Université Lille 3, 1/3/2013

UE Variation et Changement

Phonological Change

Roland Noske

Prelude: a change from Latin to French

Lat. *camera* > Fr. *chambre*

[kamera] > [ʃɑ̃bʁə] ~ [ʃɑ̃bʁ]

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[**k**amera] > [**ʃ**ãbʁə] ~ [**ʃ**ãbʁ]

k > **ʃ**   (a velar plosive becomes a postalveolar fricative)

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<u>All</u> sounds in *camera* have changed!

- **sound change:**
  - changes in **sounds**
  - changes in the sound *system*

Introduction

English
brother father mother

Introduction

English	Dutch
brother father mother	broer vader moeder

Introduction

English	Dutch	German
brother father mother	broer vader moeder	bruder vater mutter

Introduction

English	Dutch	German	Ancient Greek
brother father mother	broer vader moeder	bruder vater mutter	bhrātēr patēr mētēr

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English	Dutch	German	Ancient Greek	Old Irish	Latin	Sanskrit
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*bhreʕtēr *pʕtēr *meʕtēr						

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  - **Once a single language**
  - **At least 4000 BC, perhaps in Southern Russia**

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Modern Indo-European Languages

- **English**   **month**
- **Welsh**   **mis**
- **Gaelic**   **mí**
- **French**   **mois**
- **Spanish**   **mes**
- **Portuguese**   **mês**
- **Italian**   **mese**
- **German**   **Monat**
- **Dutch**   **maand**
- **Swedish**   **månad**
- **Polish**   **miesiac**
- **Russian**   **myesyats**
- **Greek**   **minas**
- **Albanian**   **muaj**
- **Lithuanian**   **menuo**
- **Farsi**   **mâh**
- **Hindi**   **mahina**

Other Languages

Arabic   **shahr**
Finnish   **kuukausi**
Basque   **hilabethe**
Turkish   **ay**
Chinese   **yue**

The family tree by Schleicher (1871)
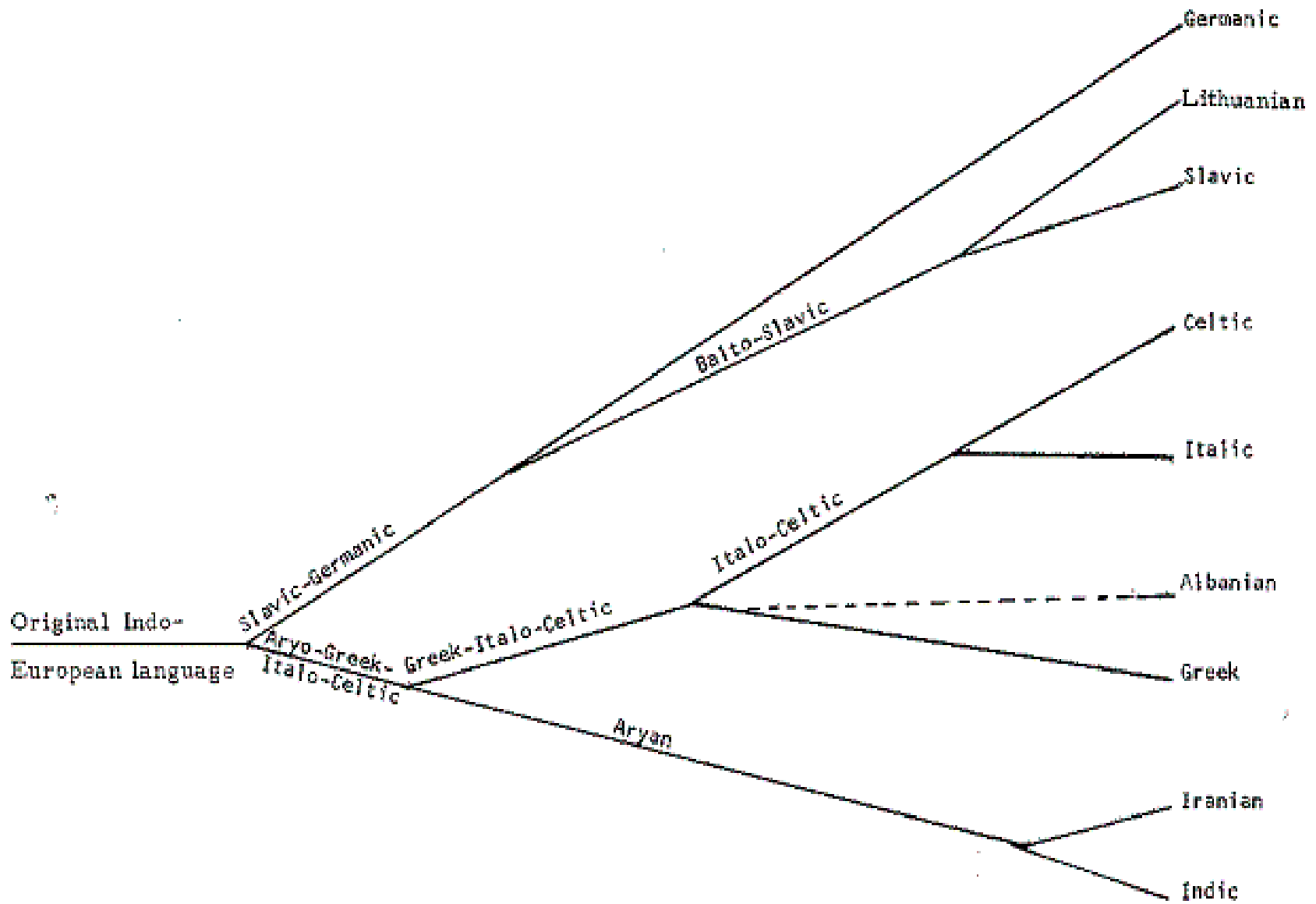
Indo-European language family

†Anatolian	Greek
Armenian	Italic
†Tocharian	Celtic
Indic	Germanic
Iranian	Baltic
Albanian	Slavic

Atlantic Ocean

Indian Ocean
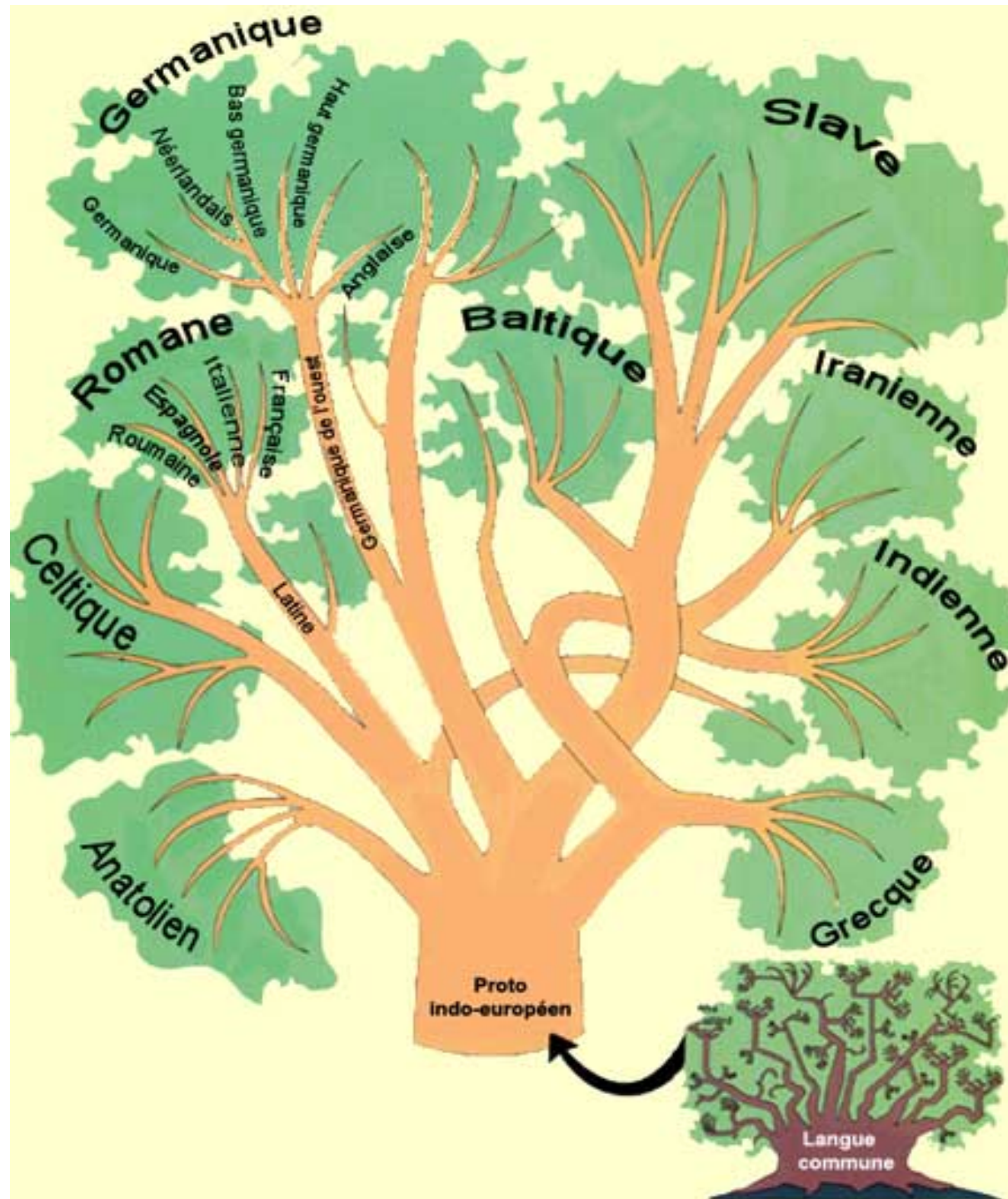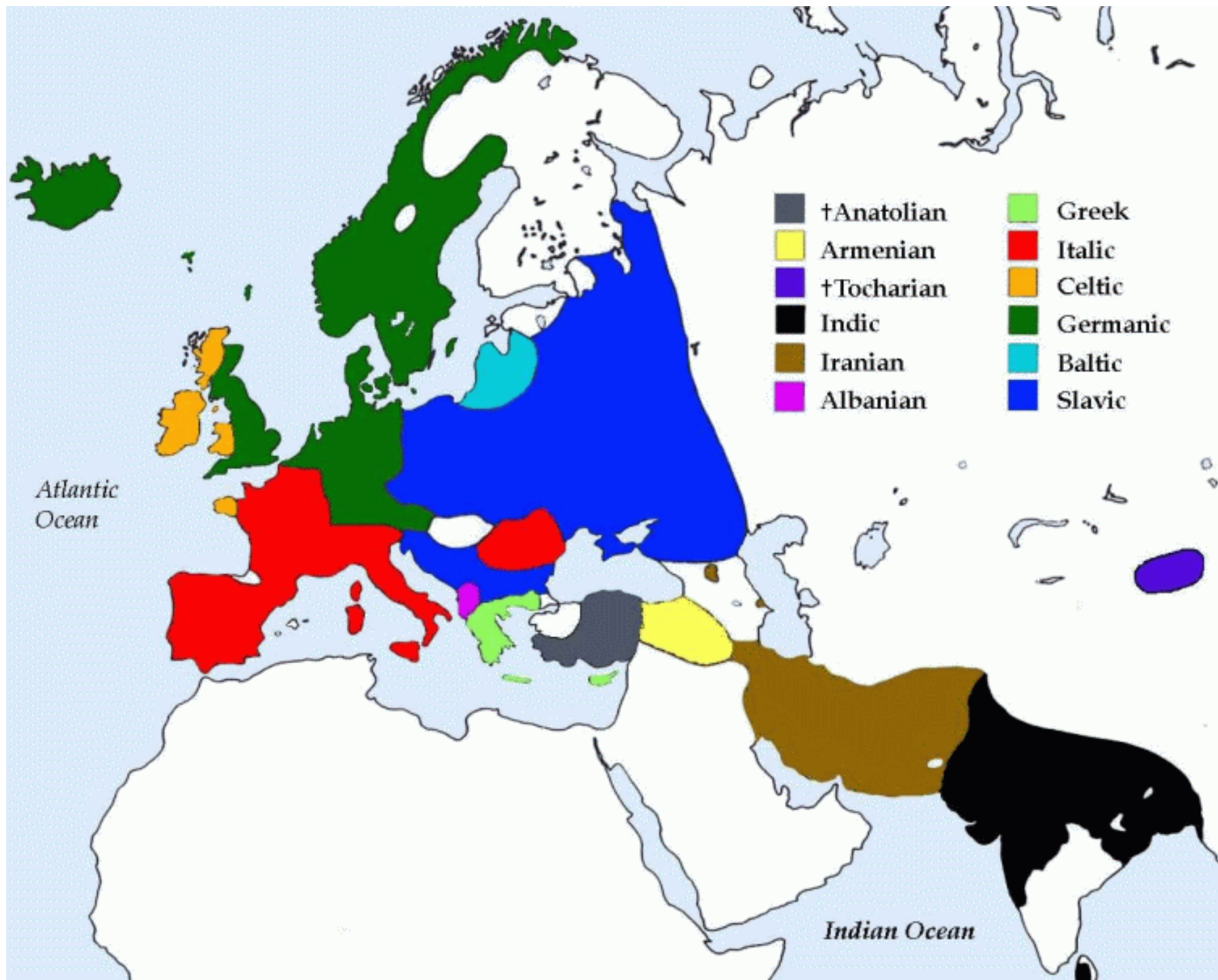
Introduction

- separate sound change > separate language

Introduction

- separate sound change > separate language

Evolution of language

- Old Preussian → sniegs Lettish, sniegas Lith.
- snechte Old Irish → sneachtu Irish
- snær Old Norse → snø Norwegian, snö Swedish, sne Danish
- snaw Old English → snow Middle Engl. → snow English
- snaiws Gothic → snea OHG → sne MHG → schnee German
- snig Protoindo-european >3000 BC
- Proto-Germanic
- snegu Church Slavonic → sneg Russian, snijeg Serb Croat, snih Bohemian
- nix, nivus Latin → noif Old French → nieve Spanish, neve Italian, neige French, nea Rumanian

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Sound Change

- What kind of processes are these?

  - considered by themselves

  - from the point of view of their context

  - in terms of activity of articulation

Sound Change

- What kind of processes are these?

  - considered by themselves
    another place and/or mode of articulation

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Sound Change

- What kind of processes are these?

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    lenition / fortition

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Sound Change

- Change of place and/or mode of articulation

    - consonants: place and mode of obstruction in the air flow

    - vowels: position of speech organs (tongue, jaw, lips (corresponding to: front/back, high/low, rounded/unrounded)

Sound Change

- Consonants
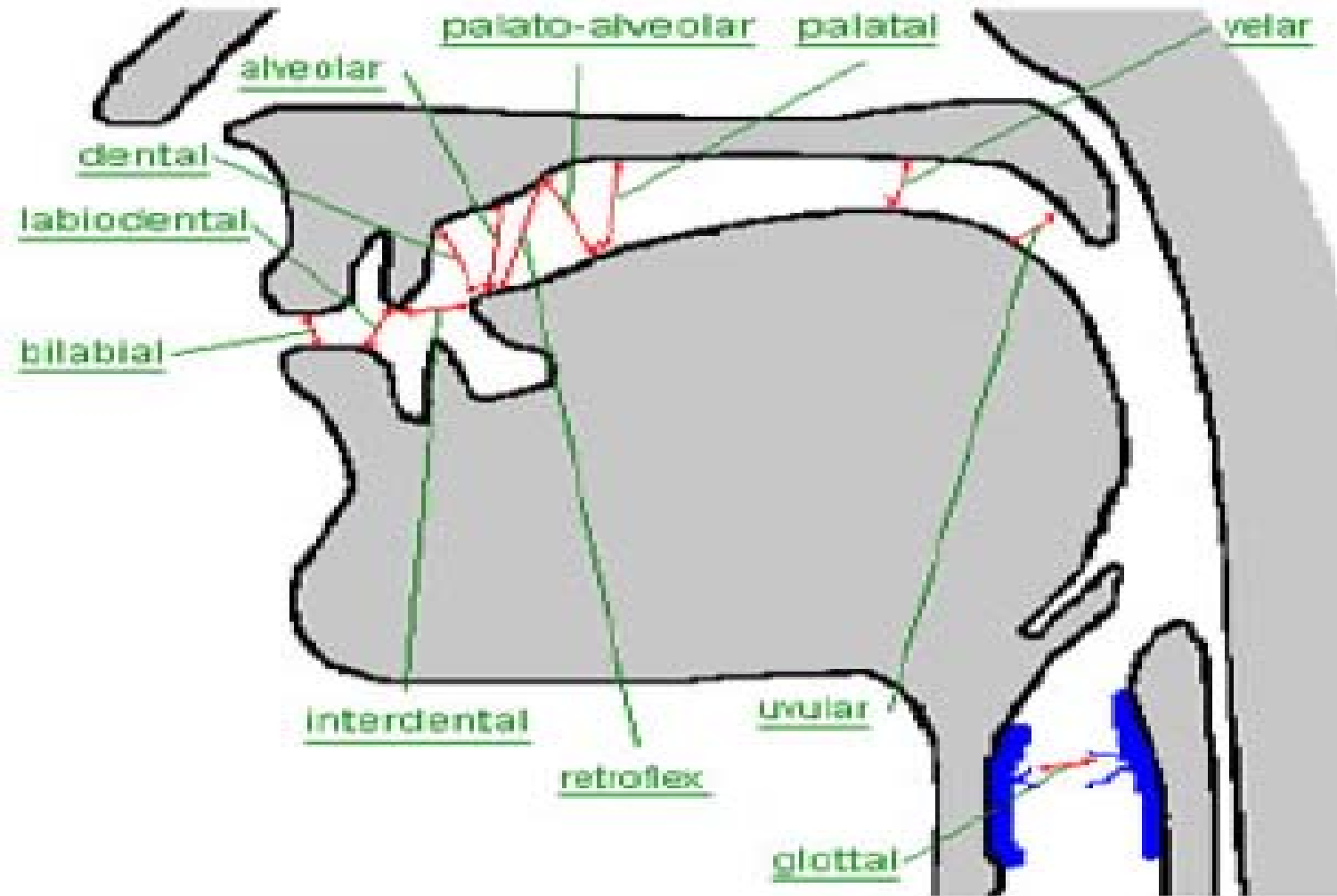
Sound Change

- places of articulation of consonants :

  - lips   p, b, m, ɥ, w
                               f, v
  - teeth

  - alveolar ridge   t, d, s, z, m
                               ʃ (**ch**at), ʒ (**j**oie)
  - palate   ɲ (a**gn**eau), j (***y****es)*

  - velum   k, g, ŋ, w

  - uvula   χ, ʁ

  - glottis   ʔ, h

Sound Change

- **Consonants : palatalisation**

  - lips   p, b, m, ɥ, w

f, v
  - teeth

  - alveolar ridge   t, d, s, z, m

ʃ, ʒ   **[tʃ]**ild   ((child) English)
  - palate   ɲ, j   **[ç]**ind   (Swiss German)

  - velum   k, g, ŋ, w   **k**ind   (High German)

  - uvula   χ, ʁ

  - glottis   ʔ, h

Sound Change

- **Consonants : palatalisation**
  - lips   p, b, m, ɥ, w
                               f, v
  - teeth

  - alveolar ridge   t, d, s, z, m
                               ʃ, ʒ   [ʃ]ambre (French)
  - palate   ɲ, j

  - velum   k, g, w   [k]amera (Latin)

  - uvula   χ, ʁ

  - glottis   ʔ, h

Sound Change

- **Consonants : palatalisation**

  - lips   p, b, m, ɥ, w
                     f, v
  - teeth

  - alveolar ridge   t, d, s, z, m   depic**t**   (English)
                     ʃ, ʒ   pic**t**ure   (English)
  - palate   ɲ, j

  - velum   k, g, w

  - uvula   χ, ʁ

  - glottis   ʔ, h

Sound Change

- **Consonants : labialisation**

  - lips   p, b, m, ɥ, w   Lipp[m̩]   (certain varieties of Germ.)

    f, v
  - teeth

  - alveolar ridge   t, d, s, z, m   Lipp[ən] ('lips')   (German)

    ʃ, ʒ
  - palate   ɲ, j

  - velum   k, g, w

  - uvula   χ, ʁ

  - glottis   ʔ, h

Sound Change

- **Consonants : glottalisation**

  - lips   p, b, m, ɥ, w
                           f, v
  - teeth

  - alveolar ridge   t, d, s, z, m   wa**t**er   (English)
                          ʃ, ʒ
  - palate   ɲ, j

  - velum   k, ɡ, w

  - uvula   χ, ʁ

  - glottis   ʔ, h   wa[ʔ]er (Cockney)

Sound Change

- Vowels:

```
FRONT                    BACK
i/y                      u  CLOSE
                            (HIGH)
   e/ø                   o
              ə
   ɛ/œ              ʌ/ɔ

         a        ɑ  OPEN
                     (LOW)
```

Sound Change

- Vowels:

  FRONT   BACK

  (i/y)   u CLOSE
                                                    (HIGH)

      (e/ø)   o

                        ə

          (ɛ/œ)   (ʌ/ɔ)

  -/+ round   a   ɑ OPEN
                                          (LOW)
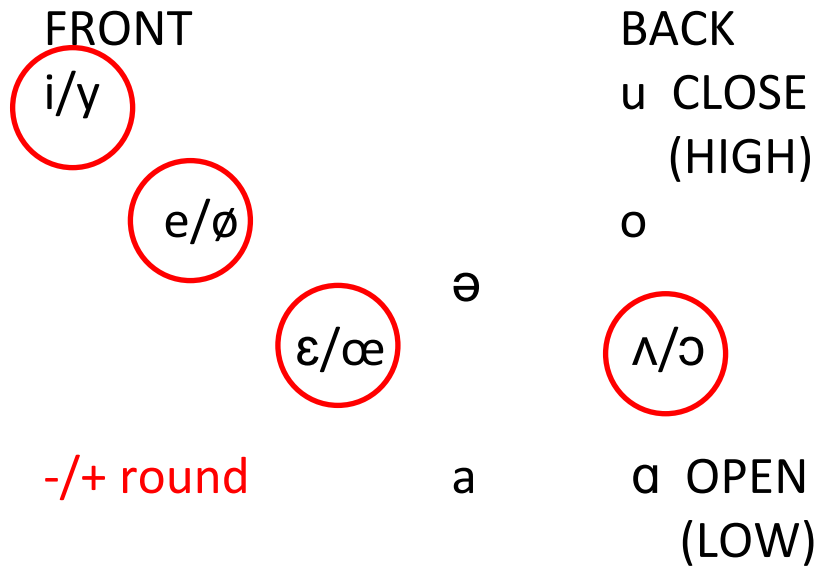
Sound Change

- Vowels: **centralisation**

FRONT   BACK
i/y   u CLOSE
                                  (HIGH)
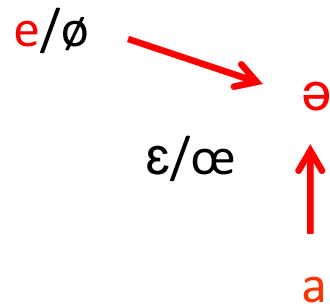
   e/ø ——→   o   d**e**bēre (Lat.)
            ə   chambr[**ə**], d[**ə**]voir   (Fr.)
      ɛ/œ   ↑   ʌ/ɔ

            a   ɑ OPEN   camer**a**   (Lat.)
                                  (LOW)

Sound Change

- Vowels: **fronting**

FRONT		BACK	
i/y	←	u CLOSE	murus (Lat.) > m[y]r (Fr.)
e/ø		o	
	ə		
ɛ/œ		ʌ/ɔ	
	a	ɑ OPEN (LOW)	

Sound Change

- **Vowels: lowering**

	FRONT		BACK		
	i/y		u	CLOSE (HIGH)	vinus (Lat.)
		e/ø		o	
			ə		
		ɛ/œ		ʌ/ɔ	vin (Fr.) ([ɛ̃])
			a	ɑ	OPEN (LOW)
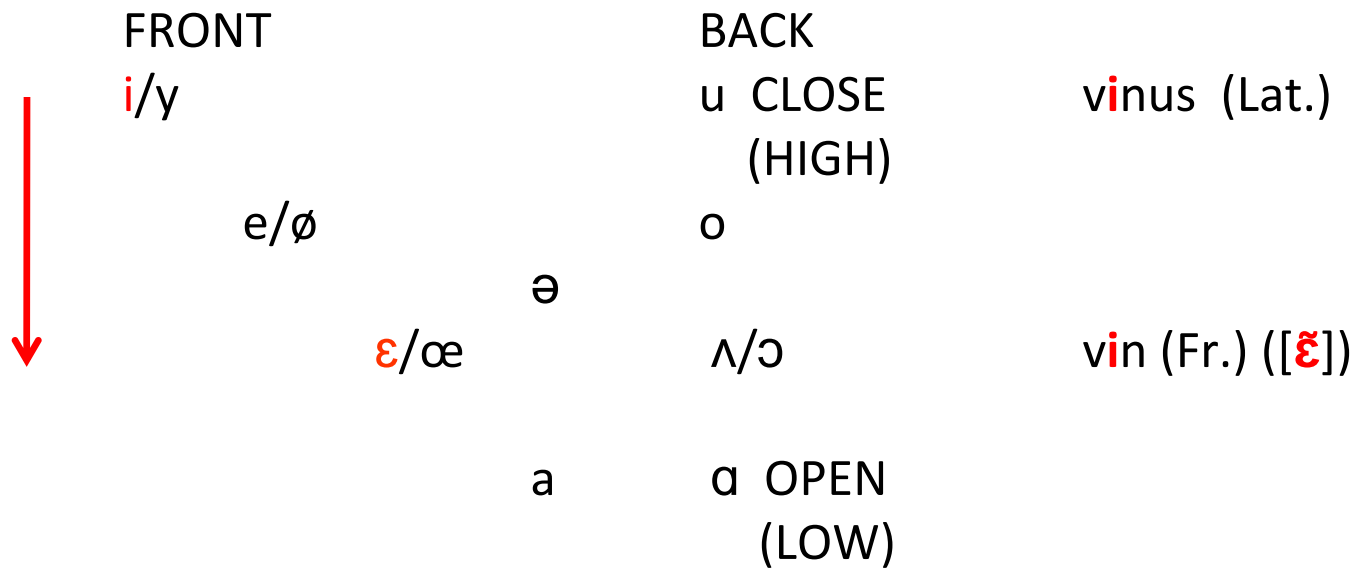
Sound Change

- Vowels: **raising**

FRONT   BACK

i/y   u CLOSE
                                            (HIGH)

    e/ø   o   n[eɪ]me (Eng.)

       ə

    ɛ/œ   ʌ/ɔ

     a   ɑ OPEN   Name (Ger.)
                                            (LOW)
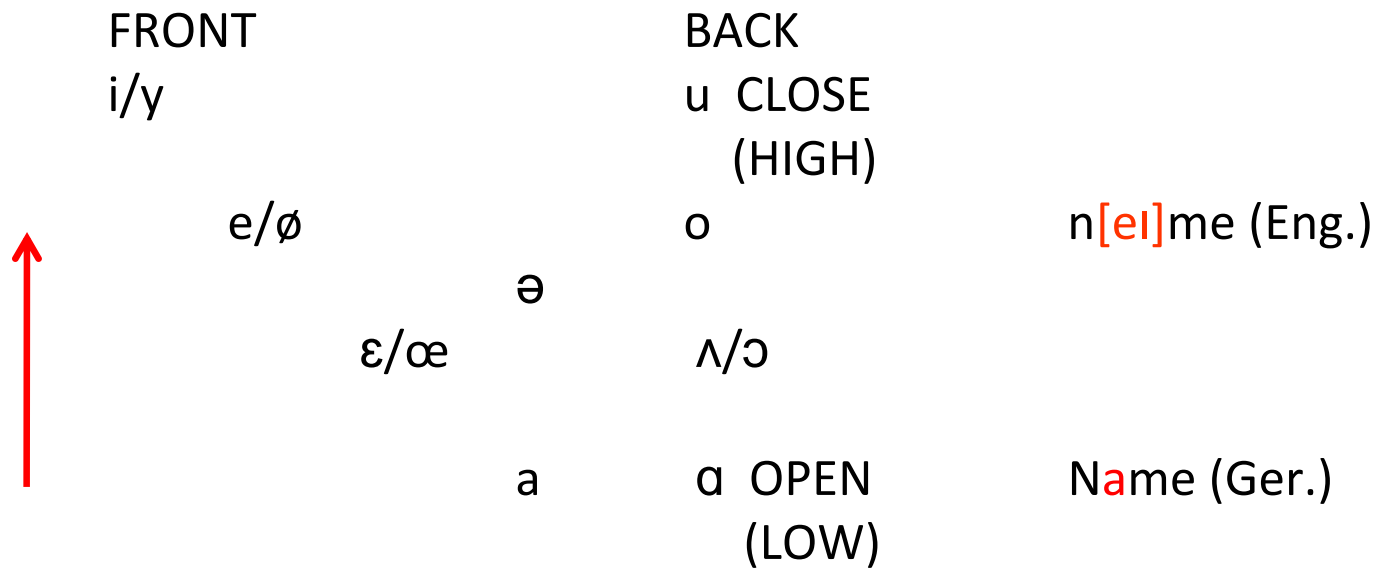
Sound Change

- **Vowels: unrounding**

FRONT   BACK

i/y   u CLOSE   *kunni (OE) > k[y]nni > kin
                                      (HIGH)

　　e/ø   o

　　　　　ə

　　ɛ/œ   ʌ/ɔ

　　　　a   ɑ OPEN
                                      (LOW)

Sound Change

- What kind of processes are these?

  - considered by themselves
    another place and/or mode of articulation

  → from the point of view of their context
    assimilation / dissimilation
    this includes: insertion and deletion

  - in terms of activity of articulation
    lenition / fortition

Sound Change

- Assimilation/dissimilation
  - assimilation
    ex.:
    a**d** + similation > a**s**similation

    this is **total** assimilation

Sound Change

- Assimilation/dissimilation
  - assimilation

    partial assimilation: e.g. voicing assimilation

    book + /**z**/ > book[**s**]
    tran/**z**/ + fer > tran[**s**]fer

Sound Change

- Assimilation/dissimilation
  - dissimilation
    - ex.:
      february > feb**y**ua**r**y

      co**l**one**l** > [k3ː**rnl**]

      Ma**r**ga**r**ita > Ma**r**ga**l**ita

      Old Fr. cou**r**oi**r** > Mod. Fr. cou**l**oi**r**

Sound Change

- **Assimilation/dissimilation**

assimilation and dissimilation can be:

- anticipatory (regressive):
  a**d** + similation > a**s**similation
  tran/**z**/ + fer > tran[**s**]fer
  cou**r**oi**r** > cou**l**oi**r**

- perseverative (progressive):
  book + /**z**/ > book[**s**]
  Ma**r**ga**r**ita > Ma**r**ga**l**ita

Sound Change

- Assimilation/dissimilation

this also includes:

epenthesis = excrescence (of a consonant),

anaptyxis (of a vowel),

camera > *camre > *cam**b**re (> cham**b**re)

cf. Cam**b**rai (Kamerijk en néerl.)

scola > **e**scola (> **é**cole)

Sound Change

- Assimilation/dissimilation

this also includes:

epenthesis = excrescence (of a consonant),

anaptyxis (of a vowel),

deletion = apocope, aphaeresis

camera > *camre (> *cambre > chambre)

cf. Kamerijk (néerl.)

Oostende > Ostend

status (Lat.) > estatus > etat > [eta] (état)

Sound Change

- Assimilation/dissimilation

this also includes:

    epenthesis = excrescence (of a consonant),

                anaptyxis (of a vowel),

    deletion = apocope, aphaeresis

metathesis

AAVE (African American Vernacular English):

wa**sp** > wa**ps**, a**sk** > a**ks**

Grk. **kr**istos > Du. **ke**r**stmis** (= **chr**istmas)

OE th**ri**d > Mod. E. th**ir**d

Old French fo**r**mage > Mod. Fr. f**r**omage

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    lenition / fortition

Sound Change

- lenition/fortition
  lenition (weakening):
  less effort during articulation

  degemination Lat. cu**pp**a > Sp. co**p**a
  Eng. i**mm**ature > i[**m**]ature

Sound Change

- lenition/fortition
  lenition (weakening):
  less effort during articulation

  degemination
  spirantisation   [k]amera > [tʃ]ambre > [ʃ]ambre]
                          wa**t**er > wa[s]er (Ger.)

Sound Change

- lenition/fortition
  lenition (weakening):
  less effort during articulation

  degemination
  spirantisation
  glottalisation   wa**t**er > wa[**ʔ**]er (Cockney)

Sound Change

- lenition/fortition
  lenition (weakening):
  less effort during articulation

  degemination
  spirantisation
  glottalisation
  nasalisation   [kamera] > [ʃɑ̃bʁə]

Sound Change

- lenition/fortition
  lenition (weakening):
  less effort during articulation

  degemination
  spirantisation
  glottalisation
  nasalisation
  voicing   Lat. ca**s**a > It. ca[**z**]a

Sound Change

- lenition/fortition
  fortition (stenghtening, less frequent than lenition):

  e.g. final devoicing (Dutch, German, Russian)

  baard > baar[t] 'beard' (plur. baar[d]en)

Sound Change

(recap)

- These are processes through which sounds change, and by which after some time languages start to differ from each other.

Sound Change

(recap)

- These are processes through which sounds change, and by which after some time languages start to differ from each other.

- Are these processes regular? I.e., do they apply to all words (given the appropriate context)?

Sound Laws

- Observation: in general sound change does not take place word by word, but across the board.

Lat.   Fr.
[k]amera   > [ʃ]ambre
[k]atus   > [ʃ]at
[k]astellum > [ʃ]ateau

Neogrammarian doctrine: sound laws are without exceptions
(However: actual sound change propagates through the lexicon)

Sound Laws

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Sound Laws

- Observation: in general, sound change does not take place word by word, but across the board.

- A sound change is a rule
- (i.e., input + context + output),
  which, if the input and the context are the same, produces the same output.

Sound Laws

- Hence: historical sound change does not operate on a word-by-word basis

- A sound change is a '**law**'

Sound Laws

- Hence: historical sound change does not operate on a word-by-word basis

- A sound change is a 'law'

This is true, but look at the change ka > ʃa in French. It did not take place in the North:

Cambrai not: Chambrai
Calais not: Chalais,
Cateau-Cambrésis not: Chateau-Chambrésis

Split between Picardian and other Gallo-Romance varieties

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Sound Laws

- **sound change:**
  - **changes in sounds**
  - **changes in the sound *system***

A little bit of Chaucher

Whan zephirus eek with his sweete breeth
Inspired hath in every holt and heeth
Tendre croppes, and the yonge sonne
Hath in the ram his halve cours yronne,
And smale foweles maken melodye,
That slepen al the nyght with open ye

- A little bit of Chaucher

Whan zephirus eek with his sweete breeth
Inspired hath in every holt and heeth
Tendre croppes, and the yonge sonne
Hath in the ram his halve cours yronne,
And smale foweles maken melodye,
That slepen al the nyght with open ye

- A little bit of Chaucher

Whan zephirus eek with his sweete *breeth*	breath
Inspired hath in every holt and *heeth*	heath
Tendre croppes, and the yonge sonne	
Hath in the ram his halve cours yronne,	
And smale foweles maken *melodye,*	melody
That slepen al the nyght with *open ye*	open eyes

- # A little bit of Chaucher

Whan zephirus eek with his sweete breeth   breath   [ɛ]
Inspired hath in every holt and heeth   heath   [i]
Tendre croppes, and the yonge sonne
Hath in the ram his halve cours yronne,
And smale foweles maken melodye,   melody   [i]
That slepen al the nyght with open ye   open eyes [ai]

- **Sounds used to be different**

mayde, sayde	maid, said
post, cost	post, cost
hous, plenteous	house, plenteous
cam, ram	came, ram
goot, hoot	goat, hot
two, so	two, so
loude, koude	loud, could
wyn, Latyn	wine, Latin

- Sounds used to be different
  - Great English Vowel Shift

ride	geese	bead	name	goat	goose	down
[i:]	[e:]	[ɛ:]	[a:]	[ɔ:]	[o:]	[u:]
[ai]		[i:]	[e:]	[o:]	[u:]	[au]

- Sounds used to be different
  - Great English Vowel Shift
  - Normal changes by themselves

ride	geese	bead	name	goat	goose	down
[i:]	[e:]	[ɛ:]	[a:]	[ɔ:]	[o:]	[u:]
[ai]		[i:]	[e:]	[o:]	[u:]	[au]

- Sounds used to be different
  - Great English Vowel Shift
  - Normal changes by themselves
  - But now: consequences for the entire sound system

ride	geese	bead	name	goat	goose	down
[i:]	[e:]	[ɛ:]	[a:]	[ɔ:]	[o:]	[u:]
[ai]		[i:]	[e:]	[o:]	[u:]	[au]

i: —————▶ əɪ   əʊ ◀————— u:

          e: o:

        ɛ: ɔ:

      a:

ride	geese	bead	name	goat	goose	down
[i:]	[e:]	[ɛ:]	[a:]	[ɔ:]	[o:]	[u:]
[ai]		[i:]	[e:]	[o:]	[u:]	[au]

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aɪ — iː — eɪ — aʊ — uː — əʊ — ɔː — juː — æ — ɒ — ʌ

1900 — oʊ — 1900

eɪ

1800 — oʊ — 1800

ʌɪ — eː — ɑʊ — o̞ː — ̈ʌ

1700 — iː — ɔ — juː — 1700

əɪ — ɛː

1600 — eː — ɛː — əʊ — ɑː/ɔː — juː — æ — ɔ/ɒ — ʏ — 1600

ɛːi — ɒ — iʊ

1500 — ɪj — iː — e̞ː — æː — æːi — ʊʊ — uː — oʊ – ɑːʊ/ɔːʊ – juː — eːʊ — 1500

1400 — iː — eː — ɛ — aː — æj — uː — oː — ɔ — ɔu — ɑu – eu/iu – ɛu — a — ɒ — o — 1400

time   see   east   name   day   house moon stone know law   new   dew   that   fox   cut
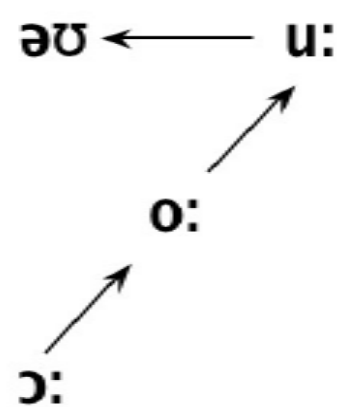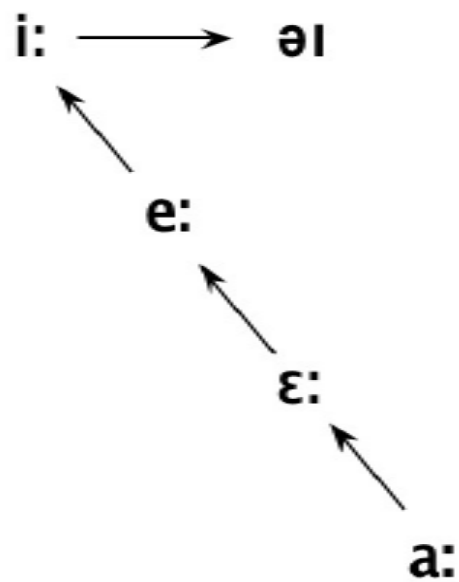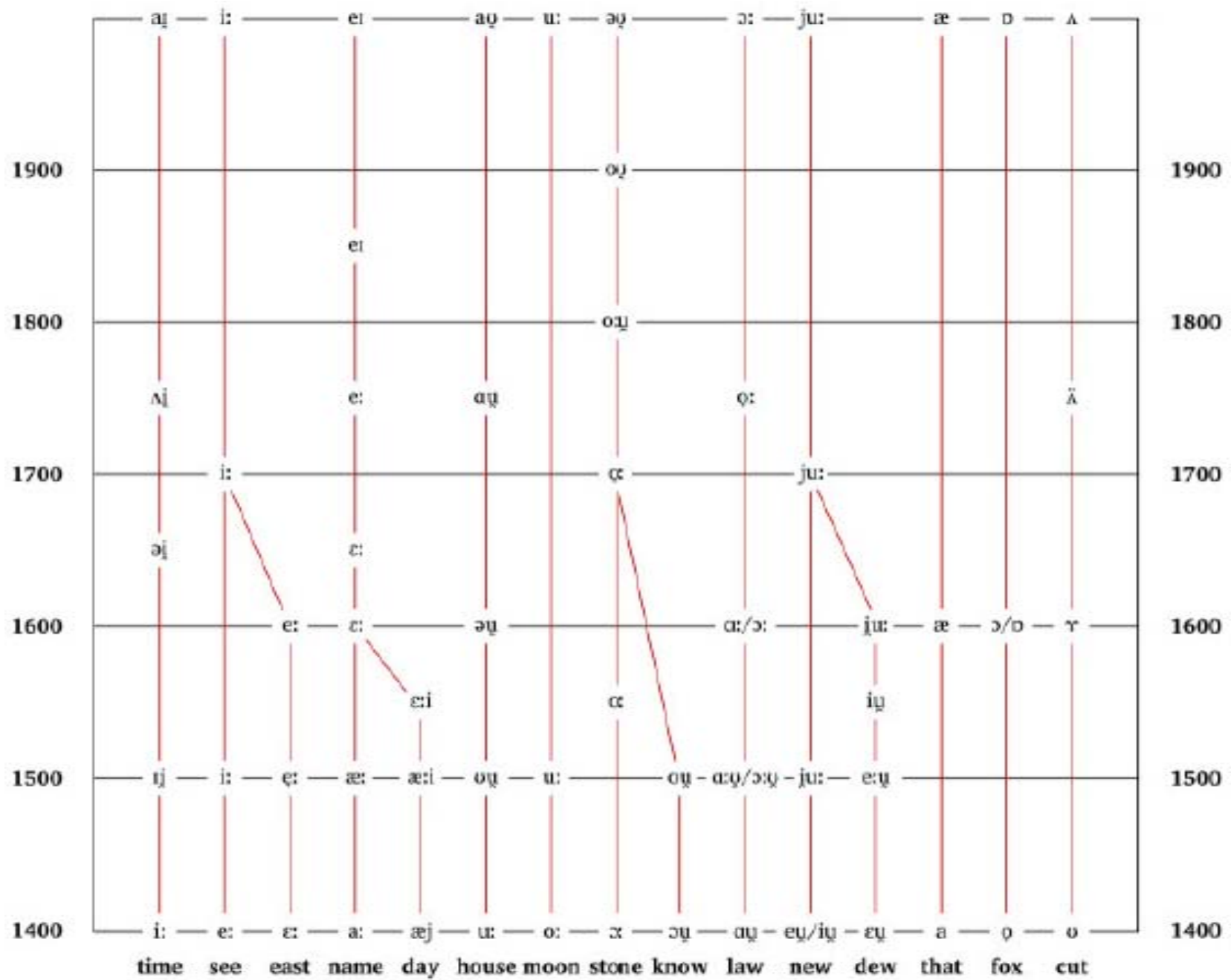
- **change in the vowel system**

Step 1: i and u drop and become əɪ and əʊ
Step 2: e and o move up, becoming i and u
Step 3: a moves forward to æ
Step 4: ɛ becomes e, ɔ becomes o
Step 5: æ moves up to ɛ
Step 6: e moves up to i
 A new e was created in Step 4; now that e moves up to i.
Step 7: ɛ moves up to e
 The new ɛ created in Step 5 now moves up.
Step 8: əɪ and əʊ drop to aɪ and aʊ
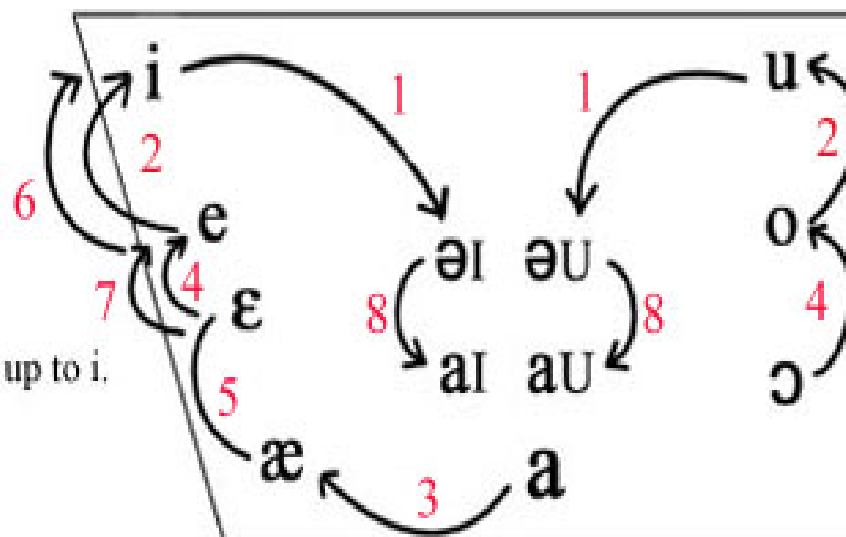
- **change in the vowel system**

- **general assumption:**

1. **diphtongization of the high vowels**
2. **mid vowels rome into the liberated space**
3. **secondary processes (father, etc.)**

- **chain shift**

  - it seems that the sound system as a whole has changed

  - and that the shift is motivated by the properties of the system ("fill up every free position")

▪ **Symmetry**

Dutch	labial	aleveolar	velar
voiced	p	t	k
voiceless	b	d	---

Symmetry

Dutch	labial	aleveolar	velar
voiced	p	t	k
voiceless	b	d	(g)

In loanwords [g] is generally maintained, because the it fits nicely into the system:

[g]oal, grappa, gay, ect.

Souns that do not fit easily in the system are changed, cf.

Fr. parapl[ɥi] > paraplu [paraply]

- **Allophones become phonemes**

  - **primary split**:
    an allophone coïncides with an existing phoneme (merger)

Latin: allophone of /s/ tussen between vowels

flos   PL   floses > flores
'flower'   'flowers'

➤ the sound system remains the same

- **Allophones become phonemes**

  - **secondary split**:
    an allophone becomes a new phoneme

    Engl. allophone of /k/ before [i]/[e]

    kinn > chin   [tʃ]
    keaff > cheaff   [tʃ] 'balle' (de grain)
    kat   > cat   [k]

- **Allophones become phonemes**

- **secondary split**:
  an allophone becomes a new phoneme

  Engl. allophone of /k/ before [i]/[e]

  monophtongisation   kᴇaff > chᴇaff   [tʃ]
                              kat   > cat   [k]

- **Allophones become phonemes**

  - **secondary split**:
    an allophone becomes a new phoneme

    Engl. allophone of /k/ before [i]/[e]

    monophtongisation   keaff > chaff   [tʃ]
    kat   > cat   [k]

    Now [tʃ] has become a phoneme

- **phonemes merge**

recently:

Fr.   pâte [paːt]
                                    patte [pɑt] → [pat]

Fr.   brin [bʀɛ̃]
                                    brun [bʀœ̃] → [bʀɛ̃]

Grimm's law

Rasmus Rask [ˈʁasmus ʁasg̊]
(1787-1832)

Jacob Grimm [ˈjaːkɔp
gʁɪm] (1785-1863)

Grimm's law (Rask 1818, Grimm 1822 + later amendments):

Act 1: voiceless plosives become spirantized (ex. PIE > angl.):

p > f   t > θ   k > χ (h) k^w > $χ^w$

*pĕd > foot   *trei̯ > three   *kāt- > hate   *ku̯od > what

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p > f $\qquad$ t > θ $\qquad$ k > χ (h) $\qquad$ $k^w > χ^w$

pĕd > foot $\qquad$ *treį > three* $\quad$ *kāt- > hate* $\qquad$ *kųod > what*

Act 2: breathy voiced plosives become voiced fricatives:

b^h > *ß $\qquad$ d^h > *ð $\qquad$ g^h > *ɣ $\qquad$ g^{wh} > *ɣ^w

---

Stopping: "in addition, the resulting voiced fricatives tend to develop into voiced plosives" (Krahe/Meid 1969, § 62). Hence:

b^h > *ß > b, $\qquad$ d^h > *ð > d, $\qquad$ g^h > *ɣ > g, $\qquad$ g^{wh} > *ɣ^w > g^w

---

b^{h}rā́tēr > brother $\quad$ *d^{h}ugəter > daughter* $\quad$ *g^{h}aidos > goat* $\quad$ *g^{wh}ermos > warm*

Grimm's law (Rask 1818, Grimm 1822 + later amendments):

Act 1: voiceless plosives become spirantized (ex. PIE > Engl.):

p > f   t > θ   k > χ (h) $k^w > χ^w$

pĕd > foot   *trei̯ > three*   *kāt- > hate*   *ku̯od > what*

Act 2: breathy voiced plosives become voiced fricatives:

b^h > *ß d^h > *ð g^h > *ɣ g^{wh} > *ɣ^w

b̥ʰrā́tēr > brother *d̥ʰugəter > daughter* *g̥ʰaidos > goat*   *g̥ʷʰermos > warm*

Act 3: voiced plosives become voiceless:

b (rare!)> p   d > t   g > k $g^w > k^w$

bend- > pen   *dekm > ten*   *gelə- > cold*   *gʷa- > come; kwamen* (pret.,
                                                                                Du.)

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Grimm's law (Rask 1818, Grimm 1822 + later amendments):

Act 1: voiceless plosives become spirantized:

$p > f$ $\qquad\qquad$ $t > \theta$ $\qquad\qquad$ $k > \chi$ (h) $\qquad\qquad$ $k^w > \chi^w$

Act 2: breathy voiced plosives become voiced fricatives:

$b^h > *\beta$ $\qquad\qquad$ $d^h > *\eth$ $\qquad\qquad$ $g^h > *\gamma$ $\qquad\qquad$ $g^{wh} > *\gamma^w$

Act 3: voiced plosives become voiceless:

b (rare!)$> p$ $\qquad$ $d > t$ $\qquad\qquad$ $g > k$ $\qquad\qquad$ $g^w > k^w$

General pattern: $T > Þ$; $D^h > *Ð > D$; $D > T$

Recap (I)Grimm's law + stopping
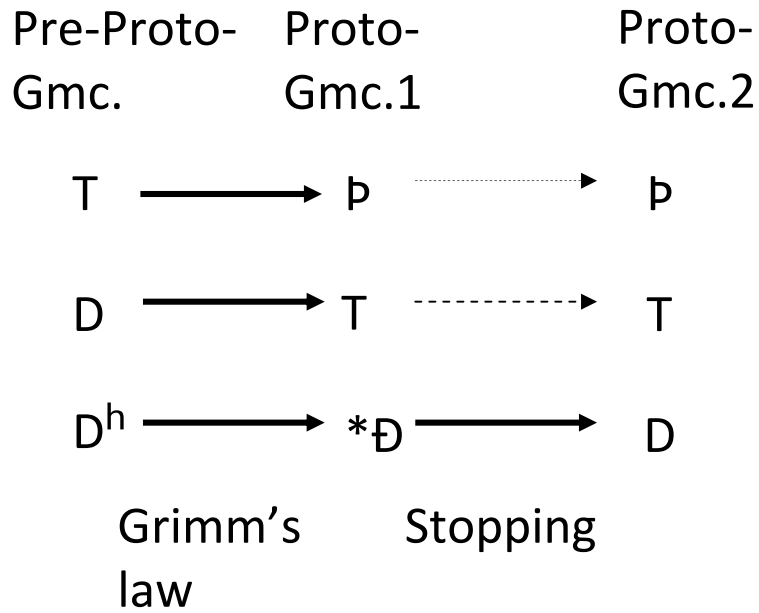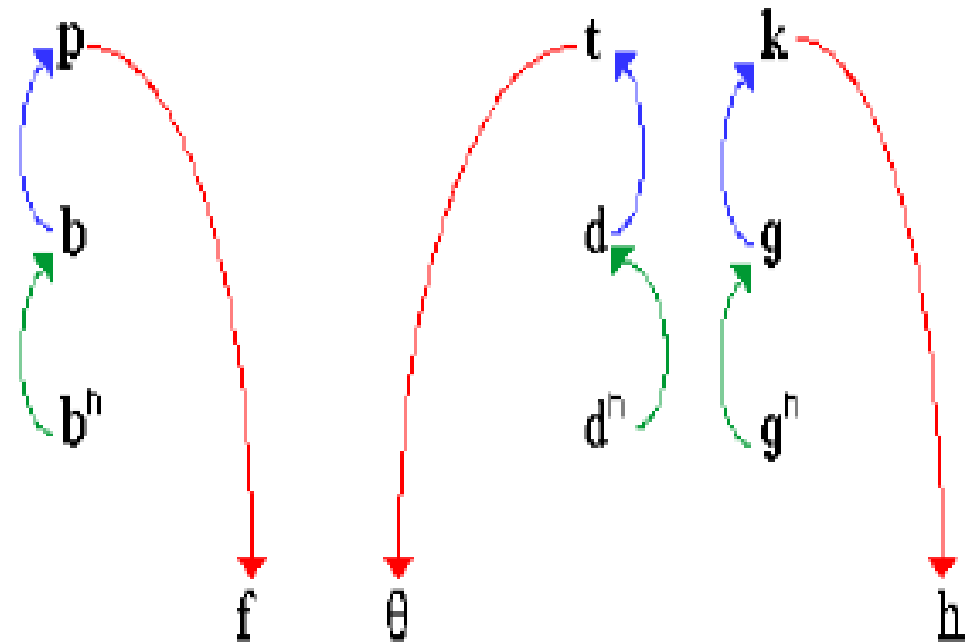
Pre-Proto-   Proto-   Proto-
Gmc.   Gmc.1   Gmc.2

T $\longrightarrow$ Þ $\cdots\cdots\cdots\rightarrow$ Þ

D $\longrightarrow$ T $\dashrightarrow$ T

D^h $\longrightarrow$ *Ð $\longrightarrow$ D

Grimm's   Stopping
law

Grimm's Law

voiceless stops --> voiceless fricatives
voiced stops --> voiceless stops
voiced aspirated stops --> voiced stops

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Like the Great English Vowel Shift, Grimm's Law is a chain shift

Grimm's Law
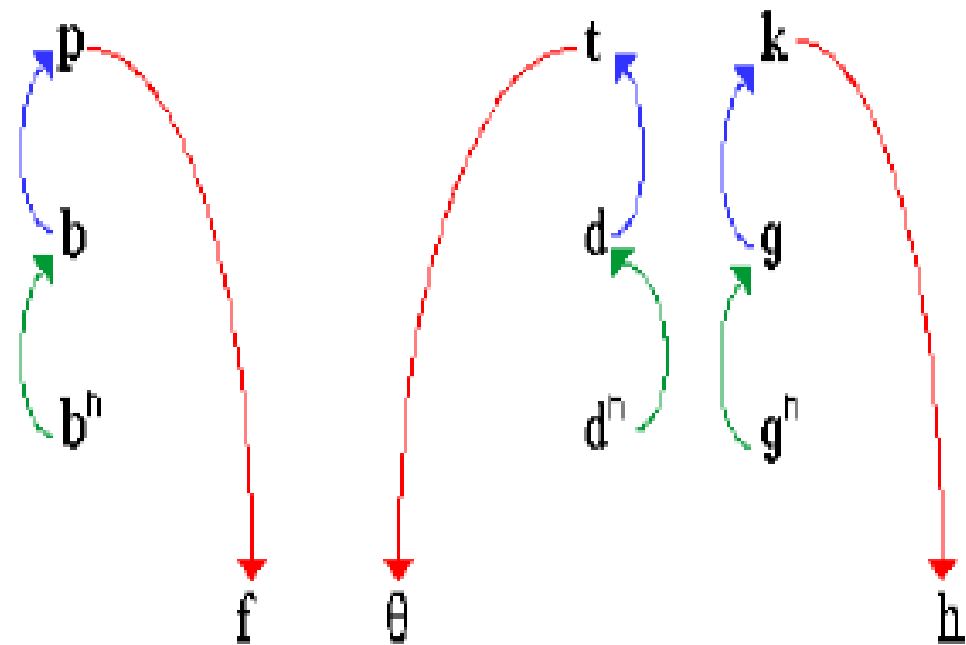
voiceless stops --> voiceless fricatives
voiced stops --> voiceless stops
voiced aspirated stops --> voiced stops

Like the Great English Vowel Shift, Grimm's Law is a chain shift
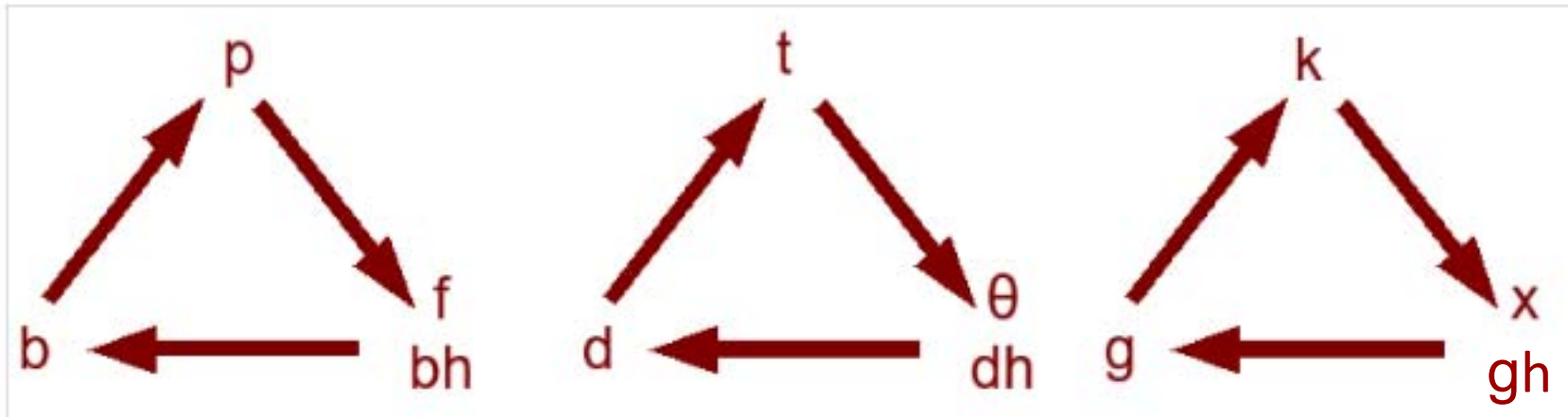
Verner's law

<u>Problem</u> : *grammatischer Wechsel* 'alternance grammaticale' (Lottner 1862)

Original /*p/ (no examples in the modern languages)

    Old English *hebban - hōf hōfon hafen* ("to lift" cf. *heave*)

Original /*t/ (survives in modern German)

    Old English: *cweþan (cwiþþ) cwæþ - cwǽdon cweden* ("to say": cf. *quoth*)

    Old English: *sēoþan (sīeþþ) sēaþ - sudon soden* ("to boil" cf. *seethe*)

    Modern German: *schneiden - schnitt geschnitten* ("to cut")

Original /*k/ (survives in modern German and Dutch)

    Modern German: *ziehen ziehe – zog gezogen* ("to pull")

    Old English: *þeon (þīehþ) þāh - þigon þigen* ("to prosper" cf. German *gedeihen*)

    Modern Dutch: *zien zie gezien - zag zagen* ("to see", Dutch lost intervocalic *h*)

    Modern Dutch: *slaan sla - sloeg sloegen geslagen* ("to beat")

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Karl Verner [kɑ(ːʔ)l ˈʋaɐ̯ʔnɐ]
(1846-1896)

Eine ausnahme der ersten lautverschiebung.

Im 11. bande dieser zeitschrift (s. 161—205) hat Lottner die ausnahmen der ersten lautverschiebung einer sorgsamen durchmusterung unterzogen. Er untersuchte alle übergänge der indogermanischen explosivae (tenues, mediae und aspiratae), die sich dem schema

idg. k = germ. h, idg. g = germ. k, idg. gh = germ. g
t = $þ$, d = t, dh = d
p = f, b = p, bh = b

zu entziehen scheinen, und es ergaben sich dem verstorbenen forscher hauptsächlich zwei kategorien von ausnahmen, abgesehen von den fällen, wo die nichtverschiebung durch gewisse consonantenverbindungen bedingt ist (idg. sk, st, sp = germ. sk, st, sp; idg. kt, pt = germ. ht, ft). Einerseits fand Lottner, dass g, d, b mitunter im germanischen unverschoben vorlagen, wie z. b. in goth. *gredu-s* »hunger« neben altind. *grdh-yati* »er ist gierig nach«, goth. *dauhtar* »tochter« neben altind. *duhitar* dss., goth. *bindan* »binden« neben altind. wz. *bandh* dss. u. a. Anderseits erschienen dieselben germanischen tönenden explosivae *(g, d, b)* in vielen fällen nicht als responsionen der indogermanischen aspiratae, wie zu erwarten wäre, sondern als responsionen der indogermanischen tonlosen explosivae *(k, t, p)*, so z. b. in germ. *tegu-* »dekade«, das mit idg. *dakan* »zehn« zusammenhängt, in germ. *modar* = idg. *mâtar*, ahd. *ebar* = lat. *aper*, goth. *bairand* »sie tragen« = altind. *bharanti* u. s. w.

Die erste klasse ausnahmen wurde aber bald nachher von Grassmann beseitigt. In seinem bekannten aufsatze im 12. bande dieser zeitschrift »Ueber das ursprüngliche vorhandensein von wurzeln, deren anlaut und auslaut eine aspirate enthielt«, weist

Proto-Indo-European (PIE) (reconstructed)	Sanskrit (Skr.)	Ancient Greek	Gothic, Old English (OE)	Modern High German
*bʰrátēr	bʰrátar-	φρᾱ́τηρ ('pʰraːteːr)	brōþar (*Gothic*) brōþor (*OE*)	Bruder
*pətḗr	pitár-	πατήρ (pa'teːr)	fadar (*Gothic*) fæder (*OE*)	Vater

Intervocalic voiceless stops (here, /t/) in PIE, Sk. and Anc. Grk. correspond to voiceless fricatives (here, /θ/ (þ)) in Gothic and OE, by spirantization (part of the Germanic sound shift).

However, if the preceding vowel is not stressed in PIE, Skr. and Anc. Grk., voiceless plosives correspond to voiced plosives in Gothic and OE. This latter phenomenon constitutes 'An Exception to the First Sound Shift' (title of Verner's 1876 article).

4. Verner's law (1877:114):

Indogerm. *k*, *t*, *p* gingen erst überall in *h*, *þ*, *f* über; die so entstandenen tonlosen fricativae nebst der vom indogermanischen ererbten tonlosen fricativa *s* wurden weiter inlautend bei tönender nachbarschaft selbst tönend, erhielten sich aber als tonlose im nachlaute betonter silben.

"IE *k*, *t*, *p* first shifted to *h*, *þ*, *f* in all environments; the voiceless fricatives thus originating, together with the voiceless fricative *s* inherited from Indo-European, then became voiced medially in voiced environments, but remained voiceless when they were the final sounds of accented syllables." (Transl. by Lehmann 1967)

Verner's law (1877):

The voiced fricatives resulting from act 1 + Verner's law coincided with the voiced fricatives resulting from act 2 (DH > *Ð) and both groups became occlusivized by a stopping process.
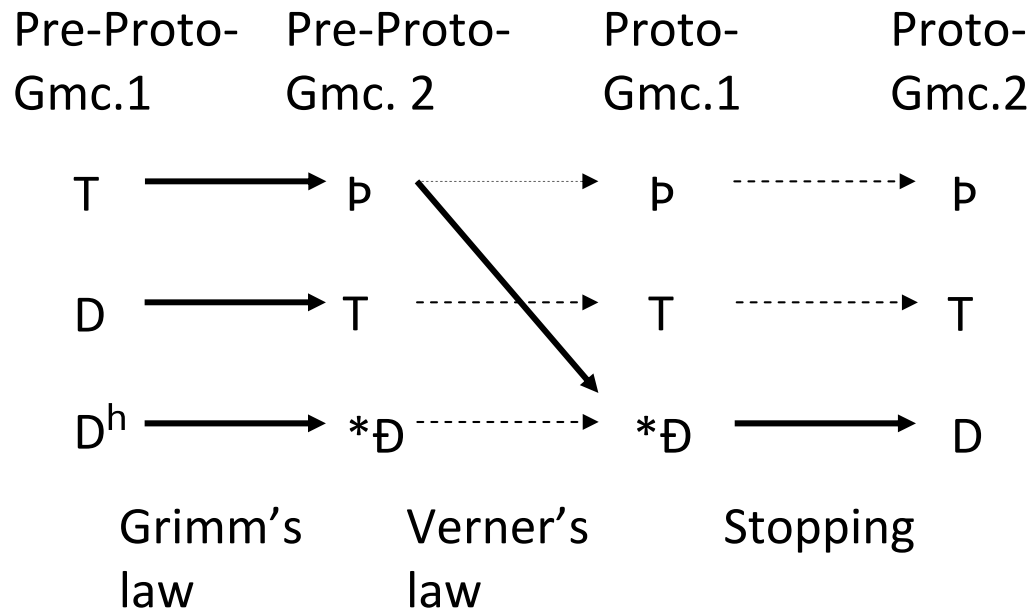
General pattern: T > *Þ > *Ð > D

Example: *pə'teːr (*PIE*) > *faθar > *faðar > 'fadar (*Goth.*), fæder (*OE*)

Recap (II)

1. PIE obstruent system, classic view: T, D, D^h, s

2. Grimm's law: T > Þ; D^h > *Ð > D;   D > T

3. Verner's law: (T >) *Þ > *Ð > D, intervocalically after an unstressed vowel

Recap (III)

Germanic sound shifts under the traditional view

Pre-Proto-Gmc.1	Pre-Proto-Gmc. 2	Proto-Gmc.1	Proto-Gmc.2
T ⟶	Þ ⋯⟶	Þ ----⟶	Þ
D ⟶	T ----⟶	T ----⟶	T
Dʰ ⟶	*Ð ----⟶	*Ð ⟶	D

Grimm's law   Verner's law   Stopping

Reconstruction

- ## Methods of reconstruction

Comparative reconstruction

Uses cognate sets to compare related languages
Goal is to reconstruct a shared ancestor — a protolanguage

Internal reconstruction

Uses evidence from within one language
Goal is to reconstruct an older form of the language — a prelanguage

Internal reconstruction

How to reconstruct a   prelanguage?,

Dutch   *vriezen, vroor, gevroren* 'geler, gelait, gelé'

(English   *freeze, froze, frozen*
German   *frieren, fror, gefroren)*

Question : what is the original segment: *r* or *z* ?

Hence is the evolution: z > *r* or *r* > z ?

If r > z, then *dieren* 'animals' > **diezen

Hence, le original segment is : *z*

Comparative reconstruction

Step 1: assemble potential cognate lists

Step 2: establish correspondence sets

Step 3: discover which sets are in complementary distribution

Step 4: reconstruct proto-phonemes

Step 5: examine the reconstructed system typologically

Italian	Spanish	Portugese	French
corpo	cuerpo	corpo	corps
crudo	crudo	cru	cru
catena	cadena	cadeia	chaîne
cacciare	cazar	caçar	chasser

Historical Linguistics

Among the aims of Historical Linguistics:

- to describe and account for observed changes in particular languages

- to reconstruct the pre-history of languages and determine their relatedness, grouping them into language families (comparative linguistics)

- to develop general theories about how and why language changes