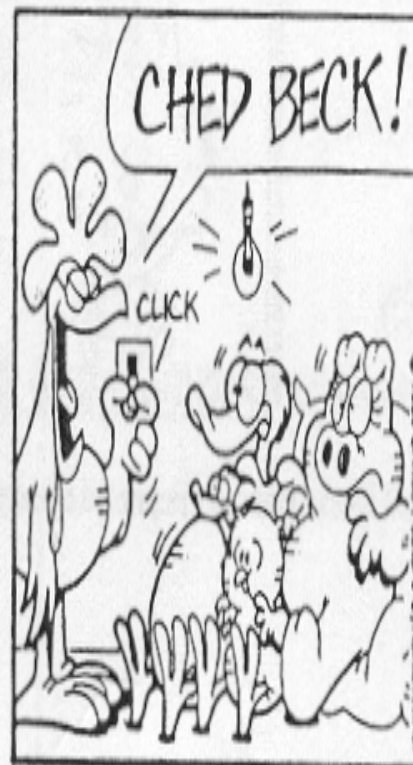
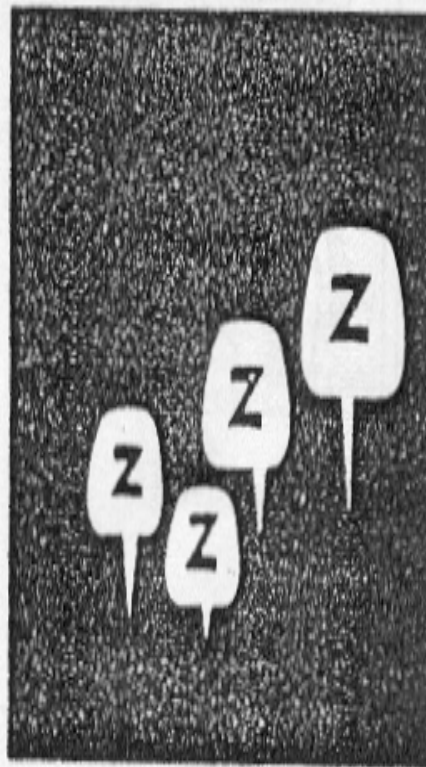


Language Production

Speech Production



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General Points about Speech Production

- ❖ 15 speech sounds per second => 2 to 3 words (7)
- ❖ Automatic, we can't tell how we do it; 'impossible to think in the middle of a word, shall I say 't' or 'd'' (Levelt)
- ❖ Production side has gotten less attention in Psycholinguistics than the comprehension side.
- ❖ Evidence for speech production behaviour has **until recently** relied heavily on speech errors (laboratory induced or natural)

Tongue Twisters

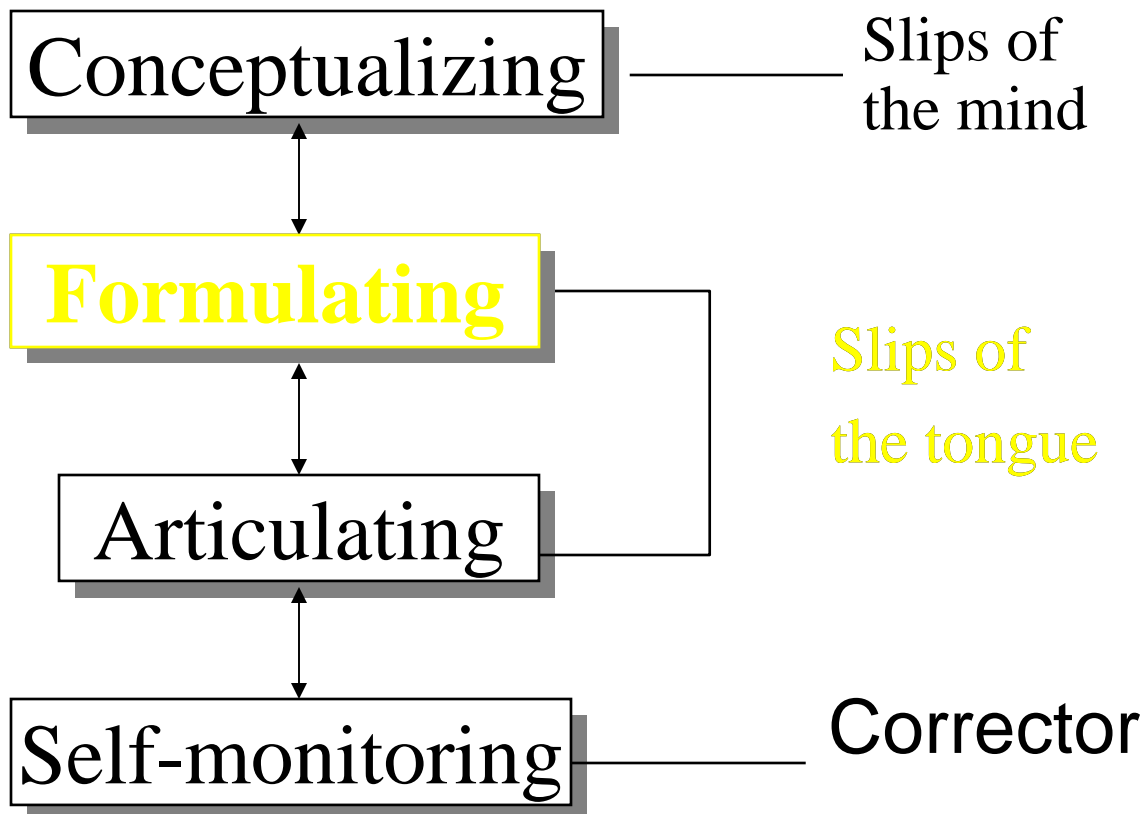
- Have speakers attempt to read the following 3 times rapidly and repeat 3 times from memory.
 - Describe 3 errors that were made
- How polite is the fame of the fib to police.
- Your lapel has the fame and the fib of Lapointe.
- This locale has a yen for a yacht by LaCoste.
- You collect if you yawn, but not yet, said Colleen.
- The rebuff was too wan since it's web to rebuild.
- If the ribbon is wan it's too wet for a rebate.
- The balloon had no gun and could get the ballet.
- From the belly a gun will not get me a ballot.
- When the lubber is gone we can get him a lapel.
- You defy me the tin and I talk to defend.

Processes in Speech Production

- Decide what to say
- Select appropriate words
- Organize words into grammatical form
- Turn sentences into speech

From Thought to Speech or Written Text

SPEECH



Spoonerisms



- Speech error in which the initial letter or letters of two or more words are switched
- “The Lord is a shoving leopard to his flock.”

SLIPS OF THE TONGUE

- ❖ Spoonerisms: Exchange of phonemes (named after Reverend Dr. William Spooner, 1844-1930).
- ❖ You have hissed my mystery lectures =>
You have missed my history lectures
- ❖ * In fact, you have tasted the whole worm =>
In fact, you have wasted the whole term.
- ❖ 8 major types of slips of the tongue. These errors appear at all levels (phoneme, morpheme, word level).
- ❖ => **Speech errors are not made at random**

Table 8-1. Major Types of Slips of the Tongue

Type	Example
Shift	<i>That's so she'll be ready in case she decide to hits it (decides to hit it).</i>
Exchange	<i>Fancy getting your model renosed (getting your nose remodeled).</i>
Anticipation	<i>Bake my bike (take my bike).</i>
Perseveration	<i>He pulled a pantrum (tantrum).</i>
Addition	<i>I didn't explain this clarefully enough (carefully enough).</i>
Deletion	<i>I'll just get up and mutter intelligibly (unintelligibly).</i>
Substitution	<i>At low speeds it's too light (heavy).</i>
Blend	<i>That child is looking to be spaddled (spanked/paddled).</i>

phoneme
exchange

Common Types of Speech Errors

- Sound Exchanges
 - Night life
 - Nife lite
 - Beast of burden
 - Burst of beaden
 - Coin toss
 - Toin coss
- Anticipation Errors
 - Take my bike
 - Bake my bike
- Perseveration
 - Beef noodle
 - Beef needle

Speech Errors & Constituents

- Sound exchange, sound anticipation, and sound perseveration errors tend to occur within a single constituent
 - Tend not to occur across constituents

- Unlikely Speech Errors

The dancer took my bike.

The bancer took my bike.

At night, John lost his life.

At nife, John lost his lite.

Stranded Morpheme/ Morpheme Exchange Error

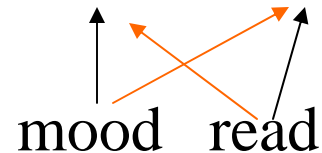
- I'm not in the read for mooding.
- She's already trunked two packs.
- (I'm not in the mooding for read.)

Decide on Pattern to Generate

Noun for Verb + ing

Fill in Specific Words

Noun for Verb + ing

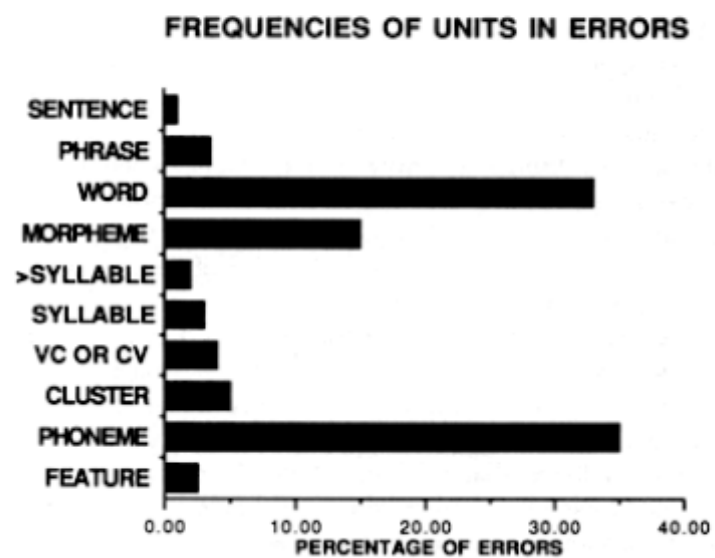


Significance of Exchanges

If α and β exchange (i.e., if the target is [... α ... β ...] and the error is [... β ... α ...]), then there must be a processing stage at which α and β are both parts of the same planning increment.

If α and β reliably share (or do not share) some property, then that property is likely to be (or to not be) relevant to the mechanisms or representations at the level of the exchange.

Rate of exchange error by type of linguistic unit



Scope of Exchanges

	Phrase Membership		Grammatical Category	
	Within	Between	Same	Different
Word Exchanges <small>N = 200</small>	19%	81%	85%	15%
Stranding Exchanges <small>N = 150</small>	70%	30%	43%	57%
Sound Exchanges <small>N = 200</small>	87%	13%	39%	61%

Some generalizations

The further apart the two exchanged elements α and β are in the planning frame, the more likely they are to belong to the same grammatical category.

When two exchanged words or morphemes are adjacent (or nearly so), they tend to be similar in overall phonological shape.

Sounds exchange between two adjacent words, and they typically occur at the beginnings of the host words.

Common properties of speech errors

1. Exchange of phonemes in similar positions

* **a** hissed mystery lectures (missed history lectures)

* **b** burst of beaden (beast of burden)

* **c** nife lite (night life)

2. On top of that, phonemic environment plays a role (see ex. c)

3. Moreover, exchange of consonants with consonants and vowels with vowels.

4. Novel forms are consistent with phonological rules of a language (blend of *slick* and *slippery* becomes *slickery*, not phonologically impermissible forms as *slickperry* or *slipkery*)

=> Simultaneous activation of language units, filled in the wrong slots

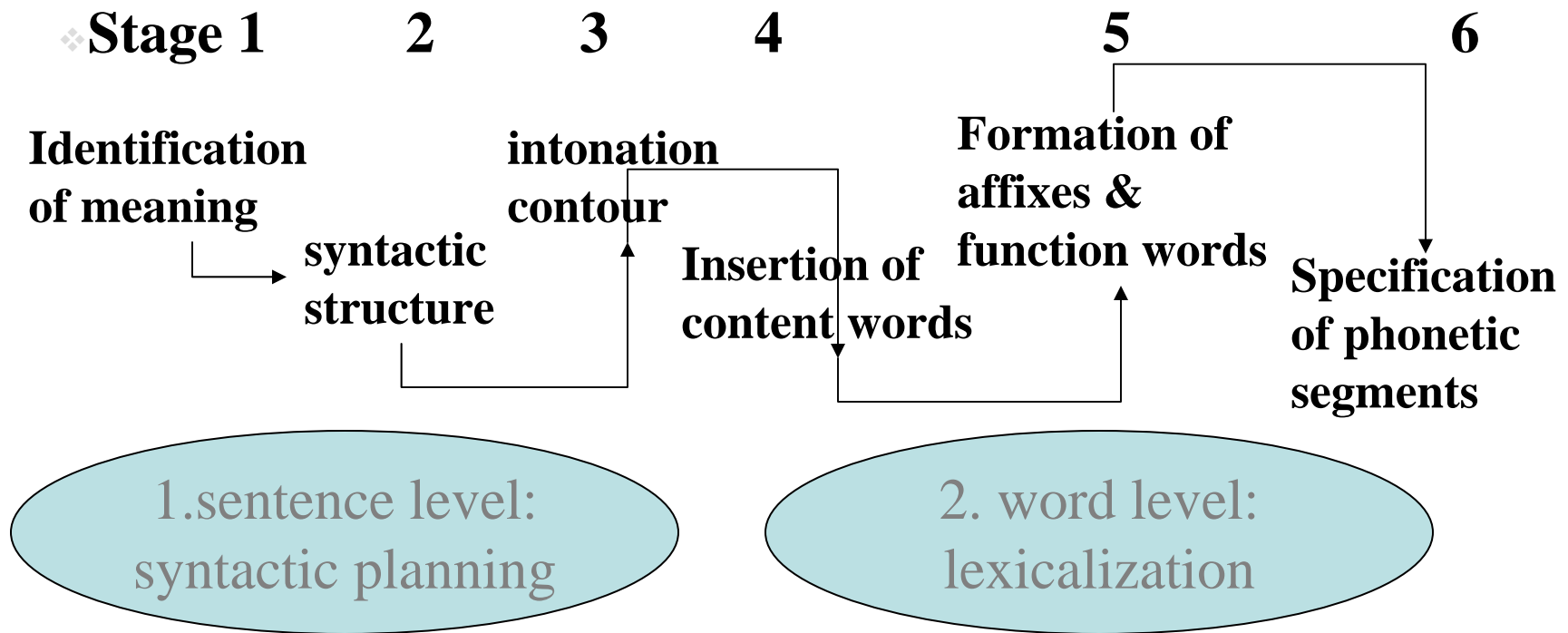
Table 8-2. Fromkin's Model of Speech Production

<i>Stage</i>	<i>Process</i>
1	Identification of meaning—a meaning to be conveyed is generated.
2	Selection of a syntactic structure—a syntactic outline of the sentence is constructed, with word slots specified.
3	Generation of intonation contour—the stress values of different word slots are assigned.
4	Insertion of content words—appropriate nouns, verbs, and adjectives are retrieved from the lexicon and placed into word slots.
5	Formation of affixes and function words—function words (articles, conjunctions, prepositions), prefixes, and suffixes are added.
6	Specification of phonetic segments—the sentence is expressed in terms of phonetic segments, according to phonological rules.

Source: V. A. Fromkin, "The Non-Anomalous Nature of Anomalous Utterances," *Language* 47 (1971):27-52.

Serial models of linguistic planning

❖ Fromkin's model of Speech Production



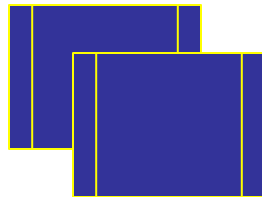
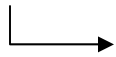
She already bagged two packs (packed two bags)

Serial models of linguistic planning

❖ Fromkin's model of Speech Production

❖ Stage 1

Identification
of meaning



Target output: She already bagged two packs (packed two bags)

Serial models of linguistic planning

❖ Fromkin's model of Speech Production

❖ Stage 1 2

Identification
of meaning

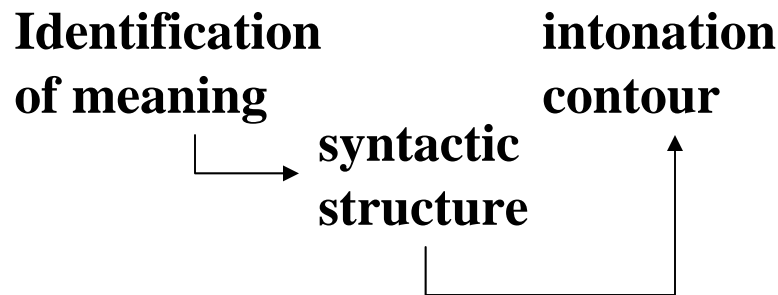
└─→ syntactic
structure

	N/Pn	Adv	V	Adj	N
Phase 2 output:	_ 1 _	_ 2 _	_ 3 _	_ 4 _	_ 5 _
Target output:	She already bagged two packs (packed two bags)				

Serial models of linguistic planning

❖ Fromkin's model of Speech Production

❖ Stage 1 2 3



Phase 3 output:

N/Pn Adv V Adj N
1 _2_ _3_ _4_ _5_

Target output:
bags)

She already bagged two packs (packed two

Serial models of linguistic planning

❖ Fromkin's model of Speech Production

❖ Stage 1 2 3 4

Identification
of meaning

syntactic
structure

intonation
contour

Insertion of
content words

Error at this stage

Phase 4 output:

N/Pn Adv V Adj N
She already bag____ two pack____

Target output:

(packed two bags)

She already bagged two packs

Serial models of linguistic planning

❖ Fromkin's model of Speech Production

❖ Stage 1 2 3 4 5

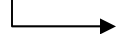
Identification
of meaning

syntactic
structure

intonation
contour

Insertion of
content words

Formation of
affixes &
function words



N/Pn Adv V Adj N

Phase 5 output:

She already bagged two packs *

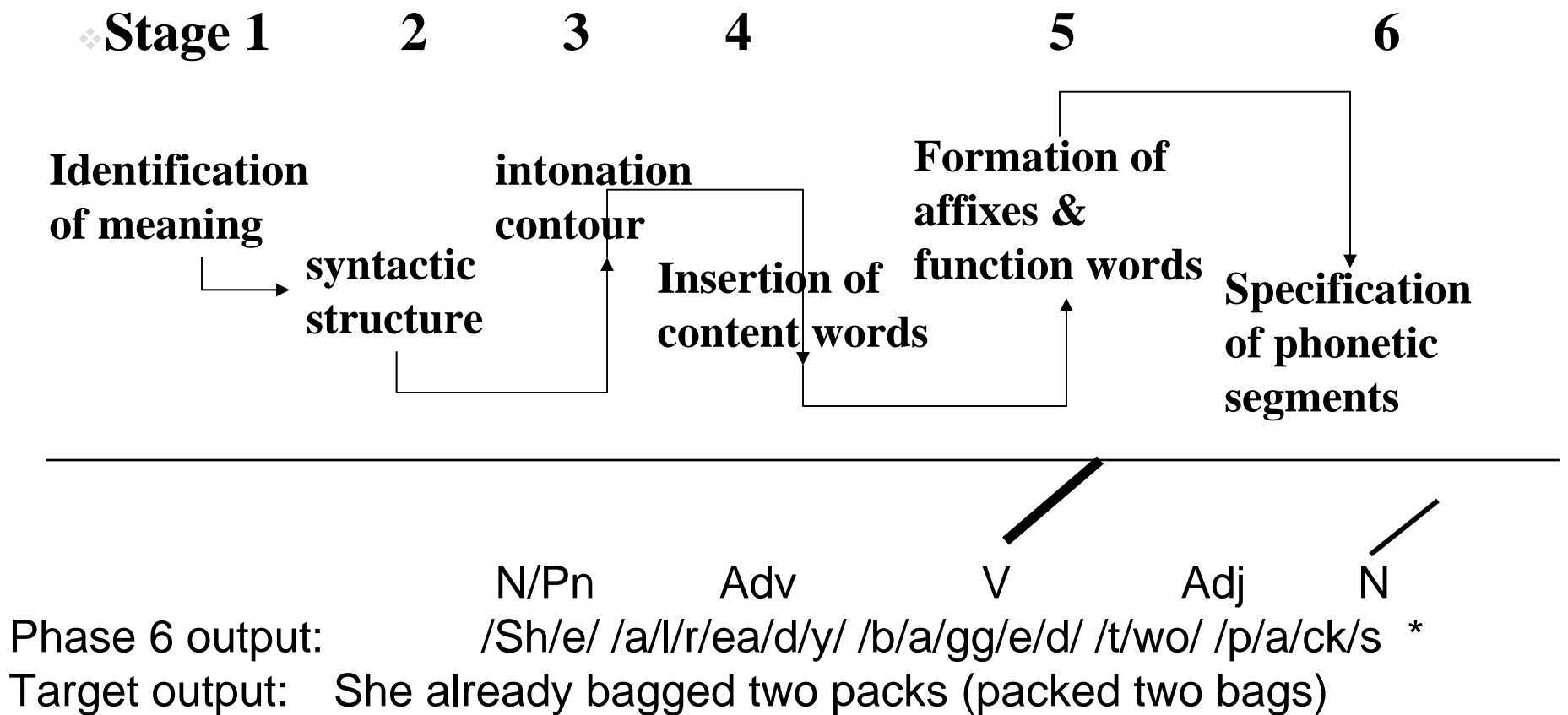
Target output:

She already bagged two packs

(packed two bags)

Serial models of linguistic planning

❖ Fromkin's model of Speech Production



Evidence for the model

- ❖ AD 1: Errors typically occur at one level

E.G.: Level 4 word stems exchange, but level 5 suffixes stay:

stem1+suffix1 stem2 suffix2
packed bags => bagged packs *

- ❖ Or Level 4 word stems stay, but level 5 suffixes exchange:

stem1+suffix1 stem2 suffix2
Singer sewing => singing sewer *
(machine)

Evidence for the model

- ❖ **AD 2: Errors typically accommodate themselves to linguistic environment. In other words, errors made at stage X trigger adjustments at stage X+1 (but not X-1)**

E.G.: phonological accommodation (Garrett, 1980):

Stage 4 error: A weekend for maniacs => A maniac for weekends

Stage 5: morpheme stranded

Stage 6: phonological accommodation

**In *weekends* final consonant is voiced /z/,
in *maniacs* it is unvoiced /s/.**

Mapping content onto form: The Garrett Model

Message Level Representation



Function Level Representation

Words (lemmas) are selected on the basis of how well their meaning encodes elements of Message Level content; Structures are built on the basis of message content AND the grammatical needs of the words chosen to encode that content; and the words and structures are merged into a complex representation of words and relations.



Position Level Representation

Word forms (lexemes) are retrieved (based on the selected lemmas) and are combined with closed class morphemes that are spelled out by rule. Ordering of spell out forms.



Phonetic Representation

Phonological operations then apply to Position Level representations to make them conform to the phonotactics of the language.