

# Fitting a Round Peg in a Square Hole: Japanese Resource Grammar in GF

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# Stylistic Differentiation

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- plain style: informal spoken language, in most books, magazines and newspaper articles
- polite style: respectful spoken language, emails, letters, postcards, lectures, radio, TV news, quoting someone's words
- practically all categories in the GF concrete syntax have the *Style* parameter (V, N, Adj... S, QS, Utt)

# Stylistic Differentiation

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- Ex.: paradigm for *i*-adjectives

```
i_mkAdj : Str -> Adj = \chiisai ->
let chiisa = init chiisai ; in {
  pred = table {
    Resp => table {
      (TPres|TFut) => table {
        Pos => chiisai ++ "です" ;
        Neg => chiisa + "くありません" } ; ... } ;
    Plain => table {
      (TPres|TFut) => table {
        Pos => chiisai ;
        Neg => chiisa + "くない" } ; ... } ;
```

- Extra: *Level* category

## Particles は “wa” and が “ga”

- は: the topic of a sentence
- が: a new subject.

寿司はおいしい。

[sushi] WA [delicious]

Sushi: it's delicious.

寿司がおいしい。

[sushi] GA [delicious]

Sushi is delicious.

- Extra: *Part* category

cat

Part ; -- particles wa/ga

fun

PartWA : Part ;

PartGA : Part ;

StylePartPhr : Level -> Part -> PConj -> Utt ->  
Voc -> Phr ;

## «Want to» + verb

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- one's own wish: ~たい “-tai” form

来年日本に行きたいです。

[next] [year] [Japan] [to] [want to go]

I want to go to Japan next year.

- someone else's wish: ~たがっている “tagatte iru”

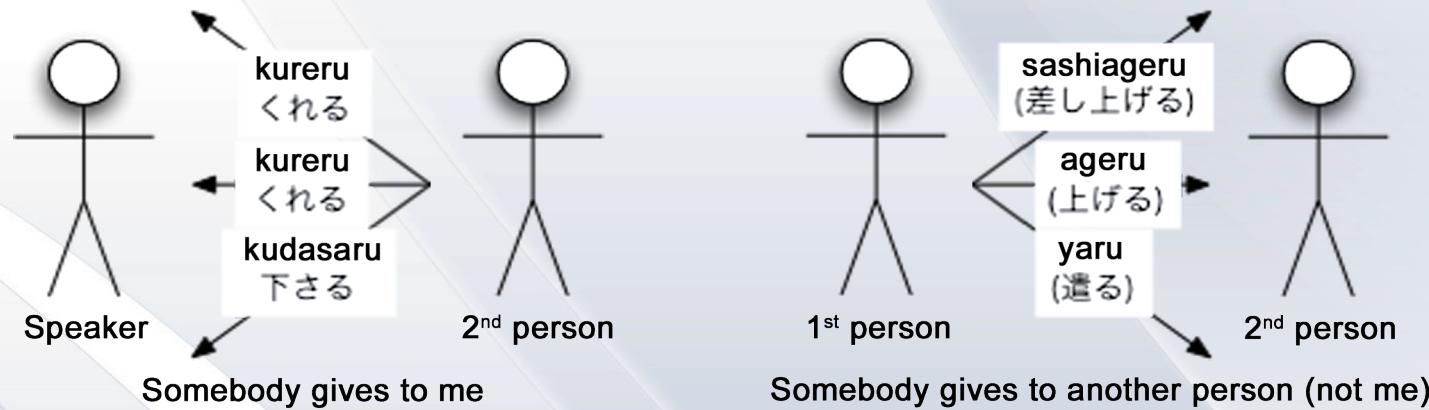
先生はコーヒーを飲みたがっています。

[teacher] topic marker [coffee] object marker [want to drink]

The teacher wants to drink coffee.

```
param Speaker = Me | SomeoneElse ;  
  
mkWant : VV = {  
    s = table {  
        Me => \\st,t,p => (i_mkAdj "たい").pred ! st ! t ! p ;  
        SomeoneElse => \\st,t,p => "たがって" ++  
                           (mkVerb "いる" Gr2).s ! st ! t ! p  
    } ; ... } ;
```

## «To give»



- somebody gives me: くれる “kureru”

太郎は私にマンガをくれた。

[Taro] topic marker [I] [to] [manga] object marker [give]

Taro gave me a manga.

- other cases: 上げる “ageru”

私は妹にお菓子を上げる。

[I] topic marker [sister] [to] [candy] object marker [give]

I give my sister a candy.

# «To give»

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- abstract:

```
Slash2V3 : v3 -> NP -> VPSlash ; -- give (it) to her
```

- concrete:

```
mkGive : Verb3 = {
    s = table {
        Me => \\st,t,p => (mkVerb "くれる" Gr2).s ! st ! t ! p ;
        SomeoneElse => \\st,t,p => (mkVerb "上げる" Gr2).s ! st ! t ! p
    } ; ... } ;
```

```
Slash2V3 v3 np = {
    s = \\sp,st,t,p => v3.s ! np.meaning ! st ! t ! p ;
    ... } ;
```

## Relative clauses

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- no relative pronouns, prepositions are omitted  
僕が記事を書いたレストラン  
[I] [article] [wrote] [restaurant]  
(1) a restaurant about which I wrote an article  
(2) a restaurant in which I wrote an article
- *missingSubj* label: True (e.g. *who is sleeping*), False (e.g. *whose mother is sleeping*)
- impossible to join RSs with *missingSubj = False* (e.g. *who is sleeping and whose mother is sleeping*)

```
BaseRS x y = {  
    and = \\a,st => x.te ! a ! st ++ "," ++ y.s ! a ! st ;  
    or = \\a,st => case <x.missingSubj, y.missingSubj> of {  
        <True, True> => x.s ! a ! st ++ "か" ++ "," ++ y.s ! a ! st ;  
        _ => x.te ! a ! st ++ ",あるいは" ++ y.s ! a ! st  
    } ; ... } ;
```

# Evaluation

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- 583 test units (words, phrases and sentences)
- no serious obstacles except complex RCl structures:  
LangEng: there is a woman the mother of whom John loves  
LangJap: ジョンがお母さんを愛する女はいる  
[John] subject marker [mother] object marker [love]  
[woman] topic marker [is]
- ambiguity:  
The woman laughs. → 3 readings  
女は笑う。 → 40 readings

## • Synopsis

<http://www.grammaticalframework.org/lib/doc/synopsis.html>

### Utt - sentence, question, word...

Function	Type	Example
lets_Utt	<u>VP</u> -> <u>Utt</u>	<i>let's sleep</i>
mkUtt	<u>S</u> -> <u>Utt</u>	<i>she slept</i>
mkUtt	<u>C1</u> -> <u>Utt</u>	<i>she slee</i>
mkUtt	<u>QS</u> -> <u>Utt</u>	<i>who did</i>
mkUtt	<u>QC1</u> -> <u>Utt</u>	<i>who sle</i>
mkUtt	( <u>ImpForm</u> ) -> ( <u>Pol</u> ) -> <u>Imp</u> -> <u>Utt</u>	<i>don't be</i>
mkUtt	<u>IP</u> -> <u>Utt</u>	<i>who</i>
mkUtt	<u>IAdv</u> -> <u>Utt</u>	<i>why</i>
mkUtt	<u>NP</u> -> <u>Utt</u>	<i>this ma</i>
mkUtt	<u>Adv</u> -> <u>Utt</u>	<i>here</i>
mkUtt	<u>VP</u> -> <u>Utt</u>	<i>to sleep</i>
mkUtt	<u>CN</u> -> <u>Utt</u>	<i>beer</i>

- API: `mkUtt (mkS pastTense (mkC1 she_NP sleep_V))`
- Afr: *sy slaap*
- Bul: *ma cna*
- Cat: *ella dormia*
- Dan: *hunsov*
- Dut: *ze sliep*
- Eng: *she slept*
- Fin: *hän nukkui*
- Fre: *elle dormait*
- Ger: *sie schließt*
- Hin: *रहस्योदी*
- Ita: *lei dormiva*
- Jap: *彼女は寝た*
- Lat: *vina gulēja*
- Nep: *उनीसुतिन्*

## • Minibar demo

<http://cloud.grammaticalframework.org/minibar/minibar.html>

**Minibar online**

Grammar: ResourceDemo.pgf    Startcat: Text    From: Eng    To: All    Clear    Random

a boy must stop .

**Abstract:** ⚡ TextS (UseCl (TTAnt TPres ASimul) PPos (PredVP (DetCN a\_Det (UseN boy\_N)) (ComplVV must\_VV (UseV stop\_V))))

Afr	⚡ 'n seun moet te stop .
Bul	⚡ момче трябва да спре .
Cat	⚡
Dan	⚡ en dreng må standse .
Dut	⚡ een jongen moet stoppen .
Eng	⚡ a boy must stop .
Fin	⚡ pojan täytyy pysähtyä .
Fre	⚡ un garçon doit s' arrêter .
Ger	⚡ ein Junge muß halten .
Hin	⚡ ଏକାଇନ୍ଦରିଯାକାମକାମ୍ବିଲ୍ସ୍ [must_VV] ହେଲ୍ପୁ
Ita	⚡
Jap	⚡ 男の子は止まらなければならぬ。
Lav	⚡ puika [must_VV] apstāties .

# Results

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- Japanese resource grammar → correlation with GF resource grammars of other languages
- Japanese is typologically and genetically distant from the European languages
- GF abstract syntax: orientation to the European languages
- no universal grammar in Japanese (plain and honorific styles)
- obstacles in forming and conjoining subordinate clauses