The phonological regularity of Japanese mimetics: Segmental markedness in mimetic neologisms

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Akio Nasu (Univ. of Tsukuba)
Topics in this talk

• Phonological regularity of Japanese mimetics
  (1) Sound-symbolism and phonological regularity
   – Obstruent voicing
   – Palatalization
  (2) Segmental (un)markedness of mimetic neologisms
   – The initial CV syllable in mimetic neologisms
   – Unmarked feature combinations are favored
Sound-symbolism: Obstruent voicing

• Voicing contrast in the initial obstruent of mimetic stems
  – kata-kata ‘light clicking or tapping sound’
  – gata-gata ‘A clattering sound caused by huge tremors’

• Sound-symbolism of voicing
  – Negative or pejorative meaning
  – e.g. roughness, dirtiness, unpleasantness, heaviness, dullness, crudeness, disgusting, hugeness... etc.

Sound-symbolism: Palatalization

• Plane vs. Palatalized contrast in consonants
  – kata-kata > katya-katya  [katɕa-katɕa]
  – ‘A light clattering or rattling sound made by relatively thin metallic or other very hard objects knocking together repeatedly’ (Kakehi, Tamori, and Scourup 1996: 598)

• Sound-symbolism of palatalization
  – ‘childishness, immaturity, instability, unreliability, uncoordinated movement, diversity, excessive energy, noisiness, lack of elegance, and cheapness’ (Hamano 1986: 238)
Phonological regularity

• Obstruent voicing and Lyman’s Law
• Lyman’s Law
  – A restriction limiting morphemes to a single voiced obstruent.
  – *takara-guzi / takara-kuzi ‘lottery’
• Lyman’s Law in mimetic stratum
  – Mimetic stems containing two voiced obstruents are banned.
    gata-gata : *gada-gada ‘clattering’
    basa-basa : *baza-baza ‘rustling’
    doku-doku : *dogu-dogu ‘gurgling’
Phonological regularity

• The phonotactic constraints on palatalization

  (Hamano 1986, 1998; Mester & Ito 1989)

  – Coronal Dominance: katya- / *kyata- ‘a light clattering sound’
    tyoko- / *tokyo- ‘bustling’
  – Dextrality: dosya- / *dyosa- ‘pouring (rain)’
    mosya- / *myosa- ‘scraggly’
  – Rhotic Exclusion: gyoro- / *goryo- ‘with goggling eyes’
Mimetic neologisms

• Recently created novel mimetic forms
  – Frequently used in Japanese *manga* (comics)
  – Containing unconventional or bizarre patterns compared with ordinal existent mimetic words

  - *barorororoooo* ‘sound expressing a car is driving away’ [Golgo 13]
  - *mugigigigi* ‘clenching teeth’ [Ribingu Geemu]
  - *zutyutyuuu* ‘slurping’ [Maison Ikkoku]
  - *dopapapa* ‘sweeping with machine-gun fire’ [Dragon Ball]
  - *gugyugyugyu* ‘choking one’s neck with both hands’ [NARUTO]
The initial CV syllable

• Phonological structure of the initial CV is remarkable

• Violation of the phonotactic constraints
  – Lyman’s Law  zuga-  (zugaan ‘sound of a mighty blast’)
  – Dextrality  syuta- (syutaa’ ‘moving briskly with quick steps’)

• The initial CV syllable has a special status as a prefix
  – Isolating the initial CV from the residue, no violation takes place in the base.
    (zu-) gaan : the base gaan has only one voiced obstruent.
    (syu-) taa’ : the base taa’ has no palatalized coronal.
The initial CV syllable

• The remaining part other than the initial CV syllable corresponds to the form of existing mimetic words.
  – zugan: (zu) gan > gan ‘A large sound made by a relatively hard object striking something hard with force’ (KTS 1996: 366)
  – syutaa’: (syu) taa’ > taa’ ‘The manner of running at high speed’ (KTS 1996: 1168)

• The initial syllable ($C_1V_1$) reflects unique properties of mimetic neologisms
  – it is reasonable to examine the sound pattern of the initial CV syllable so as to reveal phonological characteristics of newly created mimetic stems.
Data

• 393 mimetic expressions from 18 comics (Nasu 2004)
  – Partially reduplicated patterns zudododooN batatata’
  – Disyllabic CVCV stems zudo(dodooN) bata(tata’)

• 280 stems are recognized as newly created ones
    – bata- : bata-bata (KTS 1996: 45-49) > existing stem
    – zudo- : *zudo-zudo (no entry in KTS) > newly created one
### Types of the initial consonant (C1)

#### Newly created stems

<table>
<thead>
<tr>
<th>C1</th>
<th>p</th>
<th>b</th>
<th>m</th>
<th>w</th>
<th>t</th>
<th>d</th>
<th>s</th>
<th>z</th>
<th>n</th>
<th>y</th>
<th>r</th>
<th>k</th>
<th>g</th>
<th>h</th>
<th>N</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=</td>
<td>7</td>
<td>28</td>
<td>11</td>
<td>3</td>
<td>11</td>
<td>22</td>
<td>7</td>
<td>25</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>15</td>
<td>42</td>
<td>12</td>
<td>3</td>
<td>197</td>
</tr>
<tr>
<td>(%)</td>
<td>3.6</td>
<td>14.2</td>
<td>5.6</td>
<td>1.5</td>
<td>5.6</td>
<td>11.2</td>
<td>3.6</td>
<td>12.7</td>
<td>4.1</td>
<td>0.5</td>
<td>1.0</td>
<td>7.6</td>
<td>21.3</td>
<td>6.1</td>
<td>1.5</td>
<td>100.</td>
</tr>
</tbody>
</table>

Syllables containing a palatalized onset (n=41) and onsetless syllables (n=42) are removed.

#### Existing stems (based on Hamano (1998: 41))

<table>
<thead>
<tr>
<th>C1</th>
<th>p</th>
<th>b</th>
<th>m</th>
<th>w</th>
<th>t</th>
<th>d</th>
<th>s</th>
<th>z</th>
<th>n</th>
<th>y</th>
<th>r</th>
<th>k</th>
<th>g</th>
<th>h</th>
<th>N</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=</td>
<td>44</td>
<td>41</td>
<td>24</td>
<td>4</td>
<td>26</td>
<td>19</td>
<td>28</td>
<td>23</td>
<td>18</td>
<td>6</td>
<td>0</td>
<td>36</td>
<td>48</td>
<td>26</td>
<td>0</td>
<td>343</td>
</tr>
<tr>
<td>(%)</td>
<td>12.8</td>
<td>12.0</td>
<td>7.0</td>
<td>1.2</td>
<td>7.6</td>
<td>5.5</td>
<td>8.2</td>
<td>6.7</td>
<td>5.2</td>
<td>1.7</td>
<td>0.0</td>
<td>10.5</td>
<td>14.0</td>
<td>7.6</td>
<td>0.0</td>
<td>100.</td>
</tr>
</tbody>
</table>

Onsetless syllables (n=23) are removed.
The ranking of lexical frequency

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>(%)</th>
<th>Neologisms</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>g</td>
<td>14.0</td>
<td>g</td>
<td>21.3</td>
</tr>
<tr>
<td>2</td>
<td>p</td>
<td>12.8</td>
<td>b</td>
<td>14.2</td>
</tr>
<tr>
<td>3</td>
<td>b</td>
<td>12.0</td>
<td>z</td>
<td>12.7</td>
</tr>
<tr>
<td>4</td>
<td>k</td>
<td>10.5</td>
<td>d</td>
<td>11.2</td>
</tr>
<tr>
<td>5</td>
<td>s</td>
<td>8.2</td>
<td>k</td>
<td>7.6</td>
</tr>
<tr>
<td>6</td>
<td>t</td>
<td>7.6</td>
<td>h</td>
<td>6.1</td>
</tr>
<tr>
<td>7</td>
<td>h</td>
<td>7.6</td>
<td>m</td>
<td>5.6</td>
</tr>
<tr>
<td>8</td>
<td>m</td>
<td>7.0</td>
<td>t</td>
<td>5.6</td>
</tr>
<tr>
<td>9</td>
<td>z</td>
<td>6.7</td>
<td>n</td>
<td>4.1</td>
</tr>
<tr>
<td>10</td>
<td>d</td>
<td>5.5</td>
<td>p</td>
<td>3.6</td>
</tr>
<tr>
<td>11</td>
<td>n</td>
<td>5.2</td>
<td>s</td>
<td>3.6</td>
</tr>
<tr>
<td>12</td>
<td>y</td>
<td>1.7</td>
<td>w</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**C1: Neologisms**

**C1: Existing stems**
### Vowel in the initial syllable (V1)

#### Existing stems

<table>
<thead>
<tr>
<th>V1</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>65</td>
<td>17.8</td>
</tr>
<tr>
<td>e</td>
<td>42</td>
<td>11.5</td>
</tr>
<tr>
<td>a</td>
<td>70</td>
<td>19.1</td>
</tr>
<tr>
<td>o</td>
<td>97</td>
<td>26.5</td>
</tr>
<tr>
<td>u</td>
<td>92</td>
<td>25.1</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>366</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Based on Hamano (1998: 47)

#### Newly created stems

<table>
<thead>
<tr>
<th>V1</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>34</td>
<td>14.4</td>
</tr>
<tr>
<td>e</td>
<td>15</td>
<td>6.4</td>
</tr>
<tr>
<td>a</td>
<td>47</td>
<td>19.9</td>
</tr>
<tr>
<td>o</td>
<td>43</td>
<td>18.2</td>
</tr>
<tr>
<td>u</td>
<td>97</td>
<td>41.1</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>236</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Graph

- **Existing**
  - i: 17.8%
  - e: 11.5%
  - a: 19.1%
  - o: 26.5%
  - u: 25.1%
- **Newly created**
  - i: 14.4%
  - e: 6.4%
  - a: 19.9%
  - o: 18.2%
  - u: 41.1%

Syllables containing a palatalized onset (n=41) or a syllabic nasal /NN/ (n=3) are removed.
• Remarkable segments in mimetic neologisms
  – C1: voiced coronal obstruents /d/, /z/
  – V1: high back vowel /u/

• *Unmarked* nature of these segments is a key to understand phonological characteristics of newly created mimetics.
Unmarkedness of coronals

• Inventory frequency (Maddiesson 1987, Paradis & Prunet 1991, etc.)
  – The most frequent articulator in many languages
  – Japanese: Cor {t, d, s, z, c, n, j, r} > Lab {p, b, m, w} > Dor {k, g}

• Transparency (Kiparsky 1985, Avery & Rice 1988, Paradis & Prunet 1989ab, Cho 1991, etc.)
  – Coronals are more prone to undergo assimilation
    K-stems /gak/ *gappi, *gattai, *gassei / gakkoo ‘school’
Unmakedness of /u/ in Japanese

- The most frequent element as an epenthetic vowel
- Epenthesis in loanwords (NINJAL 1990)

<table>
<thead>
<tr>
<th>/u/</th>
<th></th>
<th>/o/</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>p- kппp</td>
<td>cap</td>
<td>v- seebu</td>
<td>save</td>
</tr>
<tr>
<td>b- pabu</td>
<td>pub</td>
<td>f- kyasyu</td>
<td>cash</td>
</tr>
<tr>
<td>k- pinKu</td>
<td>pink</td>
<td>ʒ- beezyu</td>
<td>beige</td>
</tr>
<tr>
<td>g- baggu</td>
<td>bag</td>
<td>ts- buutsu</td>
<td>boots</td>
</tr>
<tr>
<td>s- misu</td>
<td>miss</td>
<td>dz- niizu</td>
<td>needs</td>
</tr>
<tr>
<td>z- noizu</td>
<td>noise</td>
<td>m- hamu</td>
<td>ham</td>
</tr>
<tr>
<td>θ- basu</td>
<td>bath</td>
<td>l- beru</td>
<td>bell</td>
</tr>
<tr>
<td>f- tahu</td>
<td>tough</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Epenthesis in loanwords (NINJAL 1990)

<table>
<thead>
<tr>
<th>/o/</th>
<th></th>
<th>/i/</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>t- paato</td>
<td>part</td>
<td>ʧ- kyatti</td>
<td>catch</td>
</tr>
<tr>
<td>d- hando</td>
<td>hand</td>
<td>ʤ- oreNzì</td>
<td>orange</td>
</tr>
<tr>
<td>dz-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Combination of C1 and V1

- Combination of C1 and C2 in mimetic neologisms

<table>
<thead>
<tr>
<th></th>
<th>p</th>
<th>b</th>
<th>m</th>
<th>w</th>
<th>t</th>
<th>d</th>
<th>s</th>
<th>z</th>
<th>n</th>
<th>y</th>
<th>r</th>
<th>k</th>
<th>g</th>
<th>h</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>e</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>a</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>o</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>14</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>u</td>
<td>2</td>
<td>8</td>
<td>7</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>17</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>18</td>
<td>6</td>
</tr>
</tbody>
</table>
Combination: C1+V1

- Complementary distribution (between /u/ and /o)

![Bar chart showing distribution of vowels]
Gaps in Japanese syllabary

- */du/ as a gap in the syllabary

<table>
<thead>
<tr>
<th>C1\V1</th>
<th>a</th>
<th>i</th>
<th>u</th>
<th>e</th>
<th>o</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-</td>
<td>za</td>
<td>zi</td>
<td>zu</td>
<td>ze</td>
<td>zo</td>
</tr>
<tr>
<td>D-</td>
<td>da</td>
<td>(di)</td>
<td>(du)</td>
<td>de</td>
<td>do</td>
</tr>
</tbody>
</table>

--- /do/ >> */du/

![Bar chart showing the distribution of phonemes in Japanese syllables]
Vowel epenthesis in loanwords

- Complementary distribution of epenthetic vowels
  - \( /u/ \): if the preceding coronal is \( /z/ \)
  - \( /o/ \): if the preceding coronal is \( /d/ \)

<table>
<thead>
<tr>
<th></th>
<th>( \text{noiz}[u] )</th>
<th>( \text{bed} )</th>
<th>( \text{bed}[o] )</th>
<th>( *\text{bed}[d][u] )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{pause} )</td>
<td>( \text{pooz}[u] )</td>
<td>( \text{stand} )</td>
<td>( \text{sutan}[d][o] )</td>
<td>( *\text{suta}[n][d][u] )</td>
</tr>
<tr>
<td>( \text{jazz} )</td>
<td>( \text{zyaz}[u] )</td>
<td>( \text{side} )</td>
<td>( \text{sai}[d][o] )</td>
<td>( *\text{sa}[i][d][u] )</td>
</tr>
<tr>
<td>( \text{rhythm} )</td>
<td>( \text{riz}[u][mu] )</td>
<td>( \text{dream} )</td>
<td>( \text{d}[o][ri][imu] )</td>
<td>( *\text{d}[u][ri][imu] )</td>
</tr>
<tr>
<td>( \text{puzzle} )</td>
<td>( \text{paz}[u][ru] )</td>
<td>( \text{handle} )</td>
<td>( \text{hand}[o][ru] )</td>
<td>( *\text{hand}[d][u][ru] )</td>
</tr>
<tr>
<td>( \text{raspberry} )</td>
<td>( \text{raz}[u][berii} )</td>
<td>( \text{cadmium} )</td>
<td>( \text{kad}[o][miumu} )</td>
<td>( *\text{ka}[d][u][miumu} )</td>
</tr>
</tbody>
</table>
The phonological configuration of mimetic neologisms has something in common with that of non-mimetic items:

- CV combination in the initial syllable of mimetic neologisms
  zu-gagaan / do-gagaan (*du-gagaan)

- Phonotactic gaps in the syllabary
  z-: zu, zo / d-: (du), do

- Loanword epenthesis
  noiz[u] / said[o] (*said[u])
• Unmarked segments are favored as constituents of the initial CV syllable of mimetic neologisms.
  – Voiced coronal obstruents /d, z/ are likely to occur as C1 in neologisms whereas they are not so frequent in conventional mimetics.
  – /u/ is overwhelmingly favored as V1 in neologisms.
  – Segmental unmarkedness
    - Coronal is an unmarked articulator.
    - /u/ serves as a default vowel in the process of epenthesis.
Conclusion (2)

- Continuity between mimetic and non-mimetic vocabularies
- Phonological configurations of mimetic neologisms is not so novel but instead conventional.
  - /u/ does not appear if the preceding consonant is /d/ due to the phonotactic restriction in Japanese.
  - /zu/~/do/ distribution patterns together with loanword epenthesis.
  - /zu, do/ serve as emphatic prefixes in non-mimetic words as well.

  - do-gitui ‘garish’ (<kitui)
  - zu-butoi ‘foolhardy’ (<hutoi)
  - do-siroot ‘greenhorn’ (<sirooto)
  - zu-nukeru ‘outstanding’ (<nukeru)
  - do-konzyoo ‘guts’ (<konzyoo)
  - zuQ-kokeru ‘have a bad fall’ (<kokeru)
References


Data sources [Comics]

*Cat's Eye*, Tsukasa Hojo, Tokyo: Shueisha.


*Dragon Ball*, Akira Toriyama, Tokyo: Shueisha.


*Hot Road*, Taku Tsumugi, Tokyo: Shueisha.

*Kodomo no Omocha [Kodocha]*, Miho Obana, Tokyo: Shueisha.


*NARUTO*, Masashi Kishimoto, Tokyo: Shueisha.


*SLUM DUNK*, Takehiko Inoue, Tokyo: Shueisha.

*Tokimeki Tonight*, Koi Ikeno, Tokyo: Shueisha.


*Yamada Taroo Monogatari*, Ai Morinaga, Tokyo: KADOKAWA.


Thank you very much

Akio Nasu

nasu.akio.ge@u.tsukuba.ac.jp

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