SPE-type Rule

• SPE-type rules have the following form
  \[ A \rightarrow B / [E \_\_] \]
  where A, B are items, and E is the environment where A would alternate with B.

• Read “A becomes B in environment E”.
• An SPE-type rule states the relationship between two forms as a process of one becoming the other.
**SPE**

- SPE stands for *Sound Pattern of English*
- It is the title of an important book
- Chomsky & Halle (1968) focused their discussion on English, but main ideas extend beyond English.

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**A Central Idea in SPE**

- The grammar of a language is the system of rules that specifies the correspondence between an ideal phonetic form and an associated intrinsic semantic interpretation. (p.3)
**Example: Past Tense**

Consider the regular English Past Tense which has the following forms:

- [d] as in [bleimd] “blamed”
- [t] as in [li:kt] “leaked”
- [əd] as in [peintəd] “painted”

How can we state this pattern in the form of grammatical rules?

**Past Tense: Environment**

The phonetic form of the past tense is predictable.

- [d] when the preceding segment is voiced.
- [t] when the preceding segment is voiceless.
- [əd] when the preceding segment is [t] or [d].
Formal Statement of Environment

Stating the environment of each phonetic form can be done in the following way.

Past tense

[d] [+voice] __
[t] [-voice] __
[əd] [t, d] __

- Specification of properties of preceding segment.
- Position of past tense suffix.

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Formal Statement of Environment

___ indicates the position of the item under discussion.

Hence,

E __ = in the environment where E precedes the item under discussion.

__ F = in the environment where F follows the item under discussion.

E __ F = in the environment the item under discussion is sandwiched between E and F

G |__ = in the environment where G dominates the item under discussion.

E, F and G could be any linguistic entity such as a phonological feature, a morpheme, a boundary, etc.
So far we have statements of the environments for each of the phonetic forms of the past tense.

However, we still have not captured the correspondence between the semantic interpretation of Past Tense with the Phonetic forms.

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**Past Tense as Alternation**

- Let’s assume that the English Past tense is really $/{d_{\text{past}}}/$.
- Thus we must explain that
  - $/{d_{\text{past}}}/$ becomes $[t]$ in a certain environment
  - $/{d_{\text{past}}}/ \rightarrow [\partial d]$ in a certain environment
  - Otherwise $/{d_{\text{past}}}/$ stays as $[d]$

\[ \rightarrow = \text{becomes} \]
Past Tense as Alternation

- /d_{past}/ → [t], Environment: [-voice] __

SPE notation:

/d_{past}/ → [t] / [-voice] __

In the environment

Deriving [əd]

- If we assume that the past tense is /d_{past}/, then [ə] must be an inserted element when the past tense is preceded by [t] or [d].

∅ → ə / alveolar plosive __ alveolar plosive
∅ = nothing

Read: Nothing becomes [ə] when sandwiched between two alveolar plosives. Insert [ə] between two alveolar plosives.
**SPE-type Rules**

- Because Chomsky & Halle (1968) used rules of the format

\[ A \rightarrow B / [\text{Environment } \_\_] \]

Rules that have this format became known as SPE-type Rules.

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**Extending SPE-type Rules**

Examples outside of Linguistics

/alien from Krypton/ → Superman / [trouble ___ ]
/alien from Krypton/ → Clark Kent / [no trouble ___ ]

/insomniac guy/ → Batman / [trouble ___ ]
/insomniac guy/ → Bruce Wayne / [no trouble ___ ]

/frog/ → prince / kiss ___
Further reading


The End