

Written words: From graphematic forms to meaning

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Japanese *rubi*:

Layered representation of meaning

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0 Prelude: Requisite overview of Japanese writing system (JWS)

- 1 漢字 kanji [morphographic]: Native- (NJ) + Sino-Japanese (SJ) content words
- 2 平仮名 hiragana [syllabographic]: Functional words (inflections + particles)
- 3 片仮名 katakana [syllabographic]: Foreign-Japanese (FJ) [but not Chinese]
- 4 ローマ字 rōmaji *Latin letters* [segmental]: Foreign words + names
- 5 数字 sūji *Arabic numerals*: Widely used to represent numbers

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These scripts are employed together, according to various graphematic conventions, in largely separate yet complementary ways.

These scripts serve to differentiate between content + grammatical words and, to a lesser degree, between lexical strata (Joyce & Masuda, 2018; 2019; Taylor & Taylor, 2014; Tranter, 2008).

1 Introducing ルビ rubi 1

In concluding our AWLL14 presentation, we tendered the following definition:

Rubi denotes both the diverse materializations + the multifarious applications of a graphematic convention that is integral to the JWS's multiple scripts. Typically materialized by appending a different-script, marginal annotation to a base-word, rubi functions range far beyond mere pronunciation aids to finessing truly imaginative semantic fusions

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2 Prototypical application of furigana *pronunciation glosses*

Example	Elements	Scripts	Pronunciation	Meaning
ふりがな 振り仮名	RUBI BASE	hiragana kanji-kana	furigana furigana	<i>rubi indicates the base's pronunciation</i>

Base-rubi demarcations derive purely from typography; linguistically - it is often difficult to judge which representation is primary.

3 Developing a classification framework (Joyce et al. 2023)

Within the classification under development, furigana constitutes the default type of **graphematic variants**—base + rubi are different graphematic representations of the same word.

However, as described in prior studies (Joyce et al. 2012; Joyce & Masuda, 2019), graphematic variation is a pervasive characteristic of the JWS, which also extends to rubi, where all scripts are attested as base + rubi words.

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However, as described in prior studies (Joyce et al. 2012; Joyce & Masuda, 2019), graphematic variation is a pervasive characteristic of the JWS, which also extends to rubi, where all scripts are attested as base + rubi words.

In contrast, the second major category is of **semantic fusions**—base + rubi are conjunctions of different words (or phrases).

Typically materializing nuanced forms of written expression, such as subtly blending stipulation or emphasis, semantic-fusion rubi are the creative products of artfully layering different meaning representations.

4 Initial example selection (merest glimpse of rubi usage)

* Abbreviations: **B** = base; **R** = rubi; *italics* = English; ***bold+italics*** = keyword (omitting script indications for limited space!)



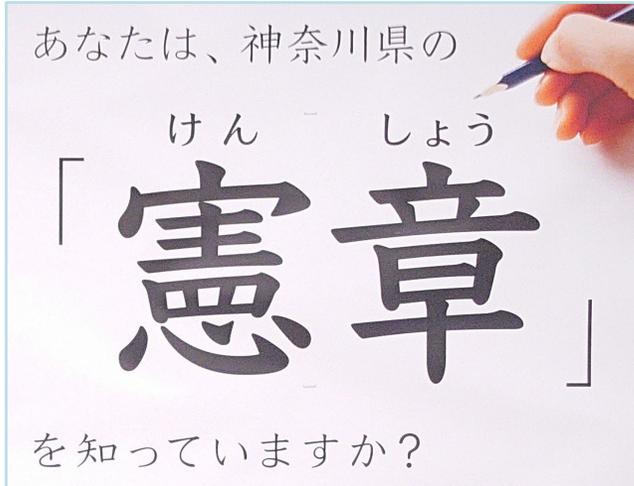
あなたは、神奈川県
けん しょう
「憲章」
を知っていますか？

ギークリー
Gookly
IT転職エージェント
ギークリー

B+R; *Geekly* (IT job-change agent);
[train-door-advert]

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B+R; *Geekly* (IT job-change agent);
[train-door-advert]

R *kenshō charter*
B

(public awareness information);
[part of a station poster]



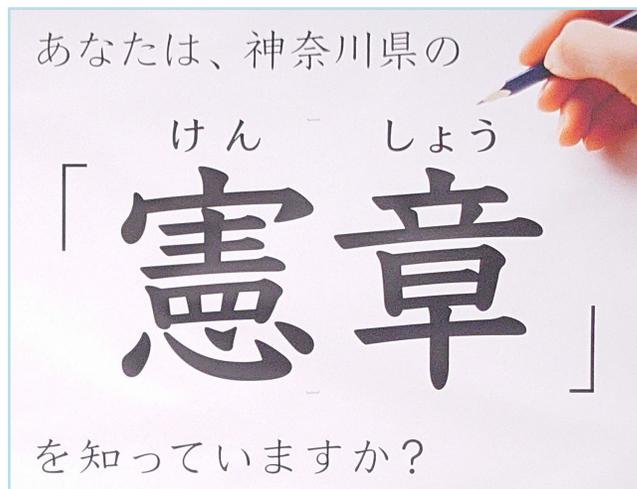
B+R; *SlimUpSlim*;
[product package]



B+R; *Ayataka*;
[train-advert]

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R kenshō *charter*
B

(public awareness information);
[part of a station poster]



B+R; *Geekly* (IT job-change agent);
[train-door-advert]



R mōningu-rūtin *morning routine*
B asa shūkan *morning habits*

miraculous morning routine;
[advert slogan for lifestyle guidebook]



B+R; *SlimUpSlim*;
[product package]



B+R; *Ayataka*;
[train-advert]



R₁ shīn *scene* **R₂** uea *wear*
B₁ bamen *drive* **B₂** fuku *clothes*

this outfit is just right for this kind of scene!
[SAFARI (2023/8) feature on travel fashion]

5 Current study

However, as the ubiquity of rubi poses considerable issues for representative sampling, the focus of this presentation is on rubi examples within two specific contexts.

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6 Context 1: Telephone-number wordplay (Tel#Rubi) 1

One common form of Japanese wordplay is 語呂合わせ /goroawase/ *phonetic matching*—homophone puns evoked by various character strings. Goroawase is often utilized as a mnemonic device for historical dates, scientific constants and telephone numbers (Wikipedia entry, nd).

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Application to telephone numbers hinges on the fact that, in Japanese, digits are associated with at least one NJ, SJ and FJ pronunciations, as well as derivatives

As illustrated on the next slide by a table within the Wikipedia entry on Japanese wordplay.

7 Context 1: Tel#Rubi 2

#	NJ	SJ	English	Derivatives
0	ma, maru, wa	re, rei	o, ze, zero	u, e, ō, mu, no, nashi, ra, wo
1	hi, hito, hitotsu	i, ichi, itsu	wa, wan	a, hi, bi, fi, kazu
2	fu, futa, futatsu	ni, ji	tsū, tū	bu, pu, tsu, zu, nu, ne, ju, nyu
3	mi, mittsu	sa, san	surī	su, zu, ta, da, so, zo, za, zan, myu
4	yo, yon, yottsu	shi	fō	ho, bo, ji, fa
5	itsu, itsutsu	ko, go	faibu, faivu	ka, ke, ga, ge
6	mu, mutsu	ro, roku	shikkusu	me, mo, ra, ri, ru, ryu, ryū
7	na, nana, nanatsu	chi, shichi	se, ze, sebun, sevun	te, de, yu
8	ya, yatsu	ha, hachi, ba, pa	e, ei, eito	he, be
9	ko, kokonotsu	ku, gu, kyu, kyū	nain	ki, gi, chu, chū
10	to, do, tō, dō, ta	ji, jū	te, ten	de, den

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65-1359

い ね 合 格

B: 1>i, 3>za, 5>gō[ka], 9>ku

R: /iza gōkaku/ *now I'll pass!*

[Part of cram school's tel#; noteworthy for missing /ka/, R=H+C-mix; placement]

8 Context 1: Tel#Rubi 3: Sample

To greatly expand on existing examples in a systematic way, we conducted an online image-search with フリーダイヤル /furīdaiyaru/ *free-dial* (0120) + search words for various services, which yielded **399** Tel#Rubi examples.

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Rating1 [O→P]: Impact factor from the digit-string to pronunciation mapping (i.e., “*Oh, so that’s how to read that number string!*”)

Rating1	Freq.	Rel.Freq.
0	7	0.02
1	90	0.23
2	287	0.72
3	15	0.04
	399	1.000

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Rating 2 [P→S]: Impact factor from the reading to meaning mapping (i.e., “*Oh, if read like that, it cleverly elicits an image of the company/organization!*”).

Rating2	Freq.	Rel.Freq.
0	6	0.02
1	39	0.10
2	308	0.77
3	46	0.12
	399	1.000

Unsurprisingly, 2 ratings are significantly correlated;
 $r = .40$, $t(397) = 8.81$, $p = .000$

9 Context 1: Tel#Rubi 4: Word counts

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Typical of Japanese corpora, the most frequent tokens are grammatical particles, albeit here overlapping considerably with rubi for digits.

Graphematic variants for prepositions + digit-rubi	Freq.	Combined	Rel.Freq.
に 二 /ni/ 2, to	44		
は ハ /wa/ subject-marker	6	50	0.04
よ ヨ /yo/ 4, sentence-particle hey	34		
な ナ /na/ 7, adjective-link, sentence-particle 'wow'; 'right'	9	43	0.03
の ノ /no/ possessive-particle	26		
	9	35	0.03
	16		
	8	24	0.02
	16	16	0.01

10 Context 1: Tel#Rubi 5: Top content words (graphematic variants) 1

/ii/, /yoi/, good;
 /yoku/ well;
 /yoshi/ good

いい	20		
イイ	12		
よい	17		
ヨイ	16		
イー	5		
いー	4		
良い	4		
イ~	3		
ヨク	3		
よく	3		
い~	1		
良く	1		
ヨシ	1	90	0.07

やさしく よみいい
 -89-4311
R: /yasashiku yomi ii/
simple easy read
B: 89>ya[sashi]ku, 43>yomi, 11>ii

イ イ ロード サービス
 06-1163
R: /ii rōdo sābisu/
good road service
B: 11>ii, 6>rō[do], 3>sā[bisu]

に わ よい よい
 28-4141
R: /niwa yoi yoi/
good good garden
B: 28>niwa, 41>yoi, 41>yoi

ハ ロ - ヨ イ フ ロ
 86-4126
R: /harō yoi furo/
hello nice bath
B: 86->harō, 41>yoi, 26>furo

ク イ ッ ク 良い 供 養
 0919-4194
R: /kuikku yoi kuyō/
quick good ceremony
B: 919>kuikku, 41>yoi, 94>kuyō

11 Context 1: Tel#Rubi 6: Top content words (graphematic variants) 2

/gō/ go

ゴー	25		
GO	7		
ごー	1	33	0.03

シチャ ゴー シチャ
78-50-78

R: /shichiya gō shichiya/
pawn-broker go pawn-broker
B: 78>shichiya, 50>gō, 78>shichiya

レスキューGOGO! 24時
-0955-24

R: /resukyū go go! 24ji/
rescue go-go 24 hours
B: 09>re[su]kyū, 55>gōgo, 24>24ji

/iku/ go; /ikō/ let's go

いく	7		
行く	6		
いこう	5		
イコー	4		
イク	3		
行こう	3		
いこー	2		
いこお	1	31	0.02

いく わ てん れい
598-100

R: iku wa tenrei/
go to ceremony
B: 59>iku, 8>wa, 10>ten, 0>rei

さあ行く 急な荷物なら
319-927

R: sā iku kyūna nimotsu nara
we transport urgent luggage
B: 3>sa[a], 19>iku, 9>kyū[na], 2>ni[motsu], 7>na[ra]

いこうよ 連合に
154-052

R: ikō yo rengō ni
let's go to the union
B: 15>ikō, 4>yo, 05>re[n]gō, 2>ni

12 Context 1: Tel#Rubi 7: Top content words (graphematic variants) 3

/minna/, /mina/
everyone

みんな	12		
ミナ	8		
みな	4		
ミンナ	3	27	0.02

Skip no.5: 21 tokens of 7 type
variants of ない /nai/ no, not

/nayami/, worries;
/nayamu/ to worry;
/nayamazu/ don't worry

なやみ	8		
ナヤミ	4		
なやむ	4		
ナヤム	2		
ナヤマズ	1	19	0.02

救うよみんなを
494-370

R: /sukuu yo minna wo/
we'll save everyone
B: 49>sukuu, 4>yo, 37>minna, 0>wo

ふなばし みな健康
2784-37

R: /Funabashi mina kenkō/
Funabashi everyone health
B: 2784>Funabashi, 37>mina-[kenkō]

78310
(なやみ言おう)

R: /nayami iou/
tell your worries
B: 783>nayami, 1>I, 0>ou

86-7837
ハロー ナヤミナシ

R: /harō nayami nashi/
hello no worries
B: 86->harō, 783>nayami, 7>na[shi]

ナヤムナ
7867

R: /nayamu na/
don't worry
B: 786>nayamu, 7>na

13 Context 2: Manga rubi 1

Study's second context is a sample of Japan's bestselling manga anthology 週刊少年ジャンプ /shūkan shōnen jyanpu/ *Weekly Shōnen Jump* (WSJ). First published on 1 August 1968, many bestselling manga series, such as *Dragon Ball*, *Hunter × Hunter*, *My Hero Academy*, *One Piece*, *Sakamoto Days*, and *Slam Dunk*, were initially serialized in WSJ.

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To date, our corpus of **1,692** manga examples is drawn from 5,211 (approx. B5-sized) pages, comprising the first 15 volumes of the 2023 first-quarter (including 272 episodes and stand-alone stories).

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Thus far, our manual extraction has excluded: (1) all default furigana glossing (thus, also all deviant pronunciation indications); (2) proper nouns; and (3) contrasts of marked vs. unmarked graphematic variations.

Moreover, conducted by the first researcher, the current extraction is likely to be considerably undercounting pertinent cases, due to detection misses.

14 Context 2: Manga rubi 2: New category of emphasis marks

Adding third top-level division for **emphasis marks** (EM) of
< · > 圈点 /kenten/ + < \ > 傍点 /bōten/, which together
account for 15.8% (268) of the manga-rubi.

EM type	#	%
bōten	152	56.7
kenten	115	42.9

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Within sampled WSJ volumes, bōten mark appears to be a specific characteristic of one manga series; 暗号学園いろは /angō gakuen iroha/ *Cipher Academy* (CA).

	CA	Other
mean	6.2	3.7
SD	5	2
Min	1	1
Max	27	19
median	4	3



B+R-BT; *it's just not okay*
[CA, ep 13]

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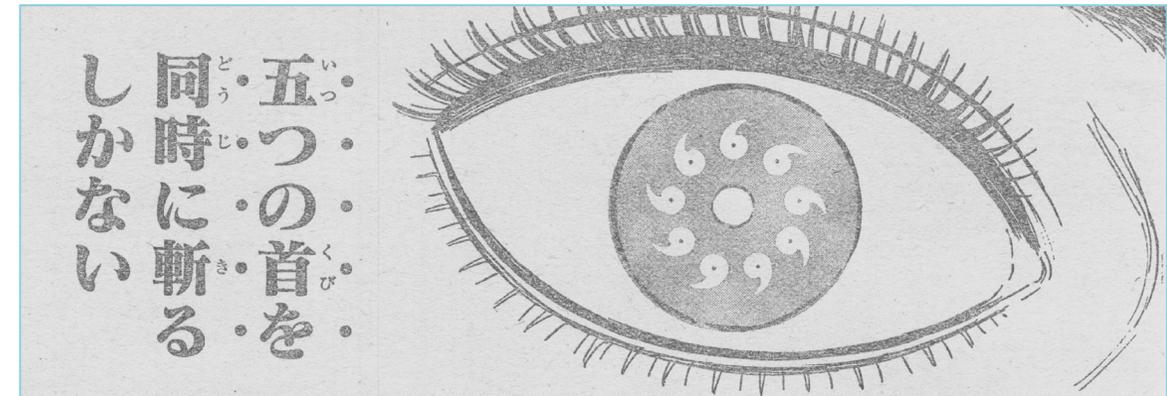
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[CA, ep 13]



B+R-KT; *The only option is to cut off five heads at the same time*

[ブラック・クローバー /burakku kurōbā/ *Black Clover*, ep 352]

15 Context 2: Manga rubi 3: Graphematic variants 1: Abbreviations

Of the 32.3% (547) graphematic variant manga-rubi, the largest sub-category consists of 38.9% (213) **abbreviations**.

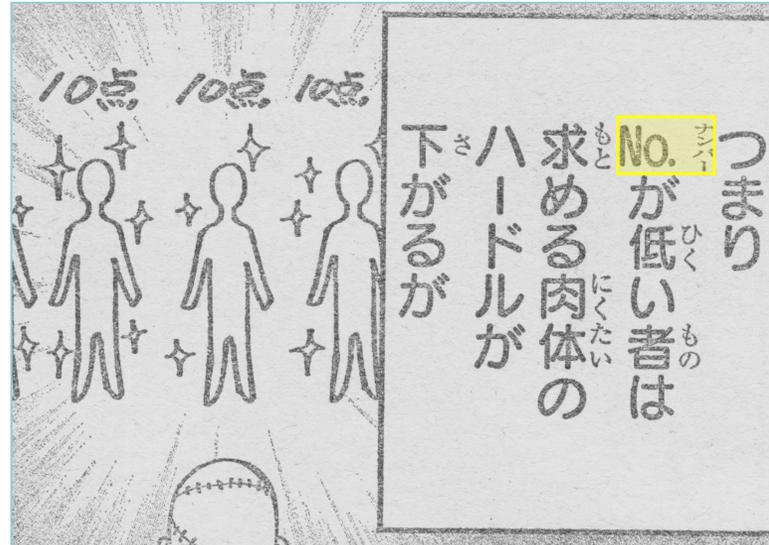
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R nanbā
B No. number

No. 150 No more war!
[アンデッドアンラック /andeddo anraku/ *Undead Unluck* (UU), ep 12]



R nanbā
B No. number

that is, those with a low number have a lower bar in terms of the physical appearance they covet
[人造人間100 /jinzō ningen 100/ *Fabricant 100*, ep 12]



R ōdāmeido
B OM order maid

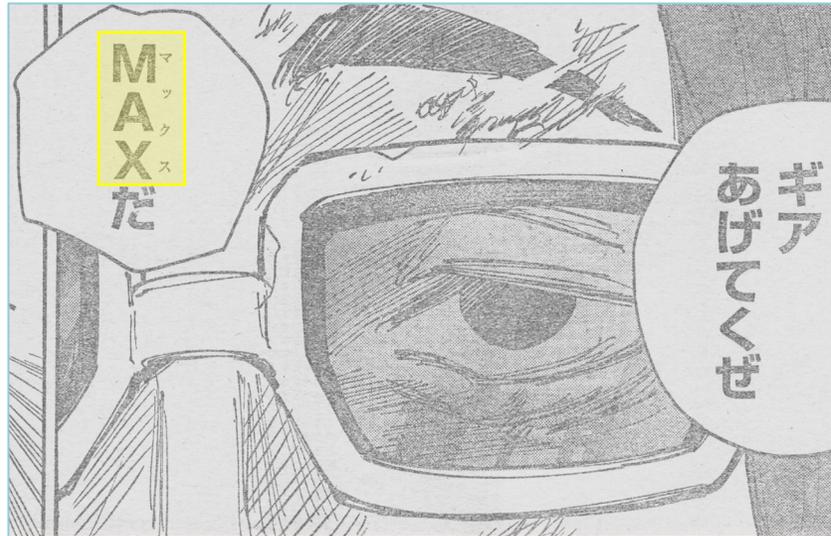
its durability is the same as an ordinary OM
[僕とロボコ /boku to roboko/ *Me & Roboco* (M+R), ep 126]

16 Context 2: Manga rubi 4: Graphematic variants 2: English

The second largest subcategory consists of 18.1% (99) of **English** words or phrases.

16 Context 2: Manga rubi 4: Graphematic variants 2: English

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R makkusu
B MAX *max*

*I'm gearing up to the **max***
[SAKAMOTO DAYS (SD), ep 110]



R₁ gō hōmu
B₁ Go home *go home*
R₂ kae
B₂ kaere *go home*

Go home.

[アオのハコ /ao no hako/ *Blue Box*, ep 82]



R tikkutokku *TikTok*
B TikTok

*You want to go viral on **TikTok**?*

[M+R, ep 128]

17 Context 2: Manga rubi 5: Semantic fusions

Although emphasis marks + graphemic variants both considerably extend the potential to convey nuanced semantic distinctions, the true capacity of rubi annotations to materialize imaginative layered representations of meanings is more fully realized in the realm of semantic fusions.

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Within our present corpus, semantic fusions account for 51.8% (877) cases. Of these, we first illustrate something of the range of the 19.2% (168)

referent subcategory—where the rubi functions to clarify the base meaning.

However, most semantic fusions, at 40.6% (356) instances, are **synonyms**—overlaps of different lexical strata, most frequently involving FJ words.

It should be also noted that there are two other closely related subcategories:

synthesis—disjoint meanings are blended, currently 11.7% (103);

metaphor—disjoint meanings are juxtaposed as allegory, currently 5.9% (52), although these are often difficult to appropriately classify.

18 Context 2: Manga rubi 6: Referent examples



R koko here
B kōbō workshop

When you run away from practice at the mansion, you always used **the workshop here** as a hiding place.

[逃げ上手の若君 /nigejōzu no wakakimi/ *The elusive samurai*, ep 99]



R uchi my
B ORDER Order

Will **my ORDER** people come? You guys

[SD, ep 110]



R orera us (causal register)
B kaizō ningen to chiisakunatta ningen modified human and a shrunken human

Some days since the existence of **us—modified human and a shrunken human—** become public... [イチゴーキ! 操縦中 /ichigōki! Sōjūchū/ *Ichigoki's under control!*, ep 14]

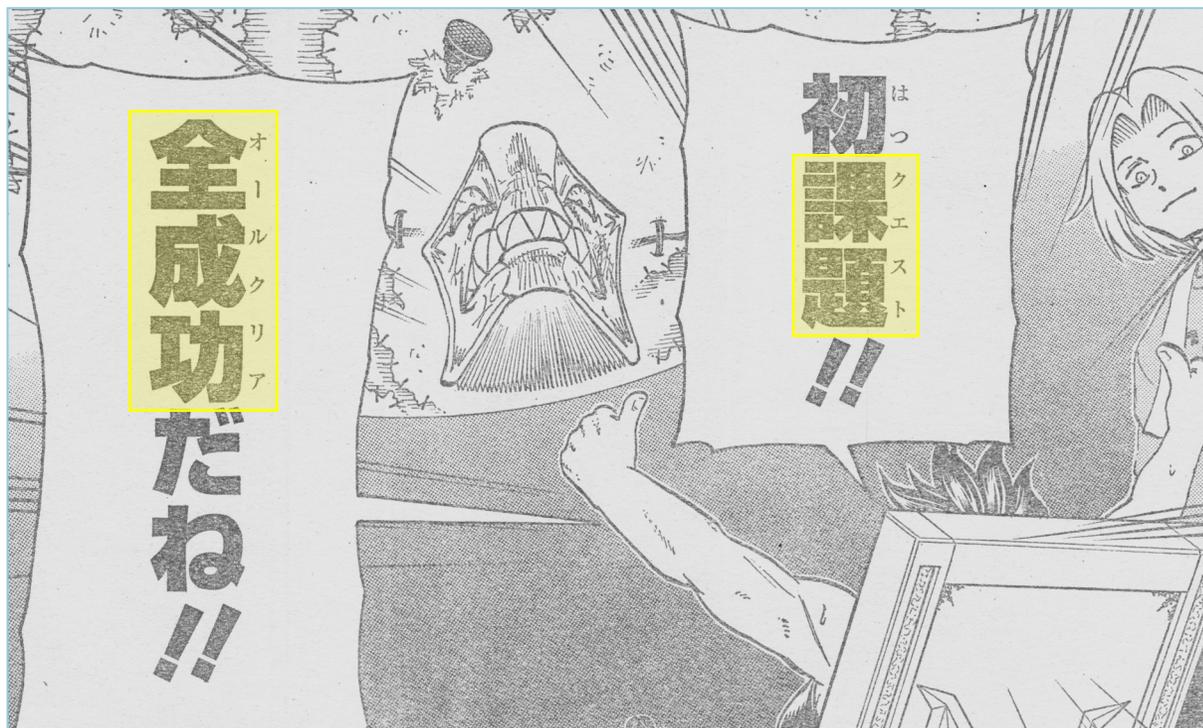
19 Context 2: Manga rubi 7: Synonyms



R₁ tai **R₂** batoru sutāto
B₁ VS *versus* **B₂** sentō kaishi *battle start*

2 on 2 battle start!!

[ギンカとリユーナ /kinka to rūna/ Ginka & Glüna, ep 20]



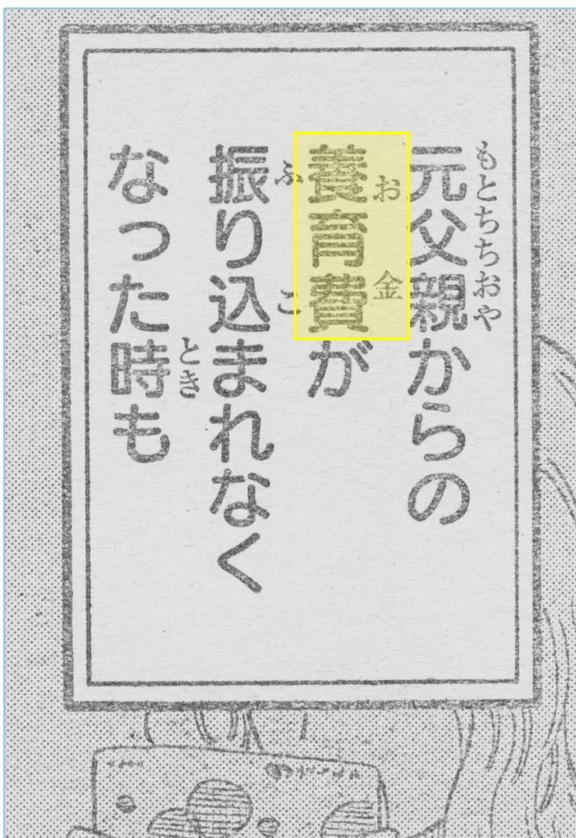
R₂ ōrukuria *all clear* **R₁** kuesuto *quest*
B₂ zenseikō *total success* **B₁** kadai *task*

First quest!! It's a total success!! [UU, ep 145]



R puran *plan*
B keikaku *plan*
according to plan
[WITCH WATCH, ep 98]

20 Context 2: Manga rubi 8: Synthesis



R okane money
B yōkuhi child support
→ child support money

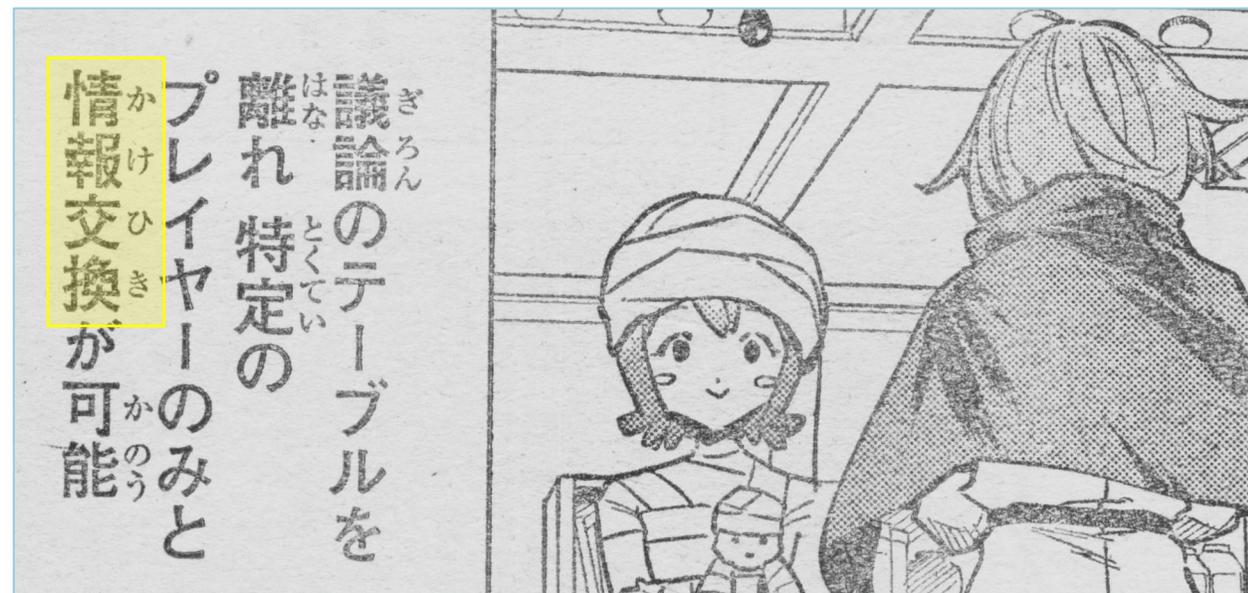
Even when my ex-father stopped paying
child support money

[あかね噺 /akane banashi/ Akane Banashi, ep 51]



R yume dream
B senryaku strategy
→ dream strategy

Iroha Irohazaka's **dream strategy**...! [CA, ep 13]



R kakehiki bargaining
B jōhōkōkan information exchange
→ bargaining for information exchange

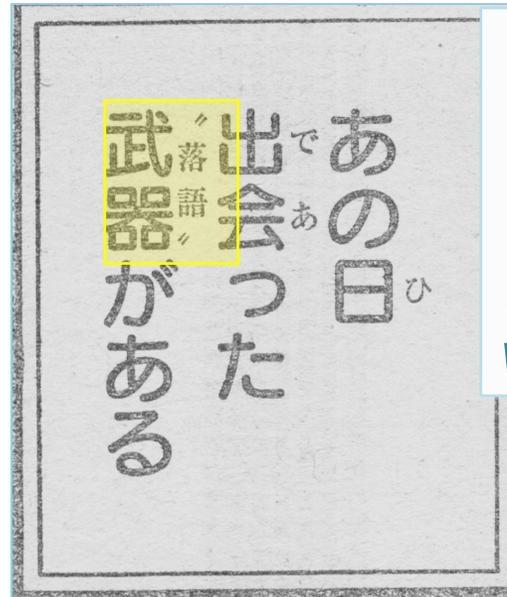
Leaving the discussion table and **bargaining for exchange information** is possible only with
specific players. [CA, ep 15]

21 Context 2: Manga rubi 9: Metaphor



R yama mountain → mountain of a job
B shigoto job

Once this mountain of a job is done, I'll take a vacation. [SD, ep 99]



R “rakugo” rakugo*
B buki weapon
→ The weapon of rakugo
*form of comedic storytelling
... that day, I encountered the weapon of rakugo [AB, ep 51]



R supai spy → existence as a spy
B sonzai existence

I want this **existence as a spy** to be able to definitely protect Mutsumi.
[夜桜さんちの大作戦 / yozakura sanchi no daisakusen/ Mission: Yozakura Family, ep 162]

22 Concluding remarks 1

Initial analyses of the manga-rubi systematically sampled to date has extended the upper-division of the classification framework to include emphasis marks, which are widely used (15.8%).

Moreover, analyses justify the initial two-way division of graphematic variants (38.9%) and semantic fusions (51.8%).

22 Concluding remarks 1

Initial analyses of the manga-rubi systematically sampled to date has extended the upper-division of the classification framework to include emphasis marks, which are widely used (15.8%).

Moreover, analyses justify the initial two-way division of graphematic variants (38.9%) and semantic fusions (51.8%).

However, Joyce, et al.'s (2023) initial framework also proposing to code the motivating factors of **conventionality** + **intentionality** (Joyce and Masuda, 2019) that are also highly pertinent for rubi-annotations, such as **message context**, **author stylistics**, **script associations**, and **creative representations**.

Accordingly, we will continue the coding of those factors (omitted this time), as we expand the sample.

23 Concluding remarks 2

JWS often regarded as the major contender for *worst* writing system ever (Coulmas, 1989; DeFrancis, 1989, Sproat, 2010), but, as Joyce and Masuda (2019) remark (primarily from the perspective graphematic variation), JWS also seems:

to foster a unique awareness for written language and even a penchant for innovative forms of Japanese graphematic representation

23 Concluding remarks 2

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to foster a unique awareness for written language and even a penchant for innovative forms of Japanese graphematic representation

Even though Japanese rubi-annotations are a supplementary device within the overall JWS, this presentation has sought to convey something of how rubi-annotations can take the potential for the layered representation of meaning to essentially unparalleled levels in other writing systems. That seems to be something worth the attention of writing system scholars!

Thank you for your kind attention

ご清聴ありがとうございます