1 Identifying Regular and Irregular Verbs

Read the following extract from the fairy tale Rumpelstiltskin:

By the side of a wood, in a country a long way off, ran (run,irreg) a fine stream of water; and upon the stream there stood (stand,irreg) a mill.

The miller’s house was (be,irreg) close by, and the miller, you must (must,reg) know (know,irreg), had (have,irreg) a very beautiful daughter.

She was (be,irreg), moreover, very shrewd and clever; and the miller was (be,irreg) so proud of her, that he one day told (tell,irreg) the king of the land, who used (use,reg) to come (come,irreg) and hunt (hunt,reg) in the wood, that his daughter could (can,irreg) spin (spin,irreg) gold out of straw.

Now this king was (be,irreg) very fond of money; and when he heard (hear,irreg) the miller’s boast his greediness was (be,irreg) raised (raise,reg), and he sent (send,irreg) for (bring,irreg) the girl to be (be,irreg) brought (bring,irreg) before him.

Then he led (lead,irreg) her to a chamber in his palace where there was (be,irreg) a great heap of straw, and gave (give,irreg) her a spinning-wheel, and said (say,irreg), 'All this must (must,irreg) be (be,irreg) spun (spin,irreg) into gold before morning, as you love (love,reg) your life.'

It was (be,irreg) in vain that the poor maiden said (say,irreg) that it was (be,irreg) only a silly boast of her father, for that she could (can,irreg) do (do,irreg) no such thing as spin (spin,irreg) straw into gold: the chamber door was (be,irreg) locked (lock,reg), and she was (be,irreg) left (leave,irreg) alone.

She sat (sit,irreg) down in one corner of the room, and began (begin,irreg) to bewail (bewail,reg) her hard fate; when on a sudden the door opened (open,reg), and a droll-looking little man hobbled (hobble,reg) in, and said (say,irreg), 'Good morrow to you, my good lass; what are (be,irreg) you weeping (weep,reg) for?'

'Alas!' said (say,irreg) she, 'I must (must,irreg) spin (spin,irreg) this straw into gold, and I know (know,irreg) not how.'

'What will (will,irreg) you give (give,irreg) me,' said (say,irreg) the hobgoblin, 'to do (do,irreg) it for you?'

'My necklace,' replied (reply,reg) the maiden.

He took (take,irreg) her at her word, and sat (sit,irreg) himself down to the wheel, and whistled (whistle,reg) and sang (sing,irreg):

'Round about, round about, Lo (look?) and behold (behold,irreg)! Reel (reel,reg) away, reel (reel,reg) away, Straw into gold!'

And round about the wheel went (go,irreg) merrily; the work was (be,irreg) quickly done (do,irreg), and the straw was (be,irreg) all spun (spin,irreg) into gold.

Exercise

1. Underline (or highlight) all the verbs in the text.
2. For every verb you found, figure out its base form.
3. For each verb you found, decide whether it is regular (reg) or irregular (irreg), by comparing its base and past tense forms.
4. How many verbs are regular? How many irregular?
2 Words and Rules

Many cognitive scientists believe, like Pinker, that human linguistic knowledge consists of two different kinds of 'mental tissue':

- a **lexicon**, containing **words**
- a **grammar**, containing **rules**

Here is an example lexicon:

- John is a **proper noun**
- Mary is a **proper noun**
- hold is a **base verb**
- catch is a **base verb**
- held is a **past tense verb**
- caught is a **past tense verb**

And here is an example grammar:

- a sentence can consist of a noun phrase followed by a verb phrase
  \[ S \rightarrow \text{NP } \text{VP} \]
- a verb phrase can consist of a past tense verb followed by a noun phrase
  \[ \text{VP} \rightarrow V_{\text{past}} \text{ NP} \]
- a noun phrase can consist of a proper noun on its own
  \[ \text{NP} \rightarrow \text{PN} \]

**Exercise**

1. Draw out the lexicon as trees, like the ones in lectures 5 and 7.
   \[
   \begin{array}{c}
   \text{PN} \\
   \text{PN} \\
   \text{V} \\
   \text{V} \\
   V_{\text{past}} \\
   V_{\text{past}}
   \end{array}
   \]
   
   \[
   \begin{array}{c}
   \text{John} \\
   \text{Mary} \\
   \text{hold} \\
   \text{catch} \\
   \text{held} \\
   \text{caught}
   \end{array}
   \]

2. Likewise, draw out the grammar rules as trees.

   \[
   \begin{array}{c}
   S \\
   \text{NP} \\
   \text{VP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{VP} \\
   \text{V}_{\text{past}} \\
   \text{NP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{NP} \\
   \text{PN}
   \end{array}
   \]

3. Use the grammar and lexicon to show that *John held Mary* is a grammatical sentence.

   \[
   \begin{array}{c}
   S \\
   \text{NP} \\
   \text{VP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{PN} \\
   \text{VP}_{\text{past}} \\
   \text{NP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{John} \\
   \text{held} \\
   \text{PN}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{Mary}
   \end{array}
   \]

4. Show that *John caught is not a grammatical sentence.

   \[
   \begin{array}{c}
   \text{PN} \\
   \text{VP}_{\text{past}} \\
   \Rightarrow \\
   \text{NP} \\
   \text{VP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{John} \\
   \text{caught} \\
   \Rightarrow \text{PN} \\
   \text{VP}_{\text{past}} \\
   \Rightarrow \text{NP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{John} \\
   \text{caught} \\
   \text{NP}
   \end{array}
   \]

5. Show that *Mary catch John is not a grammatical sentence.

   \[
   \begin{array}{c}
   \text{NP} \\
   \text{V} \\
   \Rightarrow \text{NP} \Rightarrow \text{NP}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{PN} \\
   \text{catch} \\
   \text{PN}
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{Mary} \\
   \text{John}
   \end{array}
   \]
6. How many sentences are grammatical, according to this grammar and lexicon?
Mary held John. John held Mary. Mary held Mary. John held John.
⇒ 8 sentences

3 Adding Regular Verbs

Let’s add some regular verbs to our little lexicon:

* k**is**s is a base verb
* h**ug** is a base verb

And a rule for forming regular past tense forms of verbs:
a past tense verb can consist of a base verb followed by the suffix -ed

Exercise

1. Draw out the new words and rules as trees, like before.

```
V   V  V_past
|   |   |
viss  hug  -ed
```

2. Show that John kissed Mary is a grammatical sentence.

```
NP   V -ed   NP
|   |   |
PN   kiss   PN
|   |
John                     Mary
```

```
S
|   |
NP   VP
|   |
PN   V_past  NP
|   |   |
kiss  -ed  Mary
```

3. Show that *John hug Mary is not a grammatical sentence.

```
NP   V   NP
|   |   |
PN   hug   PN
|   |
John                     Mary
```
⇒ No further rule applicable.

4. Show that *Mary catched John is a grammatical sentence, according to this grammar and lexicon.

```
NP   V -ed   NP
|   |   |
PN   catch   PN
|   |
Mary                     John
```
5. Make sure you understand how *Mary caught John blocks* *Mary catched John.*

\[
\text{• Mary, caught, John} \\
\Rightarrow \quad \text{NP} \quad \text{V}_{\text{past}} \quad \text{NP} \\\n\quad \text{PN} \quad \text{caught} \quad \text{PN} \\\n\quad \text{Mary} \quad \text{John} \\
\Rightarrow \quad \text{VP} \\\n\quad \text{V}_{\text{past}} \quad \text{NP} \\\n\quad \text{caught} \quad \text{PN} \\\n\quad \text{John} \\
\Rightarrow \quad \text{As caught is stored in the lexicon (as past tense form for catch), the rule for regular past tense forms is not applied.}
4 Data and Observation

So far in the lectures, we have discussed a whole range of experimental results and empirical observations that any theory of regular and irregular past tense verbs in English will need to account for.

Exercise

1. Describe the basic observable facts about regular and irregular past tense verb forms as they occur in spoken and written English today.
   - Regular past tense verb forms are produced by adding -ed as suffix to the verb.
   - Past-tense suffix is pronounced in three different ways (i.e., it is an allomorph): t (e.g., walked), d (e.g., jogged), ɪ (e.g., patted).
   - Twenty-eight verbs remain unchanged in past tense (e.g., put).
   - Verbs with prefixes keep (irregular) past tense form of stem (e.g., become and come).
   - In irregular verb forms, there are three observable patterns (except for go and be):
     (a) Similarity of sounds between past tense and base forms (stem-past similarity)
     (b) Many irregular verb forms undergo same vowel change when forming the past tense form (e.g., fight-fought, bring-brought) (change-change similarity)
     (c) The stem of verbs with same vowel alternation are overall very similar (e.g., grow, throw) (stem-stem similarity)

2. List all the facts and observations you can remember about how children learn regular and irregular past tense verb forms in English.
   - It is a U-shaped development: first they can produce regular and irregular verb past tense verb forms. In the second phase, they overuse regularity in the sense that they attach the suffix -ed also to irregular verb stems for which they had produced the correct past tense form previously. In the third phase the children make less and less errors.

3. List all the facts and observations you can remember about how adults recognise and produce regular and irregular past tense verb forms in English.
   - Adults (usually) don’t make regularisation errors by attaching -ed to every verb stem. They know and use the irregular past tense form, as they have heard it from other speakers multiple times. (Hypothesis: Blocking principle)
   - Minor point: They choose the past tense form of a verb according to its root (e.g., undercome → undercame, not *undercomed and succumb → succumbed, not *succame; or steal → stole, but steel → steeld).

4. List all the facts and observations you remember about the significant ways in which regular and irregular past tense verb forms have evolved in English over the last thousand years or so.
   - Originally all verb forms, including irregular forms, were regular, but this changed over the time: The younger generation learns the language from the older one by trying to infer the underlying lexicon and grammar. This inference might have been erroneous in the past: A rule producing past tense forms might not have been recognised and consequently the forms were just memorised as words, or a new rule was hypothesised. These small changes were passed down through generations and reshaped the production of past tense forms.
5. List any other facts you think a theory of regular and irregular verbs needs to account for.
   - It should not lead to explanatory contradictions with respect to how the past forms of new (regular) words are produced.
   - It should generally not be contradictory with respect to the determination of whether a verb is considered 'regular' or 'irregular' (i.e., no exceptions!).
   - It needs to explain the way children learn verb forms and how adults produce them.

5 Models for Past Tense Verbs

We have also discussed in the lectures two different models which try to explain the facts of regular and irregular past tense verbs in English.

Exercise 5.1

1. List the salient features of the basic **words-and-rules model**, in particular what it has to say about how adult speakers produce regular and irregular verb forms in English.
   - Two kinds of mental subsystems: lexicon of words, handled by mechanism to store and retrieve items in memory; grammar of rules referring to novel relationships between things, handled by mechanism for combining and analysing sequences of symbols
   - Regular (past-tense) forms of verbs are generated by rules (add suffix -ed to verb). Irregular verbs are stored as individual words in the memory and retrieved as such.
   - Blocking mediates between the two mechanisms: If a verb form can be retrieved from memory, the rule is blocked, otherwise the rule is applied. Really part of words-and-rules theory?

2. List the salient features of Chomsky and Halle’s **SPE model**, in particular what it has to say about regular and irregular verb forms in English.
   - Generation of regular as well as irregular past tense forms is handled by rules, i.e. irregular past tense forms are not retrieved from memory.
   - Three (additional) rules capture most of the patterns of irregular verbs (165 verbs).
   - A general rule handles regular verbs.
   - Simple rules change consonants and vowels.
   - Rules are tagged according to applicability to certain verbs.
   - A complex change can be attributed to the application of a set of simple rules.
   - A few rules are shared by many verbs.

We can evaluate a model by determining the extent to which it accounts for the empirical data and experimental observations we are trying to explain.

Exercise 5.2

1. Evaluate the basic words-and-rules model by deciding whether or not it accounts for each of the facts and observations you listed in exercise 4.

2. What would we have to add to the basic words-and-rules theory, to make it a better theory of regular and irregular verbs?

3. Evaluate the SPE model by deciding whether or not it accounts for each of the facts and observations you listed in exercise 4.