# Linguistics E: Class 4 Is language static or dynamic?

## 1 Research project/Conference preparation

Q.1 Discuss the difference between 'results' and 'discussion'.

Q.2 How can you most simply express your research? For example, to explain it effectively within one minute, which information do you select, which information do you discard?

## 2 Is language static or dynamic?

Q.3 Discuss what the meaning of 'cellular' is. And discuss that of "keitai" in Japanese as well.

Q.4 Give us an example to say long words short.

Q.5 Why does language have the two types of description in a long and a short?

Q.6 We have been dealing with some examples in only nouns. Discuss whether the same phenomena are true to verbs and adjectives.

Q.7 Discuss whether languages are dynamic or static.

Q.8 How long does language take to change itself? Discuss it with some examples.

## 3 A unit of language

Q.9 What is the best/better way of counting language elements?

Q.10 What units will Tokyo Kogyo Daigaku (Tokyo Institute of Technology) be divided into in Japanese?
example: 東京工業大学
 1. 私は今日初めて東京工業大学に来ました。
    I came to Tokyo Institute of Technology for the first time today.
 2. どこで生まれたかとんと見当がつかぬ。(夏目漱石: 吾輩は猫である)
    I have no idea where I was born. (Natsume Soseki: I am a cat)
 3. 国境の長いトンネルを抜けると雪国であった。(川端康成: 雪国)
    After passing through the long tunnel at the border, we found ourselves in a snowy country. (Yasunari Kawabata: Snow Country)

Q.11 Is there a universal definition of "word" and "sentence"?

Q.12 Is there a universal set of lexical categories?

# 4 Co-occurrence pattern

Q.13 Tokenize a sentence into words and find out the combinations of any two words found in the sentence.

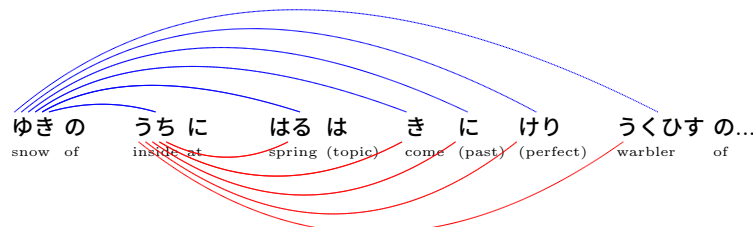雪/の/うち/に/春/は/き/に/けり/鴬/の/こほれ/る/涙/いま/や/とく/らん



Fig. 1  How to make co-occurrence patterns

Table 1  Examples of co-occurrence patterns; top ten patterns in poems written with plum blossoms.

```
KEY OP BG-01-5520-20-040 梅 20 20 3.91 5.6 1 0 2
12.69 10 BG-01-5040-01-010 3.77 10 1 BG-01-5520-20-040 3.91 20 1 香--梅
10.34 15 BG-01-5530-12-010 1.99 15 1 BG-01-5520-20-040 3.91 20 1 花--梅
10.27  5 BG-01-5520-20-040 3.91 20 1 BG-02-1570-01-010 3.96  5 1 梅--折る
 9.17  4 BG-01-5620-02-130 3.77  4 1 BG-01-5520-20-040 3.91 20 1 鴬--梅
 8.68  4 BG-01-5520-20-040 3.91 20 1 BG-01-5153-07-010 3.38  4 1 梅--雪
 8.61  4 BG-01-4240-01-010 3.32  4 1 BG-01-5520-20-040 3.91 20 1 袖--梅
 8.35  2 BG-02-3090-02-050 6.21  2 1 BG-01-5520-20-040 3.91 20 1 隠る--梅
 8.07  7 BG-01-5530-12-010 1.99 15 1 BG-01-5040-01-010 3.77 10 1 花--香
 7.92  4 BG-01-5520-20-040 3.91 20 1 BG-01-5020-01-010 2.81  4 1 梅--色
 7.87  2 BG-01-5010-13-090 5.52  2 1 BG-01-5520-20-040 3.91 20 1 闇--梅
```

$$cw(t_1, t_2, d) = (1 + \log\ ctf(t_1, t_2, d)) \cdot \sqrt{idf(t_1) \cdot idf(t_2)} \tag{1}$$

$$idf(t) = \log \frac{N}{df(t)} \tag{2}$$

$$idf(うぐいす) = \log \frac{1000}{26} \tag{3}$$
$$= \log 38.461... \tag{4}$$
$$= 1.585... \tag{5}$$

where *ctf* indicates co-occurrence term frequency.

Q.14 Calculate *idf* for the following words, and discuss the characteristics of *idf*.

1. ume/plum (noun) appears in 23 poems
2. sakura/cherry (noun) 43
3. oru/break (verb) 27
4. naku/sing (verb) 104
5. ni (particle) 625
6. wo (particle) 343

Q.15 Discuss the characteristics of co-occurrence patterns will look like in Figure 2.

Q.16 A graphical representation of all co-occurrance patterns causes a hair-ball effect/pilling. Discuss how to remove the effect.
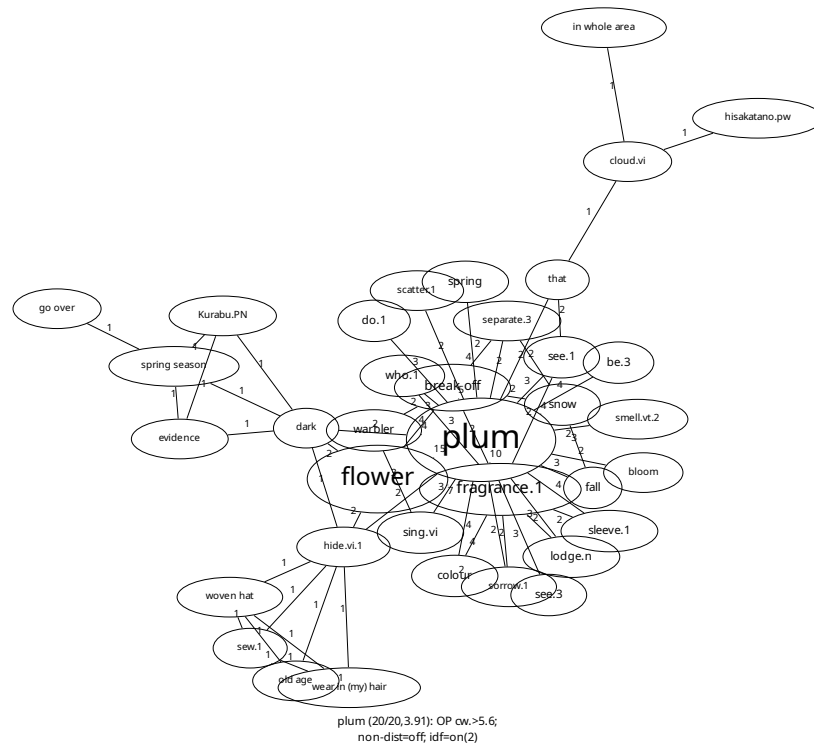


Fig. 2　Graph of plum blossoms in classical Japanese poetry

Q.17 Discuss the applications of graph figures drawn with co-occurrence patterns.

# 5　Language is interactive

Q.18 Discuss which is easier to talk between "one-way speaking" and "speaking such as a chat." Also, discuss the reason.

Q.19 Discuss how to speak differently when talking to a large number of people and when talking to individuals.

# 6　Is human language logical or not logical?

Q.20 One Japanese says that Japanese is not suitable for writing papers because it is not logical. Is Japanese an illogical language?

Q.21 What language is the non-logical language?

# 7 Sentence structure of Japanese: Modality

Q.22 There are some forms of language that don't say clearly, like *darō*(I wonder), *yōda* (look like), *sōda* (I heard that..), *rashī* (it would be..), and so on. Discuss the differences in usage between them.

Q.23 Discuss whether the modality is necessary for the language or whether you use it frequently.

# 8 Sentence structure of Japanese: Subject

Q.24 A Japanese language researcher says, "Japanese language doesn't need a subject," but does Japanese really not need a subject?