Toward a Unified Theory of Chain Shifting

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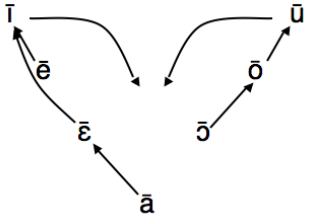
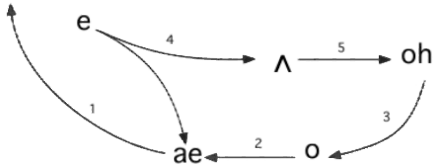
Chain shift: a set of phonetic changes affecting a group of phonemes such that each moves toward the phonetic position being vacated by one of the others:



The Great Vowel Shift, between Middle and Early Modern English



The Northern Cities Shift, ongoing in the "Inland North" region of the US[1]

Key question about chain shifts: Is a chain shift a **unitary phenomenon** where phonemes mutually cause each other's movement to maintain **margin of security** between them (Martinet 1952), or a **constellation** (Lass 1992) of independent shifts that only form a structured-seeming pattern by coincidence?

Stockwell & Minkova (1988a,b) argue for **constellation** model in the case of GVS:

- Various dialect regions of England underwent some GVS shifts but not others
- Phonemic merger calls into question principle of margin of security

Gordon (2000), Labov et al. (2006) find presence of NCS shifts irregularly distributed

Evidence for at least two-step chain shifts as **unitary** phenomena:

cross-dialectal correlation of adjacent phoneme shifts.

- ME dialects without /ō/-raising also lacked /ū/-diphthongization (Lass 1988)
- /o/-backing usually cooccurs with /æ/-backing in modern North American English (cf. Durian to appear)

[1] For modern English vowels, I use the notation of Labov et al. (2006); for Middle English, I use IPA.

Transmission vs. **diffusion** of linguistic change (Labov 2007):

- **Transmission** is the ordinary process of first-language acquisition: children acquire the dialect features of their parents, peers, and community
- **Diffusion** is borrowing of dialect features as a result of contact between **adults** from different speech communities

In **tranmission**, children can faithfully acquire marked dialect features; in **diffusion**, they are **simplified** due to adults' reduced language-learning capacity.

Labov argues: speakers subject to **diffusion of a chain shift** may ignore structural coherence and treat it as a collection of independent sound changes.

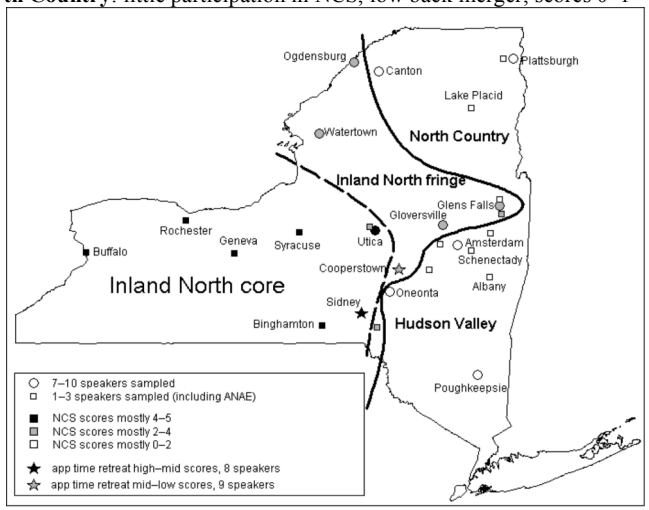
Case study: **Diffusion of NCS to Hudson Valley**

Measure NCS participation in terms of **NCS score**, number satisfied of Labov's criteria:

- **UD**: /o/ fronter than /ʌ/
- **ED**: /e/ less than 375 Hz fronter than /o/
- **EQ**: /æ/ both fronter and higher than /e/
- **AE1**: /æ/ higher than 700 Hz (i.e., F1 is less than 700 Hz)
- **O2**: /o/ fronter than 1500 Hz

Dialect regions of Upstate NY (Dinkin 2009):

- **Inland North core**: nearly all speakers subject to NCS; scores 4–5
- **Inland North fringe**: some but not most speakers subject to NCS; scores 2–4
- **Hudson Valley**: less participation in NCS; scores 0–2
- **North Country**: little participation in NCS; low back merger; scores 0–1



Majority of Hudson Valley speakers have **NCS score of 2**: clearly distinct from Inland North, but NCS features are not completely absent.

vowel means	*ANAE* Inland North (*n* = 61)	IN fringe (*n* = 40)	Hudson Valley (*n* = 33)	*ANAE* elsewhere (*n* = 385)
/o/ F2	1498 Hz	1459 Hz	1421 Hz	1310 Hz
/e/ F2	1740 Hz	1651 Hz	1724 Hz	1847 Hz
/ʌ/ F2	1353 Hz	1328 Hz	1324 Hz	1470 Hz
/æ/ F1	653 Hz	708 Hz	766 Hz	767 Hz

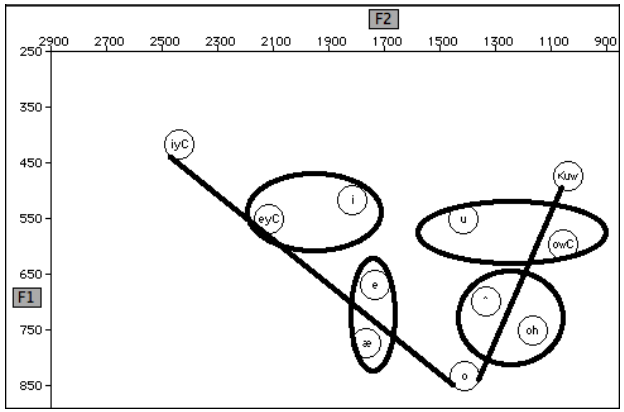
Since Hudson Valley is adjacent to but has distinct settlement history from Inland North, but has more NCS participation than most non–IN regions, seems likely that it acquired NCS features through diffusion.

The Hudson Valley:

- **resembles or exceeds the Inland North** as a whole in backing of /e/ and /ʌ/,
- is **midway between the Inland North and elsewhere** in fronting of /o/, and
- **resembles non–Inland North regions** in height of /æ/.[2]

Preston (2008) finds result of diffusion of NCS in Michigan has **more symmetric phonology** than result of transmission of NCS in its originating communities.

This is the case in Hudson Valley too: matching front/back vowel pairs at same height.



Mean F1/F2 in Amsterdam, N.Y. (Dinkin 2009)

[2] The New York State component of the Inland North is more advanced in backing of /e/ and /ʌ/ than the remainder of the Inland North; the Hudson Valley and North Country fall in between the two components of the Inland North with respect to these vowels. The mean /o/ F2 for non–Inland North communities becomes 1339 Hz when regions with the *caught-cot* merger are excluded.

Thus the Hudson Valley corroborates Labov (2007) and Preston (2008)'s hypotheses about the behavior of chain shifts under diffusion:

- Distinct components of the NCS are treated differently in the Hudson Valley.
- The result of the NCS in the Hudson Valley is phonologically symmetrical.

Preston's analysis is relevant to the GVS as well:

- Stockwell & Minkova argue that the merger of the reflexes of ME /ɛ̄/ and /ē/ calls into question the role of "margin of security" in chain shifting.
- However, this merger took place not in **transmission** of GVS, but in **diffusion** of GVS to East Anglia and back again to London (Smith 2007), and as expected produced a more symmetrical post-GVS vowel system than non-merger would
- A similar merger between ME /ɛ̄/ and /ā/ took place earlier, via diffusion to the "Mopsae" (Smith 2007), and also produced a more symmetrical vowel system.

Merger between chain-shifting vowels as a result of diffusion is also attested with diffusion of /o/~/oh/ merger into the Inland North in New York State (Dinkin 2009).

Perhaps we can formulate unified model of the life cycle of a chain shift:

- may **start out as unified process** in the community in which it originates, but
- becomes **independent movements of several phonemes** once it diffuses;
- the result will be a **more symmetric system** in the communities subject to diffusion.

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