0.032%
[C [B [[N Q][VV N]]]	1	0.032%
[C [B [[NS NN] N]]]	1	0.032%
[C [B [[P N][V [A N]]]	1	0.032%
[C [B [[V K][NN D]]]	1	0.032%
[C [L [NN [B [V N]]]]	1	0.032%
[C [L NN]][B AA]	1	0.032%

[C [M [V V]]][P [B V]]	1	0.032%
[C [M VV]][V [N N]]	1	0.032%
[C [V [K V]]][V [B N]]	1	0.032%
[C B][[A N][V NN]]	1	0.032%
[CC [NS [C VK]]]	1	0.032%
[CC [VN [C VN]]	1	0.032%
[D [A [A V][M [V N]]]]	1	0.032%
[D [C [A V]][[P N] V]	1	0.032%
[D [C [A V]][A [V D]]]	1	0.032%
[D [K [VV [[P D] V]]]]	1	0.032%
[D [L [B N]]][N [B V]]	1	0.032%
[D [L [B V]]][D [B V]]	1	0.032%
[D [V [NN [NN S]]]]	1	0.032%
[DD [[V D][[A N] N]]]	1	0.032%
[DD [[V D][A [A V]]]]	1	0.032%
[DD [A [L [B AA]]]]	1	0.032%
[FF [[V D][A VV]]]	1	0.032%
[L [D [[A N]][V [A N]]]	1	0.032%
[L [D [[V N]][N NN]]	1	0.032%
[L V][L V][N [K V]]	1	0.032%
[M [[P N][V [AN N]]]]	1	0.032%
[M [P [A N]][K VV]]	1	0.032%
[M [V [[NN] C [NN]]]]	1	0.032%
[M [V [A N][V NN]]	1	0.032%
[M [V [D N]][V KK]]	1	0.032%
[M [V [NN [V VN]]]]	1	0.032%
[M [V NN][K VV]]	1	0.032%
[M [V NN]][AA N]	1	0.032%
[M V][[P N][V [N Q]]]	1	0.032%
[N [K [[V N][V NN]]]]	1	0.032%
[N [K [V A]]][N [V A]]	1	0.032%
[N [K [V N]][N [V N]]	1	0.032%
[N [K VV]][N VN]	1	0.032%
[N [M [V N][AA N]]]	1	0.032%
[N [V [[N Q][A NN]]]]	1	0.032%
[N [V [A N]]][A [N V]]	1	0.032%
[N [V [A N]]][A AA]	1	0.032%

[N [V [A N]]][N [V K]]	1	0.032%
[N [V [N N]][M VV]]	1	0.032%
[N [V NN][[A N] V]	1	0.032%
[N [V NN][N VV]	1	0.032%
[N [V NN][V NN]]	1	0.032%
[N [V NN]][A AA]	1	0.032%
[N [V NN]][N [NN]]	1	0.032%
[N N][M [V [NN N]]]	1	0.032%
[N N][N N][[N N] N]	1	0.032%
[N N][V [K [V NN]]]	1	0.032%
[N][N][NN][NN][N]	1	0.032%
[NN [[[N Q][A N]] V]]	1	0.032%
[NN [[A N][A AA]]	1	0.032%
[NN [[AA] C [AA]]]	1	0.032%
[NN [[L N][D VV]]]	1	0.032%
[NN [[N Q][[B N] N]]]	1	0.032%
[NN [[N Q][N NN]]]	1	0.032%
[NN [[V A][NN Q]]]	1	0.032%
[NN [[V D][K [V N]]]]	1	0.032%
[NN [[V D][V NN]]]	1	0.032%
[NN [[V K] C [VN]]]	1	0.032%
[NN [[V K][[V N] A]]]	1	0.032%
[NN [[V K][NN N]]]	1	0.032%
[NN [[V K][NN Q]]]	1	0.032%
[NN [[V K][P AA]]]	1	0.032%
[NN [[V N] C [V N]]]	1	0.032%
[NN [[V N][[P N] V]]	1	0.032%
[NN [[V N][A AA]]]	1	0.032%
[NN [[V N][K VV]]]	1	0.032%
[NN [[V N][N NN]]]	1	0.032%
[NN [[V N][NN] N]]]	1	0.032%
[NN [[V N][V N N]]]	1	0.032%
[NN [[V N][VK V]]]	1	0.032%
[NN [[VV][V NN]]]	1	0.032%
[NN [A [A [N VV]]]	1	0.032%
[NN [A [A [NS V]]]]	1	0.032%
[NN [A [V [A NN]]]]	1	0.032%

[NN [A [V [K [V N]]]]]	1	0.032%
[NN [A [V [NN N]]]]	1	0.032%
[NN [A V][V [V N]]	1	0.032%
[NN [A V]][B [N V]]	1	0.032%
[NN [A V]][N [V B]]	1	0.032%
[NN [A V]][N [V N]]	1	0.032%
[NN [A V]][V AA]	1	0.032%
[NN [AA [M [V A]]]]	1	0.032%
[NN [AA [V [N Q]]]]	1	0.032%
[NN [AA [V KK]]]	1	0.032%
[NN [AA [V NN]]]	1	0.032%
[NN [B [L [AA N]]]]	1	0.032%
[NN [B [V [[D N] N]]]]	1	0.032%
[NN [B [V [N [VK]]]]]	1	0.032%
[NN [B [V [N AA]]]]	1	0.032%
[NN [B [V [NN N]]]]	1	0.032%
[NN [B [V [NS N]]]]	1	0.032%
[NN [D N][A [A V]]	1	0.032%
[NN [K V][V [B N]]	1	0.032%
[NN [K V]][A AA]	1	0.032%
[NN [K V]][D [A A]]	1	0.032%
[NN [K V]][P [L A]]	1	0.032%
[NN [L A]][N [V A]]	1	0.032%
[NN [L V]][P [A A]]	1	0.032%
[NN [M [V [NN N]]]]	1	0.032%
[NN [M V]][D [M V]]	1	0.032%
[NN [M V]][V NN]	1	0.032%
[NN [N Q]][[P N] A]	1	0.032%
[NN [NN [A AA]]]	1	0.032%
[NN [NN [AA V]]]	1	0.032%
[NN [NN [B VV]]]	1	0.032%
[NN [NN [NN A]]]	1	0.032%
[NN [NN [V [V N]]]]	1	0.032%
[NN [P V]][N AA]	1	0.032%
[NN [V [A [NN N]]]	1	0.032%
[NN [V [K [NN A]]]]	1	0.032%
[NN [V [N [L [D N]]]]]	1	0.032%

[NN [V [P [N NN]]]]	1	0.032%
[NN [V A]][[A N] V]	1	0.032%
[NN [V A]][[B N] V]	1	0.032%
[NN [V A]][A VV]	1	0.032%
[NN [V A]][M [V N]]	1	0.032%
[NN [V A]][NN A]	1	0.032%
[NN [V A]][NN V]	1	0.032%
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[NN [V K]][AA A]	1	0.032%
[NN [V N][B VK]]	1	0.032%
[NN [V N][V [B A]]]	1	0.032%
[NN [V N]][[N N] V]	1	0.032%
[NN [V N]][[V N] V]	1	0.032%
[NN [V N]][A [A V]]	1	0.032%
[NN [V N]][A AA]	1	0.032%
[NN [V N]][AA A]	1	0.032%
[NN [V N]][B VV]	1	0.032%
[NN [V N]][D [V A]]	1	0.032%
[NN [V N]][N [A V]]	1	0.032%
[NN [V N]][N [M V]]	1	0.032%
[NN [V N]][N [V A]]	1	0.032%
[NN [VN [A AA]]]	1	0.032%
[NN [VN [AA A]]]	1	0.032%
[NN [VN [AA V]]]	1	0.032%
[NN [VN [NN A]]]	1	0.032%
[NN [VN [P NN]]]	1	0.032%
[NN [VN][V AA]]	1	0.032%
[NN [VN][V BB]]	1	0.032%
[NN [VV [[B N] V]]]	1	0.032%
[NN [VV [B [V VN]]]	1	0.032%
[NN AA][[B N] V]	1	0.032%
[NN AA][B [A V]]	1	0.032%
[NN AA][B [V N]]	1	0.032%
[NN AA][BN V]	1	0.032%
[NN AA][V NN]	1	0.032%
[NN AV][VA N]	1	0.032%
[NN NN][A [V N]]	1	0.032%

[NN NN][A AA]	1	0.032%
[NN NN][NN Q]	1	0.032%
[NN NN][V NN]	1	0.032%
[NN V][C [[B N] V]]	1	0.032%
[NN VN][A NN]	1	0.032%
[NN VN][AA N]	1	0.032%
[NN VN][M VN]	1	0.032%
[NN VN][N [V N]]	1	0.032%
[NN VN][N NN]	1	0.032%
[NN VN][V NN]	1	0.032%
[NN VV][V [B A]]	1	0.032%
[NN][D N][D NN]	1	0.032%
[NN][NN][V [M V]]	1	0.032%
[NN][NS [A AA]]	1	0.032%
[NN][NS][BA V]	1	0.032%
[NN][VK [NN N]]	1	0.032%
[NS [[N Q][A AA]]]	1	0.032%
[NS [[V N][V NN]]]	1	0.032%
[NS [A V]][A AA]	1	0.032%
[NS [AA [V KK]]]	1	0.032%
[NS [NN [A VV]]]	1	0.032%
[NS [V [P [NN N]]]]	1	0.032%
[NS [VK [NN Q]]]	1	0.032%
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[NS [VK [P [V N]]]]	1	0.032%
[NS [VK [V AA]]]	1	0.032%
[NS AA][B [K V]]	1	0.032%
[NS AA][V NN]	1	0.032%
[NS VA][V [K V]]	1	0.032%
[NS][NN [[N Q] A]]	1	0.032%
[NS][NN [AA V]]	1	0.032%
[NS][VV [NN Q]]	1	0.032%
[P [A [V [P D]][V N]]]	1	0.032%
[P [A AA]][A [A V]]	1	0.032%
[P [V [[[D N] NN] V]]]	1	0.032%
[P [V [NN [K [V N]]]]]	1	0.032%
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[V [[P [NN NN]] V]]	1	0.032%
[V [[VV A]][A [B A]]	1	0.032%
[V [D [[NN][NN N]]]]	1	0.032%
[V [D [NN] C [NN]]]	1	0.032%
[V [D [NN]][K VV]]	1	0.032%
[V [D NN][A NN]]	1	0.032%
[V [D NN][B [A N]]]	1	0.032%
[V [D NN]][AA V]	1	0.032%
[V [D NN]][V NN]	1	0.032%
[V [D NS][P [V N]]]	1	0.032%
[V [K [[N V] C [N V]]]]	1	0.032%
[V [K [D V][D [A V]]]]	1	0.032%
[V [L [NN [V NN]]]]	1	0.032%
[V [M [[[A N] S] NN]]]	1	0.032%
[V [M [[A N][V [A N]]]]]	1	0.032%
[V [M [[P N][V NN]]]]	1	0.032%
[V [N [V [D [[P N] A]]]]]	1	0.032%
[V [N [V A]]][V [K V]]]	1	0.032%
[V [N NN]][[V N] V]	1	0.032%
[V [NN N]][NN S]	1	0.032%
[V [NN S]][V NN]	1	0.032%
[V [P [[[NN N] S] N]]	1	0.032%
[V [P [[N Q][NN N]]]	1	0.032%
[V [P [AA]]][VK V]	1	0.032%
[V [P [NN]]][NN N]	1	0.032%
[V [P [NS [V AA]]]]	1	0.032%
[V [P [NS]]][N NN]	1	0.032%
[V [P NN]][K [V N]]	1	0.032%
[V [P NN]][N [P V]]	1	0.032%
[V [P NN]][NN N]]	1	0.032%
[V [V [NN [V NN]]]]	1	0.032%
[V [V [VK [A NN]]]]	1	0.032%
[V [W [L [AS NN]]]]	1	0.032%
[V A][P [NN NN]]	1	0.032%
[V A][V A][V AA]	1	0.032%
[V D][[NN NN] N]	1	0.032%
[V D][[NN][NN N]]	1	0.032%

[V D][NN [V NN]]	1	0.032%
[V D][P [M [AA N]]]	1	0.032%
[V N][M [V [N N N]]]	1	0.032%
[V N][V [K [[B N] V]]]	1	0.032%
[V N][V [K [B [V N]]]	1	0.032%
[VK [[V N][A [V N]]]]	1	0.032%
[VK NN][AA V]	1	0.032%
[VK NN][V NN]	1	0.032%
[VK NN]][A AA]	1	0.032%
[VV [[D N][A [V N]]]]	1	0.032%
[VV [A [L [N [B V]]]]]	1	0.032%
[VV [A [V [A NN]]]]	1	0.032%
[VV [AA [[V N] V]]]	1	0.032%
[VV [N Q]][[N Q] N]	1	0.032%
[VV [NN [A VV]]]	1	0.032%
[VV [NN [V NN]]]	1	0.032%
[VV [NN [V VV]]]	1	0.032%
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[VV NN][[N Q] N]	1	0.032%
[VV NN][A [V N]]	1	0.032%
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[VV NN][D WN]	1	0.032%
[VV NS][M WW]	1	0.032%
[WW [NN [A [N Q]]]]	1	0.032%
[[[N Q] NS][[V K][V K]]]	1	0.032%
[[[N Q][NN S]][A AA]]	1	0.032%
[[D NS][[V N][V NN]]]	1	0.032%
[[N N] S][B [V [A AA]]]	1	0.032%
[[N N] S][V [K [NS N]]]	1	0.032%
[[N N][V KK][A VV]]	1	0.032%
[[N Q] N][V [P [NN N]]]]	1	0.032%
[[N Q] NS][VV NS]	1	0.032%
[[N Q][NN N]][A [V N]]]	1	0.032%
[[N Q][NS N]][[N Q] V]	1	0.032%
[[NN N][V [P [D NN]]]]	1	0.032%
[[NN N][VV [NN N]]]	1	0.032%

[[NN S][NN [A AA]]]	1	0.032%
[[NN S][NS [V NN]]]	1	0.032%
[[NN S][VV [V [B N]]]]	1	0.032%
[[NN][NS][A [V [K A]]]]	1	0.032%
[[NS N][V [P [A AA]]]]	1	0.032%
[[NS N][V [P [V AA]]]]	1	0.032%
[[V [D NN][V [K AA]]]	1	0.032%
[[V K][[D NN] S] NN]]	1	0.032%
[[V K][[NS N][NN Q]]]	1	0.032%
[[V K][A N]][K [[P D] V]]]	1	0.032%
[[W [N Q]][VA]][D [P A]]	1	0.032%
[A [B [L [V N]]]][C [V N]]	1	0.032%
[AA [VA [[D Q] NN]]]	1	0.032%
[B [[C [NN N]][V [P N]]]	1	0.032%
[L [M [V [[NN S][NN]]]]]	1	0.032%
[N [P [NN S][VV A]]]]	1	0.032%
[N [P [P [V [K [A AA]]]]]]]	1	0.032%
[N N][[NN N][VK V]]	1	0.032%
[NN [[N Q][[A N] NN]]]	1	0.032%
[NN [A [V [DS NN]]]]	1	0.032%
[NN [V NA][V NN]]	1	0.032%
[NN [V NN][[P N] V]]	1	0.032%
[NN [V NN][V VN]]	1	0.032%
[[NN S][B [V [M [AA]]]]	1	0.032%
[[NN S][NN [V [N Q]]]	1	0.032%
[NN S][V [P [V NN]]	1	0.032%
[[NN][[V KK][P NN]]	1	0.032%
[NS N][V [K [A AA]]]]	1	0.032%
[P [B [L [[NN S] NN]]]]	1	0.032%
[P [L [D [[N Q][A NN]]]]]	1	0.032%
[PP [V [K [AA AA]]]	1	0.032%
[V [[N Q] NN][A AA]]	1	0.032%
[V [D [[NN] C [NN N]]]]	1	0.032%
[V [D [K [[V N] C [V N]]]]]	1	0.032%
[V [D [NN S]]][A [L N]]	1	0.032%
[V [D N]][NN [[N N] N]]	1	0.032%
[V [N Q]][NN [V NN]]	1	0.032%

[V [P [[[NN S] S] NN]]	1	0.032%
[V [P [[D NS][NN N]]]]	1	0.032%
[V [P [NN N][V NN]]]	1	0.032%
[V [P [NN S][[N N] V]]]	1	0.032%
[V [P [NN S][N VV]]]	1	0.032%
[V NS][NN [V [B N]]]	1	0.032%
[VN [P [DS [NS N]]]]	1	0.032%
[[[N Q] NS][A [B [V NN]]]]	1	0.032%
[[[NN N] S][VK [V NN]]]	1	0.032%
[[AA NN][[V K][NN N]]]	1	0.032%
[[AA NN][V D][N NN]]	1	0.032%
[[AA NN][VK [V NN]]]	1	0.032%
[[AN NN][V [K [A AA]]]	1	0.032%
[[AN S][[V N][VK [V N]]]]	1	0.032%
[[N [NN S]][A N][B [A N]]	1	0.032%
[[N Q][[N NN] S]][A AA]]	1	0.032%
[[NN S] N][[V K][V NN]]]	1	0.032%
[[NN S][V [N Q]][AAA]]	1	0.032%
[[NN][NN][V D][B [VN]]	1	0.032%
[[NN][NN][V N][N NN]]	1	0.032%
[[NS][D V]][NS [P [B V]]]	1	0.032%
[[P D][V [K [NN [AA V]]]]]	1	0.032%
[[V [D NN][VK [V NN]]]	1	0.032%
[[V K] NN][NS [V [V N]]]	1	0.032%
[B [L [[D NN][L [V NN]]]]]	1	0.032%
[B [L [[NN][D NN][V K]]]	1	0.032%
[B [L [[NS][D NN]][V K]]]	1	0.032%
[B [V [D [D Q][AA NN]]]]	1	0.032%
[C [B [[N Q] NN][V NN]]]	1	0.032%
[D [B [M [V A]]][B [M [V A]]]]	1	0.032%
[D [V [P NN]]][AA [B A]]	1	0.032%
[D [V [P NN]]][BB VV]	1	0.032%
[N N][V [NN S][V NN]]	1	0.032%
[NN [[N Q] NN][V [P N]]]	1	0.032%
[NN [[N Q][NN [NN N]]]	1	0.032%
[NN [[V N][[NN NN] N]]]	1	0.032%
[NN [[V N][NN [V NN]]	1	0.032%

[NN S][NN S][V NN]	1	0.032%
[NN][NN][[V N][AA V]]	1	0.032%
[NN][NN][[V N][N NN]]	1	0.032%
[V [[N Q] N] S][V [K [V N]]]	1	0.032%
[V [A [[NN][NN]][A VV]]	1	0.032%
[V [D [[NN N] S]][K VV]]	1	0.032%
[V [D [N NN] C [N NN]]]	1	0.032%
[V [D [NS][NS]][K [V N]]]]	1	0.032%
[V [K [NS AA][N AA]]]	1	0.032%
[WN [VV]][P [K [V NN]]]	1	0.032%
[[NN S][NN][NN][A [B V]]]	1	0.032%
[A [B [V [NN [AA [V KK]]]]]]	1	0.032%
[C [[N Q] NS]][AA [V VV]]	1	0.032%
[NN [[V K][[N Q][NN N] S]]]]	1	0.032%
[NN [WN [VV [[P NN] V]]]	1	0.032%
[NS [V [P [[NN N] S]]]][AA V]]	1	0.032%
[V [[N Q][[NN S] N][K [V N]]]	1	0.032%
[V [D [[NN Q][NN [V NN]]]]]	1	0.032%
[V [M [V [[AN S] S][NN N]]]]]	1	0.032%
[V D][[D Q][AA NN]][V AA]]	1	0.032%
[[NN S][P [L [V [N Q]][V [N Q]]]]]	1	0.032%
[[V K][AA NN]][P [AB VV]]	1	0.032%
[[N Q] NS][V [[N Q] NS][K [N S]]]]	1	0.032%
[[V A][V A]][A [L [D [[N Q][A NN]]]]]	1	0.032%
[[N Q] NS][VK [[V NS][K [V NS]]]]	1	0.032%
Total	3155	100.000%

Appendix 2

Syllables	Simplified tree	Lines	Percentage
3	[1 2]	570	18.067%
5	[2 [1 2]]	461	14.612%
3	[2 1]	263	8.336%
5	[2 [2 1]]	180	5.705%
5	[2][1 2]	139	4.406%
7	[2 [2 [1 2]]]	117	3.708%
4	[2 2]	109	3.455%
7	[[2 2][1 2]]	104	3.296%
7	[2 2][1 2]	98	3.106%
6	[[2 1][1 2]]	73	2.314%
5	[1 [1 [1 2]]]	63	1.997%
5	[1 [1 [2 1]]]	60	1.902%
4	[2][2]	53	1.680%
7	[2 [2 [2 1]]]	53	1.680%
4	[1 [1 2]]	49	1.553%
5	[2][2 1]	39	1.236%
7	[2 2][2 1]	37	1.173%
7	[[2 2][2 1]]	33	1.046%
7	[1 [1 [2 [1 2]]]]	29	0.919%
7	[1 [1 2]][1 2]	24	0.761%
4	[[2 1] 1]	21	0.666%
6	[1 [1 [2 2]]]	20	0.634%
6	[1 2][1 2]	20	0.634%
7	[2 [1 [1 [2 1]]]]	20	0.634%
3	[3]	19	0.602%
4	[1][2 1]	16	0.507%
7	[[2][2][1 2]]	16	0.507%
7	[1 [1 2][1 2]]	16	0.507%
7	[2 [1 [1 [1 2]]]]	16	0.507%
7	[2][2][2 1]	14	0.444%
2	[2]	13	0.412%
6	[2 [2 2]]	13	0.412%
6	[[1 2][1 2]]	11	0.349%
5	[1 [2 2]]	10	0.317%

6	[[2 1][2 1]]	10	0.317%
7	[[[2 1][1 [2 1]]	9	0.285%
7	[1 [1 2]][2 1]	9	0.285%
5	[[2 1] 2]	8	0.254%
5	[[2 2] 1]	8	0.254%
7	[1 [1 [2 [2 1]]]]	8	0.254%
5	[[1 2] 2]	7	0.222%
7	[[2][2][2 1]]	7	0.222%
8	[[2 1][2 [1 2]]]	7	0.222%
8	[[2 2][2 2]]	7	0.222%
9	[2 [2 [2 [1 2]]]]	7	0.222%
6	[2 [1 [2 1]]]	6	0.190%
6	[2 1][2 1]	6	0.190%
7	[2 [[2] 1 [2]]]	6	0.190%
5	[2 [3]]	5	0.158%
5	[2 1 2]	5	0.158%
6	[2 [1 [1 2]]]	5	0.158%
7	[[[2 1] 1][1 2]]	5	0.158%
7	[1 [1 [[2] 1 [2]]]]	5	0.158%
7	[1 [1 2][2 1]]	5	0.158%
8	[1 [1 [2 1]][2 1]]	5	0.158%
8	[2 1][1 [1 [1 2]]]	5	0.158%
4	[[1 2] 1]	4	0.127%
6	[[1 [1 2]] 2]	4	0.127%
7	[2 [[2 1] 2]]	4	0.127%
7	[2][2][1 2]	4	0.127%
8	[[2 1][1 [1 [1 2]]]]	4	0.127%
8	[1 [1 [2 1]][1 2]]	4	0.127%
9	[2 2][2 [1 2]]	4	0.127%
5	[[1 [1 2]] 1]	3	0.095%
6	[[1 [1 [2 1]]] 1]	3	0.095%
6	[1 [1 [1 [1 2]]]]	3	0.095%
6	[1 [2 [1 2]]]	3	0.095%
7	[[1 [1 2]][1 2]]	3	0.095%
7	[[2 2][3]]	3	0.095%
7	[1 [1 [[2 1] 2]]]	3	0.095%
7	[2][1 [1 [1 2]]]	3	0.095%

7	[2][1 [1 [2 1]]]	3	0.095%
5	[[[2 1] 1] 1]	2	0.063%
5	[1 [2 2]]	2	0.063%
5	[1 [[1 2] 1]]	2	0.063%
5	[2][3]	2	0.063%
6	[1 [1 [[2 1] 1]]]	2	0.063%
6	[1 [1 [1 [2 1]]]]	2	0.063%
6	[1 [2 [2 1]]]	2	0.063%
6	[1 [2][2 1]]	2	0.063%
6	[2 [[2 1] 1]]	2	0.063%
7	[[1 2][2 2]]	2	0.063%
7	[1 [1 [[2 2] 1]]]	2	0.063%
7	[1 [2 1][1 2]]	2	0.063%
7	[2 [2][1 2]]	2	0.063%
7	[2 1][1 [2 1]]	2	0.063%
7	[2][2 [1 2]]	2	0.063%
8	[1 [1 [1 [[2 1] 2]]]]	2	0.063%
8	[1 [2 2]][1 2]	2	0.063%
8	[1 2][2 [1 2]]	2	0.063%
8	[2 [1 [1 [2 2]]]]	2	0.063%
8	[2 [1 2][1 2]	2	0.063%
8	[2 [2 [2 2]]]	2	0.063%
9	[[[2 1] 1][2 [1 2]]]	2	0.063%
9	[[2 2][1 [1 [1 2]]]]	2	0.063%
9	[[2 2][2 [1 2]]]	2	0.063%
9	[[2][2][2 [1 2]]]	2	0.063%
9	[1 [1 [1 2]]][2 2]	2	0.063%
9	[1 [1 [2 [1 2]] 2]]	2	0.063%
9	[1 [1 [2 2][1 2]]]	2	0.063%
9	[2 [1 [1 [2 [1 2]]]]]	2	0.063%
9	[2 1][1 [1 [1 [1 2]]]	2	0.063%
1	[1]	1	0.032%
5	[1 [[2 1] 1]]	1	0.032%
5	[1][2][2]	1	0.032%
5	[4 1]	1	0.032%
6	[[[2 2] 1] 1]	1	0.032%
6	[[1 [2 1]] 2]	1	0.032%

6	[[1 2][2 1]]	1	0.032%
6	[1 [[1 [2 1]] 1]]	1	0.032%
6	[1 [[2 2] 1]]	1	0.032%
6	[1 [1 [2 1] 1]]]	1	0.032%
6	[1 2][1 2]	1	0.032%
6	[1 2][2 1]	1	0.032%
6	[2 [[1 2] 1]]	1	0.032%
6	[2][1 [1 2]]	1	0.032%
6	[2][1 [2 1]]	1	0.032%
6	[3][3]	1	0.032%
7	[[[1 2] 1][1 2]]	1	0.032%
7	[[[2] 1 [1]][1 2]]	1	0.032%
7	[[[2] 1 [1]][2 1]]	1	0.032%
7	[[1 2] 1][1 2]	1	0.032%
7	[[1 2][1 [1 2]]]	1	0.032%
7	[[2 [2 [1 2]]]	1	0.032%
7	[[2 1] 1][1 2]]	1	0.032%
7	[[2 1][1 [1 2]]]	1	0.032%
7	[[2 1][2 2]]	1	0.032%
7	[1 [[1 [2 2]] 1]]	1	0.032%
7	[1 [1 [[2 1] 1] 1]]]	1	0.032%
7	[1 [1 [1 [1 [1 2]]]]]	1	0.032%
7	[1 [1 [1 [2 1]]]]	1	0.032%
7	[1 [1 [1 [2 2]]]]	1	0.032%
7	[1 [1 [1 2][2]]	1	0.032%
7	[1 [2 [1 [2 1]]]]	1	0.032%
7	[1 [2 1]][1 2]	1	0.032%
7	[1 [2 1]][2 1]	1	0.032%
7	[1][1][2][2][1]	1	0.032%
7	[2 [[2 2] 1]]	1	0.032%
7	[2 [1 [[1 2] 1]]]	1	0.032%
7	[2 [1 [[2 1] 1]]]	1	0.032%
7	[2 [1 [2 2]]]	1	0.032%
7	[2 [2 [1 [1 2]]]]	1	0.032%
7	[2 [2 1]][2]	1	0.032%
7	[2 1][1 2]	1	0.032%
7	[2][2 [1 2]]	1	0.032%

7	[2][[2 1] 1]	1	0.032%
7	[2][[2 2] 1]	1	0.032%
7	[2][1 [1 [3]]]	1	0.032%
7	[2][1 [2 2]]	1	0.032%
7	[2][2 [2 1]]	1	0.032%
7	[2][2 [3]]	1	0.032%
7	[2][2][3]	1	0.032%
8	[[[1 2] 2][1 2]]	1	0.032%
8	[[1 [1 2]][1 [1 2]]]	1	0.032%
8	[[1 2][2 [1 2]]]	1	0.032%
8	[[1 2][2 [2 1]]]	1	0.032%
8	[[2 [1 2]][1 2]]	1	0.032%
8	[[2 [2 1]][1 2]]	1	0.032%
8	[[2 1][1 [1 [2 1]]]]	1	0.032%
8	[[2 1][2 [2 1]]]	1	0.032%
8	[[2][2][1 [1 2]]]	1	0.032%
8	[1 [1 [[[2 1] 1] 2]]]	1	0.032%
8	[1 [1 [[1 2][2 1]]]]	1	0.032%
8	[1 [1 [[2] 1 [2 1]]]]	1	0.032%
8	[1 [1 [1 [[2] 1 [2]]]]]	1	0.032%
8	[1 [1 [1 [1 [1 [1 2]]]]]]	1	0.032%
8	[1 [1 [1 [2 [1 2]]]]]	1	0.032%
8	[1 [1 [1 2]][1 2]]	1	0.032%
8	[1 [2 2][1 2]]	1	0.032%
8	[2 [[[1 2] 1] 2]]	1	0.032%
8	[2 [1 [2 [2 1]]]]	1	0.032%
8	[2 [1 2][2 1]]	1	0.032%
8	[2 [1 2]][1 2]	1	0.032%
8	[2 [2 1]][2 1]	1	0.032%
8	[2 1][1 [1 [2 1]]]	1	0.032%
8	[2 1][2 [1 2]]	1	0.032%
8	[2 2][1 [2 1]]	1	0.032%
8	[2 2][2 2]	1	0.032%
8	[2][[1 2][1 2]]	1	0.032%
8	[2][[2 1][2 1]]	1	0.032%
9	[[[2 [[1 2] 1]][1 2]]	1	0.032%
9	[[1 [2 1]][2 [1 2]]]	1	0.032%

9	[[2 1][1 2][3]]	1	0.032%
9	[[2 1][2 [2 2]]]	1	0.032%
9	[[2 2][2 [2 1]]]	1	0.032%
9	[1 [[2 1] 1][1 [1 2]]]	1	0.032%
9	[1 [1 [[1 2] 1 [1 2]]]]	1	0.032%
9	[1 [1 [[2 1] 1][1 2]]	1	0.032%
9	[1 [1 [1 [2 [2 2]]]]]	1	0.032%
9	[1 [1 [1 2][1 [1 2]]]]	1	0.032%
9	[1 [1 [1 2]][1 [1 2]]]	1	0.032%
9	[1 [1 [2 2]][1 2]]	1	0.032%
9	[1 [1 [2]][2]][1 2]	1	0.032%
9	[1 [1 2][2 [1 2]]]	1	0.032%
9	[2 [[2 2][1 2]]]	1	0.032%
9	[2 [1 [1 [2 [2 1]]]]]	1	0.032%
9	[2 [2 [[2 2] 1]]]	1	0.032%
9	[2 [2 [2 [2 1]]]]	1	0.032%
9	[2 1][2 1][1 2]	1	0.032%
9	[2 2][1 [1 [1 2]]]	1	0.032%
9	[2][1 [2 1][1 2]]	1	0.032%
9	[2][2][2 [1 2]]	1	0.032%
9	[2][2][2 [2 1]]	1	0.032%
10	[[2 1][2][2][1 2]]	1	0.032%
10	[1 [1 [[2 1][2 [1 2]]]]]	1	0.032%
10	[1 [1 [1 [[[2 1] 1][2 1]]]]]	1	0.032%
10	[1 [1 [1 [2 2 [1 2]]]]]	1	0.032%
10	[1 [2 [[2 1] 1]][1 2]]	1	0.032%
10	[1 [2 2]][2 [1 2]]	1	0.032%
10	[2 [1 [1 [[2 1] 1]]][2 1]]	1	0.032%
10	[2 [2 [2 [[1 2] 1]]]]	1	0.032%
10	[2 [2 [2 [[2 1] 1]]]]	1	0.032%
10	[2 [2 [2 2]][1 2]]	1	0.032%
11	[[2 1][1 [1 [1 2][1 2]]]]	1	0.032%
11	[2 [2 2]][1 [2 2]]	1	0.032%
12	[2 2][1 [1 [1 [2 [1 2]]]]]	1	0.032%
12	[2 2][1 [2 2]][1 2]	1	0.032%
13	[2 2][2 [[1 2][1 [1 2]]]]	1	0.032%
	Total	**3155**	**100.000%**

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