Constructed Languages

Day 6 - Writing Systems
Before we begin....

Let’s finish discussing our conlangs thus far.
What is writing?
What is writing?

- Writing is the representation of language with the use of visual signs.

- The primary goal of writing is to make our utterances, which are by default audible, visible.
ICONIC SIGNS

- Signs within a writing system may be **iconic**
  - the signifier bears strong resemblance to the signified
  - **Signifier** = letter, syllabogram, character, etc.
  - **Signified** = what the sign represents (word, sound, etc.)

Egyptian < pr > ‘house’
Symbolic Signs

- Or symbolic
  - arbitrary relationship between the signifier and signified
Ogham Standing Stone
But every writing system **must** represent language

Represents the morpheme *pr* ‘house’ & the syllable /pr/

Represents the phonemes of Old Irish
ICONIC & SYMBOLIC WRITING SYSTEMS

- Is the English alphabet **iconic** or **symbolic**?

a b c d e f g h i j k l m n o p q r s t u v w x y z
Whether iconic or symbolic, writing *must* represent language.
THE CHEYENNE INDIAN LETTER

- 19th c. message from Turtle-Following-His-Wife to his son, Little Man
- Says something like: “Dad (TFHW) says to return home, enclosed is $53 for the cost of the trip”
THE CHEYENNE INDIAN LETTER

- Is this an instance of writing? Why or why not?
The Cheyenne letter is an instance of **pictographs**

- = picture writing
  - pictorial representation of objects, ideas and events

- Signs represent an event or an idea and not direct language
  - i.e., words, morphemes, phonemes, etc.

- Independent of a word or utterance, which refers to that object, idea or event
Any modern pictographs in America?
MODERN PICTOGRAMS
Pictographs

- In each of the examples above, pictographs convey an idea, event or tell a story

- But in order for a graphic mark to be true writing, it must represent language
Types of Writing Systems?
Types of Writing Systems

- In devising a writing system one must choose between representing meaning (semiography) or representing sound (phonography):

  Meaning
  ↗
  ↖
  Semiography
  ↘
  Sound

  Writing
  Phonography
Types of Writing Systems

- So writing systems are always either:
  1. Phonological
     - Contains signs that represent individual sounds that are contrastive in a particular language
     - “Phonographic” writing system
       - Phono- ‘sound’, graph- ‘write’
  2. Morphological:
     - Contains signs that represent individual morphemes that are contrastive in a particular language
     - “Logographic” writing system
       - Logo- ‘word’, graph- ‘write’
Logographic Script: Chinese

- These logograms represent the words ‘happiness’, ‘love’ and ‘joy’

- Not the phonographic equivalents of said words in Chinese
Any logographic signs that we use in English?

• What do you think?

• There are a few:

1. Arabic Numerals: 1, 2, 3, 4, 5, etc.

1. Mathematical symbols: +, - , = , × , etc.

1. Other common symbols: &, %, $, €, #, etc.
Any “Purely” Logographic Scripts?

• Nope!
  • No “pure” logographic scripts, as each logographic system has at least some phonological signs

• Why not?
  • For a writing system to adequately represent a language, it must be able to represent words that are newly introduced in the language, like:
    • names
    • foreign words
    • new words created with derivational morphemes, etc.
PHONOGRAPHIC WRITING SYSTEMS

- There are a number of different ways that phonographic writing systems may represent the phonology of a language.

- Traditionally divided into:
  - Syllabic
    - Graphemes represent syllables (completely or incompletely)
  - Segmental
    - Graphemes represent phonemes (completely or incompletely)
SYLLABIC SCRIPTS

• Syllabic scripts = Syllabaries
  ● Signs stand for syllables, not individual phonemes

• What would English look like if we used a syllabary?

  • <If> <Eng><lish> <had> <a> <syl><la><ba><ry>
    <we> <would> <write> <like> <this>
What’s a syllable?
WHAT’S A SYLLABLE?

- So a **syllable** has three parts to it: the **onset**, the **nucleus** and the **coda**.
- The nucleus and coda form another phonological unit, which is called the **rhyme**.
SYLLABARIES

- Many of the world’s languages that utilize syllabaries have very restrictive syllable structure

- Syllables look like CVCVCVCVCV
  - CV = consonant + vowel
  - cf. Hawaiian *meli kalikamaka* ‘Merry Christmas’
  - cf. Japanese *meri kurisumasu* ‘Merry Christmas’
In a syllabary, each grapheme should represent a syllable

- And what does every syllable have?
- A nucleus! (usually a vowel, V)
- So each grapheme – at the bare minimum – should represent a nucleus
平仮名（ひらがな）

| a | 安 | い | 以 | u | う | 宇 |
| ka | か | き | 幾 | ku | く | 久 |
| sa | さ | し | 之 | su | す | 世 |
| ta | た | ち | 知 | tsu | つ | 天 |
| na | な | に | 仁 | nu | ぬ | 奴 |
| ha | は | ひ | 比 | fu | ふ | 不 |
| ma | ま | み | 美 | mu | む | 武 |
| ya | や | や | リ | yu | ゆ | 由 |
| ra | ら | ら | 良 | ru | る | 留 |
| wa | わ | わ | 和 | wi | わ | 為 |
| i | 安 | い | 以 | e | え | 衣 |
| ki | き | 極 | 之 | ke | け | 計 |
| shi | し | 之 | se | se | せ | 世 |
| chi | ち | 知 | te | te | て | 天 |
| nu | ぬ | 仁 | ne | ne | ね | 裁 |
| fu | ふ | 比 | he | he | へ | 女 |
| mi | み | 美 | me | me | め | 部 |
| mu | み | 美 | re | re | れ | 礼 |
| ri | り | 利 | we | we | わ | 恵 |
| わ | わ | 為 | わ | わ | わ | 為 |
# Cherokee Syllabary

<table>
<thead>
<tr>
<th>a</th>
<th>e</th>
<th>i</th>
<th>o</th>
<th>u</th>
<th>v [ś]</th>
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</thead>
<tbody>
<tr>
<td>D a</td>
<td>R e</td>
<td>T i</td>
<td>ð o</td>
<td>ð u</td>
<td>i v</td>
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<td>S ga _SOFT</td>
<td>ge</td>
<td>y gi</td>
<td>A go</td>
<td>J gu</td>
<td>E gv</td>
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<td>ʃ ha</td>
<td>ʃ he</td>
<td>ʃ hi</td>
<td>F ho</td>
<td>ʃ hu</td>
<td>ʃ hv</td>
</tr>
<tr>
<td>W la</td>
<td>ʃ le</td>
<td>F li</td>
<td>G lo</td>
<td>M lu</td>
<td>A lv</td>
</tr>
<tr>
<td>ʃ ma</td>
<td>A me</td>
<td>H mi</td>
<td>ʃ mo</td>
<td>y mu</td>
<td></td>
</tr>
<tr>
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<td>A ne</td>
<td>H ni</td>
<td>Z no</td>
<td>ʃ nu</td>
<td>ʃ nv</td>
</tr>
<tr>
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<td>ʃ que</td>
<td>ʃ qui</td>
<td>ʃ quo</td>
<td>ʃ quu</td>
<td>ʃ quv</td>
</tr>
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<td>ʃ s ʃ U sa</td>
<td>ʃ se</td>
<td>b si</td>
<td>ʃ so</td>
<td>ʃ su</td>
<td>ʃ sv</td>
</tr>
<tr>
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<td>ʃ de ʃ T te</td>
<td>ʃ di ʃ ti</td>
<td>ʃ do</td>
<td>S du</td>
<td>ʃ dv</td>
</tr>
<tr>
<td>ʃ dla ʃ L tla</td>
<td>ʃ l tie</td>
<td>C tli</td>
<td>F tlo</td>
<td>Y tlu</td>
<td>P tlv</td>
</tr>
<tr>
<td>ʃ G tsa</td>
<td>T tse</td>
<td>H tsi</td>
<td>K tso</td>
<td>J tsu</td>
<td>G tsv</td>
</tr>
<tr>
<td>ʃ G wa</td>
<td>ʃ we</td>
<td>ʃ wI</td>
<td>ʃ wo</td>
<td>ʃ wu</td>
<td>G wv</td>
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<tr>
<td>ʃ ya</td>
<td>B ye</td>
<td>ð yi</td>
<td>ð yO</td>
<td>G yu</td>
<td>B yv</td>
</tr>
</tbody>
</table>
ENGLISH AS A SYLLABARY?

• Both Japanese & Cherokee have relatively simple syllable structures
• Simple = no consonant clusters, CV
  ● Why is this good for a language using a syllabary?
  ● Is English a good candidate for using a syllabary?
  ● English:
    • Onsets (1, 25) + (2, ~42) + (3 x ~ 9) = 76
    • Nuclei – 18 (14 vowels + syllabic liquids, nasals)
    • Codas – ~100
    • 18 + (76 x 18) + (100 x 18) + (76 x 18 x 100) = 139,986!!!!!
SEGMENTAL SYSTEMS

• Graphemes represent discrete phonological segments (phonemes)

• First type of segmental systems you’re familiar with

• Alphabet
  • Graphemes represent consonants and vowels
### Cyrillic Alphabet

<table>
<thead>
<tr>
<th>Cyrillic</th>
<th>Romanization</th>
<th>Pronunciation</th>
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</thead>
<tbody>
<tr>
<td>А а (A)</td>
<td>Р р (R)</td>
<td></td>
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<tr>
<td>Б б (B)</td>
<td>С с (S)</td>
<td></td>
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<tr>
<td>В в (V)</td>
<td>Т т (T)</td>
<td></td>
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<tr>
<td>Г г (G)</td>
<td>У у (U)</td>
<td></td>
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<tr>
<td>Д д (D)</td>
<td>Ф ф (F)</td>
<td></td>
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<tr>
<td>Е е (E)</td>
<td>Х х (KH)</td>
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<tr>
<td>Ё ё (YO)</td>
<td>Ц ц (TS)</td>
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<tr>
<td>Ж ж (ZH)</td>
<td>Ч ч (CH)</td>
<td></td>
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<tr>
<td>З з (Z)</td>
<td>Ш ш (SH)</td>
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<tr>
<td>И и (I)</td>
<td>Щ щ (SHCH)</td>
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<tr>
<td>Й й (Y)</td>
<td>Ь Ь (Y')</td>
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<tr>
<td>К к (K)</td>
<td>Э э (E)</td>
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<tr>
<td>Л л (L)</td>
<td>Ю ю (YU or IU)</td>
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<tr>
<td>М м (M)</td>
<td>Я я (YA or IA)</td>
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<td>Н н (N)</td>
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<td>О о (O)</td>
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<tr>
<td>П п (P)</td>
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</tbody>
</table>
Abjads

- **Abjad**, aka **consonant(al) alphabet**
  - Graphemes represent consonants only

- **Cn y’ll rd ths sntnc? Ths s wht nglsh wld lk lk f th lphbt wr n bjd.**
### Abjads - Arabic

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<th>Final</th>
<th>Medial</th>
<th>Initial</th>
<th>Isolated</th>
<th>IPA</th>
<th>Latin</th>
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<td>sād</td>
<td>ض</td>
<td>ضاد</td>
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</tbody>
</table>

*Note: The above table represents the Arabic alphabet in the Abjad script.*
ALPHASYLLABARIES

- Alphasyllabary
  - Graphemes represent consonants and vowels, but are grouped by syllable
  - Cf. devanagari, the script of Hindi:
ALPHASYLLABARIES

- Cf. the Ethiopic Ge‘ez script, used to write Amharic and Tigrinya (both Semitic languages)

What are the symbols for:

/š/ /n/ /i/ /e/
To Review

1. Logographic: graphemes = morphemes
2. Phonographic: graphemes = sounds
   a) Syllabic:
   b) Segmental
      1) Alphabet
      2) Abjad
      3) Alphasyllabary
In ConLangs...
**FUTURAMA**

<table>
<thead>
<tr>
<th>Letters</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
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<th>i</th>
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</tbody>
</table>
KLINGON - TYPE?

"I believe that we do not need to limit these suffixes now."
Transliteration
Ash nazg durbatuluk
Ash nazg gimbatul
Ash nazg thrakatuluk
Agh burzum-ishi krimpatul

Translation
One Ring to rule them all,
One Ring to find them,
One Ring to bring them all
and in the darkness bind them
TENGWAR SCRIPT

- May be written in two different “modes”: tehta mode and the mode of Beleriand
  tehta – vowels = diacritics
  http://www.omniglot.com/writing/tengwar.htm

Ir Rúmil teithà
a Faenor hain ı
i Ngolodhr hyn eglerianner.  “the Noldor praised them.”
Dar ig Daegor teithart i khigth virui,  
runes,  
i Thiougim gharreg -  
& ir raughgim shor eghlegiarreg

“But when Daegor drew the first  
runes,  
"the Sindar laughed -  
"and the Dwarves praised him."

http://www.omniglot.com/conscripts/cirth.htm
• Oeri ta peyæ fahew akewong ontu teya længu.
  My nose is full of his alien smell.
• Fisk’aungiri tsapʔalute sengi oe.
  I apologise for this moron.
• Oel ŋati kameie.
  I see you.
• T’o new ŋa rivei, oehu!
  Come with me if you want to live!
• Eiwa
  the Pandoran deity
• tiftia kifkeĩæ
  science
FROM OMNIGLOT

http://www.omniglot.com/conscripts/scar.htm
FROM OMNIGLOT

http://www.omniglot.com/conscripts/balinsilel.htm
Example: Heptapod
For Today - Writing Systems

1. Create an original writing system for your language.
2. It may be an:
   a. Alphabet
   b. Abjad
   c. Alphasyllabary
   d. Logographic System
   e. Hybrid
   f. Something else??????
Constructive Languages

Day 6 - Side-Note: the History of Writing Systems
China (1700 BCE)

oracle bone
Mesoamerica (700 BCE)

Teotihuacan

Mayan hieroglyph
Mesopotamia (4000 BCE)
cuneiform tablet
ORIGINS OF WRITING

• In each of these cases, writing was invented in a culture that was:
  ● technologically advanced,
  ● a sedentary civilization with cities,
  ● has a division of labor and
  ● a surplus economy
Mesopotamia – Why Was Writing Invented?

- In the Middle East, writing invented to record business transactions
- Made possible the keeping of reliable records for palaces and temples of
  - grain
  - produce
  - livestock
  - textiles
MESOPOTAMIAN WRITING - CUNEIFORM
Cuneiform Example – 196th Law of Hammurabi, King of Babylon (1750 BCE)

šu-um-ma a-wi-lum
i-in ma-a-ar ši
uḥ-ta-ap-pid
i-in šu
u-ḥa-ap-pa-du

[šumma awilum i:n ma:r ši uḥtappid i:n ū ṭappadu]

“If a man destroys the eye of a man’s son, his eye will be destroyed.”
What happened in 3000 BCE?

cf.
How might that happen?
WAYS CUNEIFORM SIGNS ALTERED IN SUMERIAN

1. Creation of Phonographic Signs
   - This enables the Sumerians to write word endings like
     - **cases:** ergative, dative, absolutive
     - verbal agreement

   (1) enkik-e isimud-ra gu mu-na-de-e
       Enkik-ERGATIVE Isimud-DATIVE voice(ABSOLUTIVE) PREFIX-DATIVE.AGR-pour-NOMINATIVE.AGR
       *(The god) Enkik says to (his vizier) Isimud …’

   (2) Third millennium: den-ki isimud gu3 de2
       Second millennium: den-ki-ke4 isimud-ra gu3 mu-un-na-de2-e
       Transcription: enkik-e isimud-ra gu mu-na-de-e

roots only

affixes added
How were Phonographs created?

The Rebus Principle
The use of an easily pictured object to stand for its more abstract homonym.
Rebus Principle
Another one (courtesy of Shealynn Hall)
Another one (courtesy of Hillary Smith)
CREATION OF PHONOGRAPHS

‘Barley’ → <še>
CREATION OF PHONOGRAPHS

‘tool’ [ba] → ‘distribute’ [ba]
CREATION OF PHONOGRAPHS

‘body’ [su] → ‘replace’ [su]
CREATION OF PHONOGRAPHS

‘plant’ [sar/šar] → ‘write’
CReATION OFe PHONOGRAPHS

‘arrow’ [ti] → [til] ‘life’
SPREAD OF WRITING

Stimulus Diffusion
How does Egyptian Work?

- Very similar to Cuneiform:
  - Logograms
  - Phonograms
    - Not Syllabograms – Consonantograms!
EGYPTIAN LOGOGRAMS

/pr/ ‘house’  

/r/ ‘sun, day’
EGYPTIAN CONSONANTOGRAMS

- **1 consonant:**
  - š [ʃ]
  - q [q]
  - k [k]
  - g [g]
  - t [t]
  - ṭ [t̚]

- **2 consonants:**
  - nw
  - rw
  - ḫw
  - ḫw

- **3 consonants:**
  - smn
  - shm
  - sšm
  - sšr
  - stp
WHY CONSONANTOGRAMS AND NOT SYLLABOGRAMS?

• Egyptian morphemes are phonemically composed only of consonants.
  - Triconsonantal – *nfr* ‘good, complete’
  - Biconsonantal -- *pr* ‘house’

• Egyptian speakers would provide grammatical and lexical modifications to these roots by providing different vowels
  - *nafir* ‘good’ (masc.)
  - *nafra-t* ‘good’ (feminine + t suffix)
Similarly, in Arabic

<table>
<thead>
<tr>
<th>Arabic</th>
<th>English</th>
<th>Arabic</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>kitaaba</td>
<td>‘writing’</td>
<td>kataba</td>
<td>‘he wrote’</td>
</tr>
<tr>
<td>kaatib</td>
<td>‘writer’</td>
<td>kaatiba</td>
<td>‘he corresponded with’</td>
</tr>
<tr>
<td>maktab</td>
<td>‘office’</td>
<td>maktaba</td>
<td>‘he dictated’</td>
</tr>
<tr>
<td>maktaba</td>
<td>‘library’</td>
<td>iktataba</td>
<td>‘he was registered’</td>
</tr>
<tr>
<td>maktuub</td>
<td>‘letter’</td>
<td>takaatuba</td>
<td>‘he exchanged letters with’</td>
</tr>
<tr>
<td>miktaab</td>
<td>‘typewriter’</td>
<td>inkataba</td>
<td>‘he subscribed’</td>
</tr>
<tr>
<td>kutubii</td>
<td>‘bookseller’</td>
<td>iktataba</td>
<td>‘he had a copy made’</td>
</tr>
</tbody>
</table>

- *ktb* is the root, the vowels that are interweaved determine the meaning.
WHERE HAVE WE SEEN THIS BEFORE?

• ABLAUT!
  • *drink*, drank, drunk
  • *sing*, sang, sung, song
  • *bind*, bound, band, bond
  • *sit*, sat, seat, ne-st
Where did our alphabet come from?!!?
Proto-Canaanite

- Speakers of Semitic language
- Worked in the Egyptian mines
  - Had relatives living in Middle-Bronze-Age Palestine
- We’ve only got a few inscriptions, all quite short

ca. 1800 BCE
Wadi El-Hol

ʔl ‘god’ — rb ‘chief’
Phoenician Alphabet

<table>
<thead>
<tr>
<th>P</th>
<th>O</th>
<th>H</th>
<th>E</th>
<th>N</th>
<th>I</th>
<th>C</th>
<th>I</th>
<th>A</th>
<th>L</th>
<th>A</th>
<th>P</th>
<th>H</th>
<th>A</th>
<th>B</th>
<th>E</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>G</td>
<td>D</td>
<td>H</td>
<td>W</td>
<td>Z</td>
<td>Ch</td>
<td>T</td>
<td>Y</td>
<td>K</td>
<td>L</td>
<td>M</td>
<td>N</td>
<td>S</td>
<td>P</td>
<td>C</td>
</tr>
</tbody>
</table>
Hieroglyphs!

- Usually used logograms and multiconsonantal graphemes
- Had a full set of signs that each stood for a single consonant (just like the Semitic abjad)
- But the Semitic mercenaries and delta dwellers who created the Semitic alphabet didn’t care!
  - Just wanted the simplest, easiest script that suited their language.
Amalia Gnanadesikan:

‘[The Proto-Canaanites] created their own bare-bones set of uniconsonantal signs, modeled after the Egyptian ones. This was the “For Dummies” version of writing, stripped of all complexity and redundancy.’
<table>
<thead>
<tr>
<th>Egyptian hieroglyphic</th>
<th>Sinai script</th>
<th>Early Semitic</th>
<th>Name of letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>✱</td>
<td>?aleph ‘ox’</td>
</tr>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>✳</td>
<td>bet ‘house’</td>
</tr>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>✴</td>
<td>waw ‘hook’</td>
</tr>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>✼</td>
<td>kaph ‘open hand’</td>
</tr>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>✽</td>
<td>mem ‘water’</td>
</tr>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>✹</td>
<td>nahas ‘snake’</td>
</tr>
<tr>
<td>[image]</td>
<td>[image]</td>
<td>ڡ</td>
<td>‘ajin ‘eye’</td>
</tr>
</tbody>
</table>
ACROPHONY

Value of an iconic symbol is taken from the first sound of the name of the object it represents

\[ \text{= } \langle t \rangle \]

\[ \langle d \rangle = \]
ACROPHONIC GREETING
ACROPHONY IN PROTO-CANAANITE

• The symbols and the acrophonic principle were borrowed from Egyptian – the sound values of the graphemes were not!

< pr > → < b >, Semitic bēt ‘house’
< n > → < m >, Semitic mem ‘water’
< ḫ > → < n >, Semitic nahas ‘snake’
< r > → < ʕ >, Semitic ʕayin ‘eye’
To Review

Sumerian

Egyptian

Proto-Canaanite

English Alphabet

stimulus diffusion

signs, not values taken

Tokens
Figure 7.3  Timeline of the development of the Semitic abjad
For Next Time - Diachrony

1. Create /describe the linguistic history of your language

2. Create another language related to your own, and imagine how the two can be connected through:
   a. Sound Change
   b. Morphological Change
   c. Syntactic Change