1. Basic processes


Conceptualization

♦ Retrieve lexical items: horse, barn, sleep

♦ Plan the syntactic structure of the utterance:

\[
\text{Noun (subject)} + \text{Verb} + \text{Prepositional phrase (location)}
\]

♦ Specify the phonological properties of the utterance, for example:

'horse' + PLURAL = /hɔːs/ + /z/  
'sleep' + 3rd person PLURAL = /slip/ + /Ø/

Articulation

"The horses sleep in the barn."

2. Some issues to consider in translating or encoding a thought into an utterance (Fromkin & Bernstein-Ratner 1998:314-15)

- What types of linguistic units are involved and how are these units combined?
Are there distinct stages of planning and/or processing involved and, if so, is it possible to gain some understanding of how these might operate in real time?

Is there any evidence for the psychological validity of the types of units, constituents, and/or rules that are standardly invoked in linguistic theory (e.g. nouns, morphemes, phonemes, phonetic features)?

3. **The data**

Traditionally, data has been observational (e.g. speech errors) rather than experimental due to the difficulty of investigating specific stages of processing. Controlling the form of the input is particularly problematic (cf. presentation of a written word and presentation of a thought).

Normal speakers produce words at the rate of 2 to 4 per second, which presupposes that retrieval of words from our mental lexicon is similarly rapid. Nevertheless, errors in speech are relatively infrequent: The average speaker makes no more than one to two errors per every 1,000 words, not all of which are readily detected in normal speech (Levelt 1989, 2001).

Slips of the tongue/speech errors, for the most part, fall into one of the following eight major categories (Carroll 1999:194).

- **Shift** – a segment appears in a displaced location
- **Exchange** – two segments change places
- **Anticipation** – a later segment takes the place of an earlier one
- **Perseveration** – an earlier segment replaces a later one
- **Addition** – a segment is added
- **Deletion** – a segment is omitted
- **Substitution** – a segment is replaced by another
- **Blend** – two segments combine to form one

Errors are not random in nature: They occur in highly regular patterns to be described in the sections to follow.

3.1 **Explaining speech errors**

Freud (early 20th century) – Speech errors reveal unconscious or suppressed thoughts.

A student who wants to postpone an exam: “Last night my grandmother lied” (Motley 1987, cited in Carroll 1999)
Freud's original writings (with speech error samples) can be found at: http://psychclassics.yorku.ca/Freud/Psycho/chap5.htm

Dell (1995) - Speech errors reflect the fact that each stage of language production involves some degree of creativity. In general, words and sentences are formed in a spontaneous manner, rather than retrieved whole.

3.2 Evidence for a level of phonological planning

Phonetic or phonemic errors (including spoonerisms)

Errors of this type are observed to adhere to the phonological rules of the particular language spoken. So, for example, speakers of English do not produce phonemes that are not attested in the language or that violate phonotactic constraints (i.e. produce illicit sequences of phonemes such as */ŋæt/).

Bolshoi balloi Target: Bolshoi ballet [perserveration of /ɒɪ/]
frish gotto Target: fish grotto [/gr/ → /g/]
"It's a furking..." Target: 'a full, working mill'

From Fromkin's 1971 corpus: "Mity the due teacher - I mean - nity the poor teacher - no- pity the new teacher."

Demonstrates reversal of nasality: Target sound /p/, which is [-nasal], becomes [+nasal] /m/, while target sound /n/, which is [+nasal], becomes [-nasal] /d/.

This last example is particularly interesting because phonological (i.e. distinctive) features appear to have exchanged here, rather than whole phonemes. Fromkin takes this as evidence that phonetic features such as [-consonantal], [+voice], and [-nasal] are psychologically real.

Finally, the following errors are attributed to Reverend Wm. A. Spooner, Warden of New College, Oxford U. (1903-24), who lends his name to general errors of this type, which are termed spoonerisms:

- A well-boiled icicle Target: ?
- Ye noble tons of soil Target: ?
- Will nobody pat my hiccup? Target: ?

Sponsorisms appear to involve an exchange in the linear ordering of two yet-to-be pronounced sounds. Another example: "gus gazzlers" Target: gas guzzlers [/ʌ/ → /æ/]

The lexical bias effect: Phoneme exchanges that result in the production of two real words are about three times as likely to occur as are those which create nonwords (corroborated by the experimental work of Baars, Motley, and MacKay 1975, cited in Dell 1995).

3.3 Evidence for a level of morphological planning

"The readily-available-ness of the missile." (reporter, Channel 4)
"Let me explain the importance of this." (Amer. English speaker)
"I can’t commentate on that." (Tessa Jowell on BBC news)
"She’s a really revengous type of person." (AmE speaker, US television)  
Target: vengeful, revenge??

Syllable-level errors

aminal  Target: animal (common error in child speech)
"bobala island"  Target: Balboa Island
"Tropper and Haugott"  Target: Hopper and Traugott

3.4 Evidence for a level of syntactic planning

Word-level errors adhere to what has been termed the syntactic category rule, in which whole words can be seen to exchange/blend only with words that share the same syntactic category; i.e. verbs only exchange with verbs, nouns only blend with nouns, etc.

Furthermore, it has been observed that content (or lexical) words behave differently from function (or grammatical) words in speech production. For example, Harley (2001:354) notes that in his own corpus of several thousand speech errors, there are no examples of content words exchanging with grammatical words. Also, function word errors are observed to be constrained by distance (i.e. they occur quite locally in the clause), whereas content word errors are not.

✧ “Where can I get this cash checked?”  Target: check cashed
✧ “Why would you go to holiday on a place like that?”  Target: Why would you go to holiday to a place like that?
✧ That’s James and he is standing over his dead body’s wife.”  
Target: dead wife’s body. (Speaker answering a question while watching television programme on King James II of England.)
Garrett (1980)
She offends his sense of how the world should be.
Target: He offends her sense of how the world should be.

Note that '*Her offends he sense of how the world should be' is a type of error that is not attested.

Subject pronouns = she, he
Object pronouns = her, him

The above error suggests that the target subject pronoun, he, has been 'mistagged' as taking the grammatical role of a possessive object pronoun (his), while the reverse holds true for the target possessive pronoun her, which becomes the subject pronoun she in the actual utterance. That is, in the syntactic planning of the utterance, the wrong lexemes have been coded for 'subject' and 'object' roles. The error thus would appear to involve more than simply erroneous insertion of the pronouns 'he' and 'her' in the syntactic frame (i.e. a simple word exchange).

More phrase-level examples:

I wanted to read my grandmother to the letter. Target: I wanted to read a letter to my grandmother. (Two noun phrases exchange rather than single words; cited in Dell 1995:188)

The senator has got to understand if he’s going to have - he can’t have it both ways. He can’t take the high horse and then claim the low road. (Mixed metaphor; George W. Bush in South Carolina, 2000)

"Since 1989, I’ve had a problem with my kidneys which I was treated with drugs." (male speaker of British English)

Stress placement errors

Does stress move with an exchanged constituent or does it remain consistent with the planned target utterance? According to Fromkin (1971), the speech error data support the latter contention. (Note that in the following examples, (1) indicates primary stress, (2) secondary, and (3) tertiary.)

1. ne²rve of a ve³rgeous bre¹akdown
   Target: ve²rge of a ne³rvous bre¹akdown

2. in the phono²logy of theo¹ry
   Target: in the theo²ry of phono¹logy
Syntactic priming

Experimental evidence suggests that syntactic structure can be primed independently from the meaning of an utterance. In conversation, this type of priming is evidenced when speakers (subconsciously) structure their own utterance to match a syntactic pattern previously attested in the conversation. (See discussion in Harley 2001:356-7)

Selective priming of the sentence frames illustrated in (1) and (2) has been demonstrated in experimental studies:

(1) 'John baked a cake for Mary' vs. (2) 'John baked Mary a cake' (dative shift)
(2) 'Edward ate the icing' vs. (2) 'The icing was eaten by Edward' (passive)

3.5 Lexical errors

Malapropisms (word retrieval/substitution errors that involve phonological similarity)

✓ He is the very pineapple of politeness. (Mrs. Malaprop in Sheridan's play The Rivals (1775))
✓ "Republicans understand the importance of bondage between a mother and child." (Dan Quayle, US Vice-President)
✓ "I don't have to accept their tenants. I was trying to convince those college students to accept my tenants." (American president George W. Bush)

Word retrieval/substitution errors that involve semantic similarity:

"The terminator as Arnie and I like to call him." Target: Arti (a person's name)
"I had that toast before I went to bread." Target: bed

Note that all of the above are examples of mixed errors, in that they reflect both semantic and phonological influence on the production of the error.

Word blends (create novel, and possible, words of English)

✧ A tennis athler (Fromkin 1971) Target: player and athlete
✧ "the pentuary" (union head speaking on TV) Target: 'pensions actuary'

For many more interesting word blend errors, produced by American president George W. Bush, see: http://www.dubyaspeak.com/
**Message-level intrusion errors** (also ‘cognitive intrusion errors’, Harley 2001)

- Get out of the Clark. Target: ‘Get out of the car.’  
  (Speaker was looking at a shop-front with the name ‘Clark’s’ and yet reported that he was not aware of this at the time of speaking.)

- “Wow, a real candleluer.” Target: ‘chandelier’ (Speaker looking at a chandelier decorated with lighted candles in a stately home.)

Interestingly, like malapropisms, cognitive intrusion errors often appear to involve phonological facilitation.

### 3.6 Other evidence: Disfluencies

- Unfilled pauses
- Filled pauses (e.g. ‘umm’, ‘er’)
- Repetitions
- Parenthetical remarks (e.g. ‘you know’)
- Tip-of-the-tongue (TOT) state

Pauses provide information regarding 2 hypothesized types of speech planning:

1. **Microplanning** - Pertains to retrieval of individual lexical items.  
   Duration and frequency of hesitations (extreme in the case of TOT phenomena) increases with words that are less predictable or difficult.

2. **Macroplanning** - Pertains to syntactic and semantic planning of higher-level constituents (i.e. phrase or sentence).  
   The duration and frequency of both filled and unfilled pauses is observed to increase according to the syntactic complexity of speech.

### 4. Models of language production

- Garrett (1975, 1976) - See Appendix I
- Fromkin (1971)

Both are serial models that propose discrete levels of processing.

- Dell (1986, 1995) - See Appendix II

A connectionist model of language production that involves spreading activation, with both feed-forward and feedback of information.
Reading Recommendations

Introductory sources


Important early papers


Appendix I
Garrett's (1975, 1976) Model of Speech Production

Message Level
- Conceptual knowledge
- Propositional knowledge
- Illocutionary intent

Functional Level
- Abstract syntactic and semantic specification of content words
- Grammatical (or functional) roles assigned
- Order of words not yet specified.

Positional Level
- Abstract specification of grammatical elements
- Sentence frame constructed marking fixed position of both content words and functional elements.
- Phonological form of content words accessed and slotted into position.

Sound Level
- Phonological specification of grammatical elements retrieved. These are now ready to be pronounced.
- Phonetic detail of both lexical and grammatical elements provided.

Articulatory Instructions
- Sent to articulatory systems.
- Tongue twisters may cause difficulties here.
Appendix II
Dell’s model of speech production (1986)

A connectionist model of both lexical retrieval and sentence production. Works on the basis of spreading activation, allowing both top-down and bottom-up processing of information, as well as lateral activation of adjacent nodes on any given level of representation.

It is assumed that the most highly activated item will be chosen to fill a particular slot in the frame under construction:

Sample frames:

**Syntactic frame:** Det Noun Verb

**Morphological frame:** Stem Affix

**Phonological frame:** Onset Nucleus Coda

Retrieval of ‘prevent’ rather than ‘present’ (Dell 1986)
(Reproduced from Fromkin and Bernstein Ratner 1998:337)