

Dissertation defense

13 October 2009

Dialect Boundaries and Phonological Change in Upstate New York

Aaron J. Dinkin
dinkin@babel.ling.upenn.edu

Three possible reasons for dialect differences between nearby communities:

- **Speed of diffusion:** a sound change that originated in one community may simply not have had enough time yet to spread to the other.
- **Social or demographic factors:** e.g., one community may resist another's dialect features for cultural or ideological reasons.
- **Internal constraints:** a dialect feature of one community may be structurally incompatible with the existing dialect features of the other community.

In the third case, comparing sound changes that can diffuse across dialect boundaries with those that don't can illuminate the structures and constraints underlying phonological change.

ANAE (Labov, Ash, & Boberg 2006) identifies at least four distinct dialect regions surrounding a large area of eastern **Upstate New York**:

- the **Inland North**, featuring the **Northern Cities Shift (NCS)**
- **Canada**, featuring the **Canadian shift** and **low back merger**
- **Western New England**, divided into (Boberg 2001):
 - **Northwestern New England**, featuring the **low back merger**
 - **Southwestern New England**, relatively unmarked but showing some similarity to NCS behavior
- **New York City**, featuring phonemic split in /æ/ and raising of /oh/

Aims of this dissertation:

- **Map** the dialect geography of Upstate NY, between the regions defined in *ANAE*
- Draw general **conclusions about phonological change** from the interactions between these regions' features

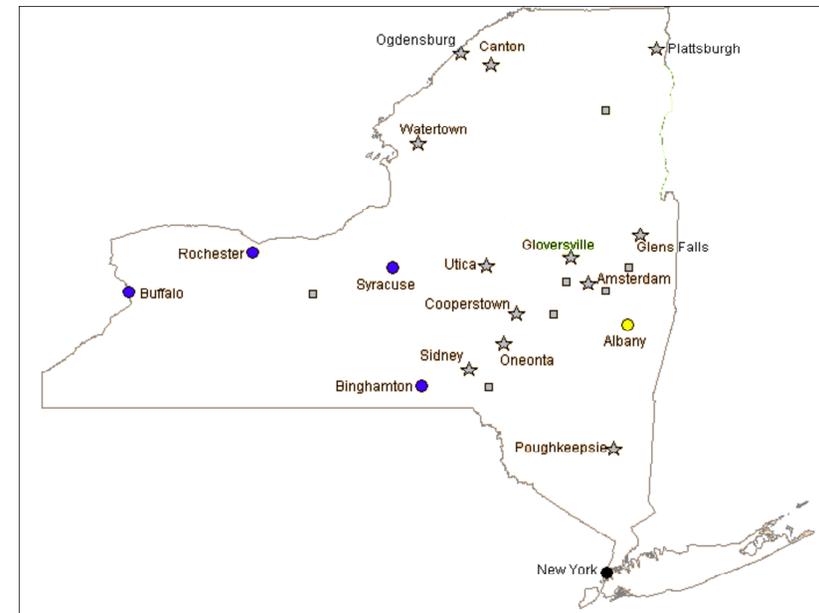
Previous work on relationships between these dialect regions:

- Chambers (1994): sharp lexical boundaries between Inland North and Canada
- Boberg (2000): very sharp phonological boundary between Inland North and Canada (data from Michigan and Western Ontario, not New York State)
- Labov (2007): imperfect diffusion of New York City /æ/ system to Albany
- Boberg (2001): argues Southwestern New England is merely an extension of the Inland North, with less advancement in the NCS
- Kurath (1949): using lexical variables, assigns **Northwestern New England** to the same region as the Inland North; and finds a "Hudson Valley" region separating the modern Inland North from Southwestern New England

Data collected through telephone interviews using *ANAE* methodology and the Short Sociolinguistic Encounter (SSE) protocol described by Ash (2002), including word lists and minimal pair judgments. Interviews from the following New York State communities were collected and analyzed:

- SSE only: Glens Falls (7), Morrisonville (1), Oneonta (9), Plattsburgh (7), Poughkeepsie (7), Queensbury (2), South Glens Falls (3), Utica (7), Watertown (10), Yorkville (1)
- SSE and telephone interviews: Amsterdam (5+2), Canton (7+2), Cooperstown (5+4), Gloversville (7+2), Ogdensburg (7+2), Sidney (6+2)
- Telephone interviews only: Cobleskill, Fonda, Geneva, Lake Placid, Saratoga Springs, Schenectady, Walton (2 each)

Total corpus: 119 speakers.



New York State, showing *ANAE* communities (circles), communities with 7–10 speakers sampled in this dissertation (stars), and communities with two phone interviews in this dissertation (squares).

Speakers' vowel systems were measured and normalized according to the *ANAE* methodology; tokens before sonorants are disregarded in computing means.

NCS score defined by Labov (2007)'s vowel mean diagnostics for participation in NCS

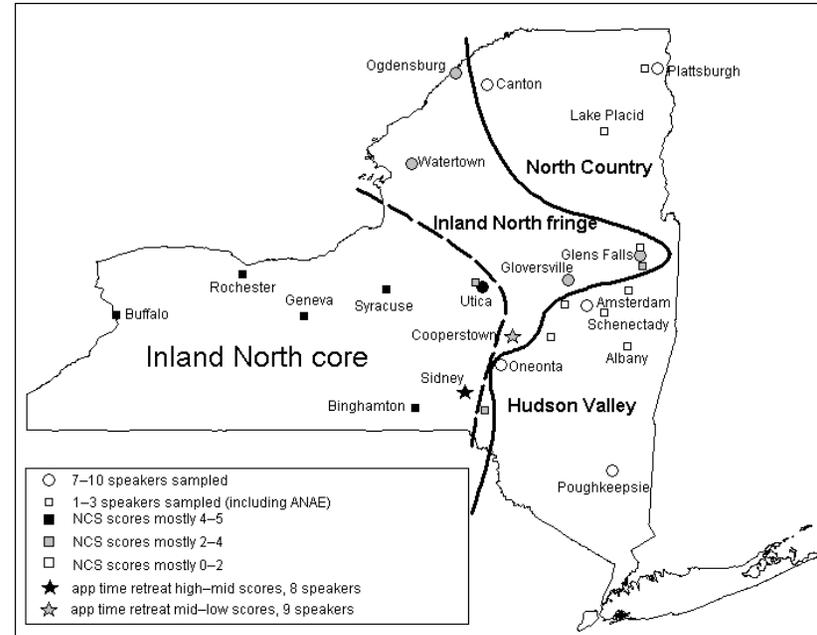
- **UD criterion:** /o/ fronter than /ʌ/
- **ED criterion:** /e/ less than 375 Hz fronter than /o/
- **EQ criterion:** /æ/ both fronter and higher than /e/
- **AE1 criterion:** /æ/ higher than 700 Hz (i.e., F1 is less than 700 Hz)
- **O2 criterion:** /o/ fronter than 1500 Hz

	number of NCS criteria satisfied					
	zero	one	two	three	four	five
<i>ANAE</i> NY Inland North			1		3	4
Utica				2	3	2
Gloversville			3	1	5	
Glens Falls			2	2	3	
Ogdensburg		1	2	4	2	
Watertown			6	1	3	
Sidney			3	2	1	2
Cooperstown	1	3	3	1	1	
Amsterdam		1	6			
Oneonta		2	6	1		
Poughkeepsie	1	2	3	1		
Plattsburgh	2	3	2			
Canton	4	3	2			
<i>ANAE</i> WNE	2	5	4	1	1	

- Speakers in Utica mostly meet 4–5 NCS criteria, agreeing with *ANAE* Inland North.
- Speakers in Amsterdam, Oneonta, Poughkeepsie, Plattsburgh, and Canton mostly meet 2 or fewer NCS criteria, similar to *ANAE* Western New England.
- Speakers in Gloversville, Glens Falls, Ogdensburg, and Watertown meet 2–4 NCS criteria, midway between WNE and Inland North speakers.
- Sidney and Cooperstown are apparently retreating from the NCS in apparent time.

criterion	% NYS speakers	% <i>ANAE</i> IN speakers	% other <i>ANAE</i>
UD	84%	93%	15%
ED	85%	84%	13%
EQ	18%	66%	3%
AE1	26%	84%	17%
O2	18%	46%	5%

Total rate of satisfaction of NCS criteria in this sample vs. Inland North and non-Inland North *ANAE* speakers.



Regions defined based on NCS scores. “Hudson Valley” region suggested by the region of that name defined by Kurath (1949).

- Entire Upstate New York sample satisfies UD and ED at Inland North–like rates.
- The greatest differences between communities are found in the EQ criterion.
- Quantitative analogue of EQ criterion: **EQ1 index** = meanF1(e) – meanF1(æ), so **higher EQ1 index means more NCS raising of /æ/**.

	min	max	mean		min	max	mean
<i>ANAE</i> NY Inland North	-26	+266	+87	Oneonta	-140	-39	-88
Utica	-35	+280	+69	Cooperstown	-150	+75	-96
Gloversville	-61	+96	+4	Amsterdam	-125	-75	-103
Sidney	-80	+134	-6	Canton	-152	-67	-107
Watertown	-86	+51	-19	Poughkeepsie	-168	-43	-121
Glens Falls	-73	+25	-19	Plattsburgh	-184	-108	-148
Ogdensburg	-87	+52	-25	<i>ANAE</i> WNE	-187	+15	-83

EQ1 indices of communities with seven or more speakers sampled

EQ1 index defines a sharp distinction:

- In Inland North (core or fringe), almost all EQ1 indices are above -62
- In Hudson Valley and North Country, almost all EQ1 indices are below -62
- Thus the eastern boundary of the Inland North is the maximum extent of **raised /æ/**: other NCS features extend more or less across the boundary.

Are smaller villages near the boundary less dialectologically focused?

- Harder to define dialectological status of some communities with just 1–2 speakers sampled: villages near the boundary have intermediate EQ1 indices and scores.
- Sidney and Cooperstown: villages changing in apparent time
- However, cities near boundary appear stable: Amsterdam and Gloversville just 15 miles apart and have no overlap in EQ1 index.

Settlement history of these communities:

- **New York State** originally Dutch “New Netherland” colony; many settlements founded by Dutch settlers. Came under English control in 1664; but e.g. Poughkeepsie was Dutch-speaking until 1770s (Platt [1905] 1987).
- **Western New England** was staging ground for settlement of Inland North (Boberg 2001, *ANAE*)

Compare Amsterdam and Gloversville:

- **Amsterdam** had leading Dutch families in early 19th c. (Donlon 1980); by 1804, “the hamlet had acquired a considerable population, with an almost equal proportion of Dutch and Yankees” (Frothingham 1892b).
- **Gloversville** area basically depopulated after Revolution; “the immigration was largely of Anglo-Saxon elements.... Among the early settlers the Connecticut influence seems to have been strongest.” (Frothingham 1892a).

In general: communities with high EQ1 indices settled mainly from SW New England; others settled either from NYC and Hudson Valley or from NW New England.

So: raising of /æ/ does not diffuse completely across the settlement boundary, while other NCS features do:

Is there a **phonological obstacle**?

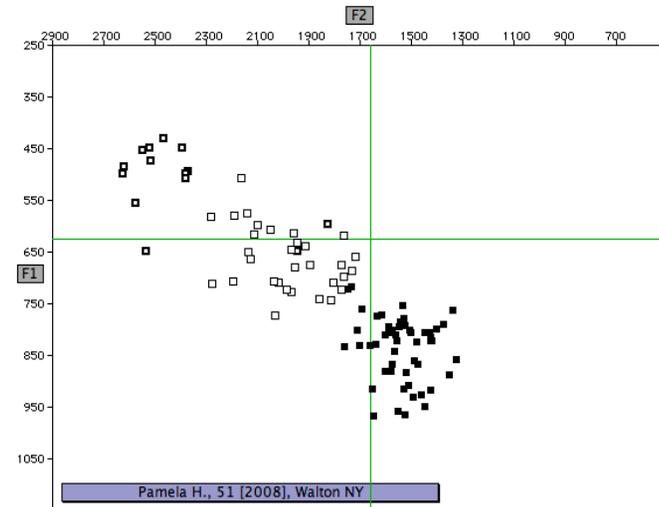
Allophonic patterns of /æ/:

- **Nasal system:** prenasal /æ/ occupies a distinct higher region of phonetic space.
- **Continuous system:** prenasal /æ/ is still higher than non-prenasal /æ/, but all tokens are still within a single cluster in phonetic space.

ANAE implies NCS raised /æ/ must have a continuous distribution, but sharp nasal allophony can coexist with raised /æ/

Continuous /æ/ patterns more associated with more Inland North–like areas:

- **Raised continuous** system most concentrated in Inland North Core; correlated with high rate of NCS features
- **Raised nasal** system most frequent in Inland North fringe; correlated with moderate rate of NCS features



Raised nasal /æ/ system of Pamela H. from Walton: non-prenasal /æ/ (white) raised in comparison to /o/ (black); prenasal /æ/ (bold outline) is a separate phonetic cluster.

- Nasal system **less likely to be raised** than continuous system
- Even unraised /æ/ is more likely to be continuous in Inland North than elsewhere:

	continuous	nasal
Inland North (core or fringe)	11	13
elsewhere	8	43

Geographical distribution of low /æ/ systems: continuous system is more frequent in the Inland North even though there are relatively few speakers with low /æ/ at all.

Does **nasal-system** dominance outside Inland North prevent diffusion of raised /æ/?

Life cycle of phonological change (Bermúdez-Otero 2007):

- **Phase I:** A rule for phonetic implementation of phonological features
 - **Phase II:** An allophonic rule acting discretely on phonological features
 - **Phase III:** A rule relating different phonemes, which may interact with morphology
 - **Phase IV:** A dead rule, no longer part of synchronic phonology at all
- Natural direction of change: from Phase I to Phase II, etc.

Prenasal /æ/ tokens are higher than non-prenasal tokens in both nasal and continuous systems, but by **Phase I** in **continuous systems** and **Phase II** in **nasal systems**.

Chain shifting is a Phase I operation:

- Therefore the basic unit of chain shifts is the output of Phase II
- So prenasal and non-prenasal /æ/ act independently in a nasal system
- In the nasal system, the phonologically distinct prenasal allophone **blocks** nonprenasal /æ/ from raising into its phonetic space.
- Thus nasal system in Hudson Valley and North Country prevents diffusion of /æ/ from Inland North, while other NCS changes are not blocked.

Raised nasal system must be a **later development** of Inland North fringe: discrete Phase-II allophony developing out of already raised /æ/.

History of diffusion of Northern Cities Shift:

- /æ/-raising developed in Inland North core, initiating chain shift
- Communities not settled from SWNE developed nasal /æ/ system
- NCS diffused eastward unimpeded into Inland North fringe
- NCS diffusion affected Hudson Valley (and North Country) as well, but /æ/ raising blocked by nasal system.

New York City /æ/ system:

p	t	č	k
b	d	ǰ	g
m	n		ŋ
f	θ	s	š
v	ð	z	ž
	l	r	

Phase III phonemic split: semi-predictable distribution between tense /æh/ before nonvelar nasals, voiced stops, voiceless fricatives, and lax /æ/ elsewhere.

Labov (2007): NYC /æ/ system diffused to Albany **as Phase II allophonic rule:**

phonological conditioning is preserved, but lexical exceptions and interaction with morphology are eliminated.

Five speakers in the current sample have this diffused NYC /æ/ system;

however, /æ/ is **not tensed before /g/** (by them or the *ANAE* Albany speakers).

Thus the process of diffusion makes the tensing rule **more phonologically streamlined**; the result of diffusion is not only more phonologically **predictable** but also more **structurally symmetrical**.

The five speakers with the diffused NYC /æ/ system include

- three from Poughkeepsie
- one from Schenectady
- one from Cooperstown, whose parents were both from NYC suburbs.

Poughkeepsie and Albany also feature **raised /oh/**, with mean F1 less than 700 Hz.

This defines the **Hudson Valley core**: a dialect region reaching north from NYC along the Hudson River, featuring diffusion of NYC /æ/ and /oh/ patterns.

Low back merger:

Two regions should show **stable resistance** to low back merger, according to *ANAE*:

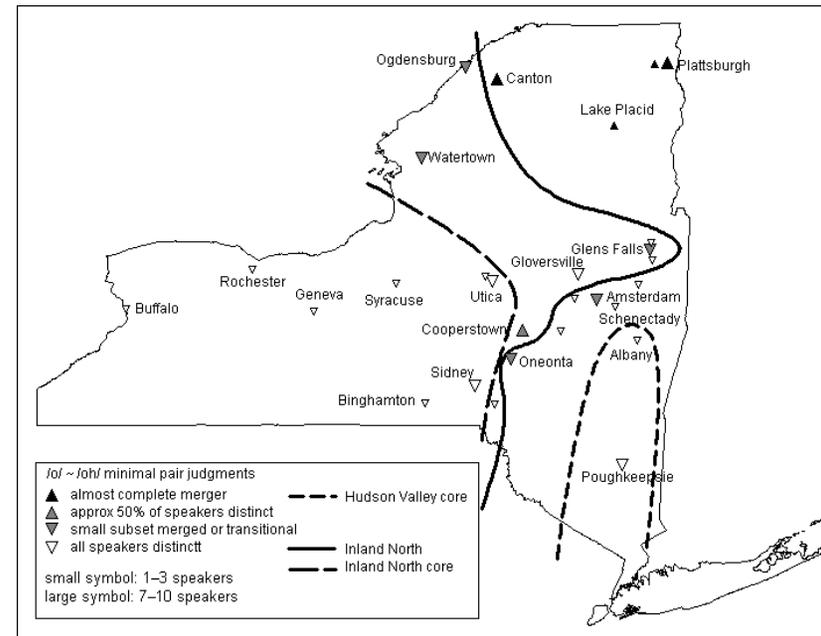
- In Inland North, /o/ is fronted away from /oh/
- In Hudson Valley core, /oh/ is raised away from /o/

Herzog's Principle (Labov 1994): "Mergers expand at the expense of distinctions."

Question: **Is "stable resistance to merger" consistent with Herzog's principle?**

Minimal-pair judgments:

- All subjects were asked for judgments on at least two /o/~oh/ minimal pairs
- Rated subjects with inconsistent or uncertain judgments as "transitional"
- Discard two subjects judged by me as having been confused by the task



Low back merger in perception

- Most merged region: **North Country**—only two oldest speakers distinct
- Outside North Country, all merged or transitional speakers born later than 1981.
- Merger in Cooperstown a result of **new dialect formation** (as in Kerswill 2002).
- Most other transitional speakers are in Inland North fringe—suggesting diffusion of merger from North Country, NCS "resistance" to merger notwithstanding.

Total of 11 merged and 18 transitional speakers; all others distinct:

community	merged & transitional speakers
Amsterdam	1 merged
Canton	3 merged, 5 transitional
Cooperstown	2 merged, 2 transitional
Glens Falls	1 transitional
Lake Placid	2 transitional
Morrisonville	1 transitional
Ogdensburg	3 transitional
Oneonta	1 transitional
Plattsburgh	5 merged, 1 transitional
Watertown	2 transitional

Trend toward merger by approximation (as defined by Herold 1990):

region	n	/o/ F2 vs. year of birth			/o~/oh/ Cartesian vs. year of birth		
		r ²	p	slope	r ²	p	slope
N. Country	19	.2923	< .02	-2.353	.4759	< .002	-2.812
IN fringe	40	.3258	< .0002	-2.385	.2271	< .0002	-2.080
IN core	18	.4000	< .005	-2.312	.2346	< .05	-2.224
HV fringe	24	.1808	< .05	-1.313	.2529	< .02	-1.993
HV core	9	.0268	n.s.		.0074	n.s.	
ANAE IN rgn.	53	.0030	n.s.		10 ⁻⁵	n.s.	

Pearson correlations of F2 of /o/ and the Cartesian distance between /oh/ and /o/ in Hz

- All regions show backing of /o/ in apparent time except Hudson Valley core
- Although /o/-backing is contrary to NCS, it coexists with NCS in Inland North
- No /o/-backing found in ANAE Inland North communities outside New York State.
- NCS **does not** grant “stable resistance” to merger; but **raised /oh/ apparently does**.

Phonological transfer: /oh/ replaces /o/ before /l/+consonant (oIC), as in *revolve*.

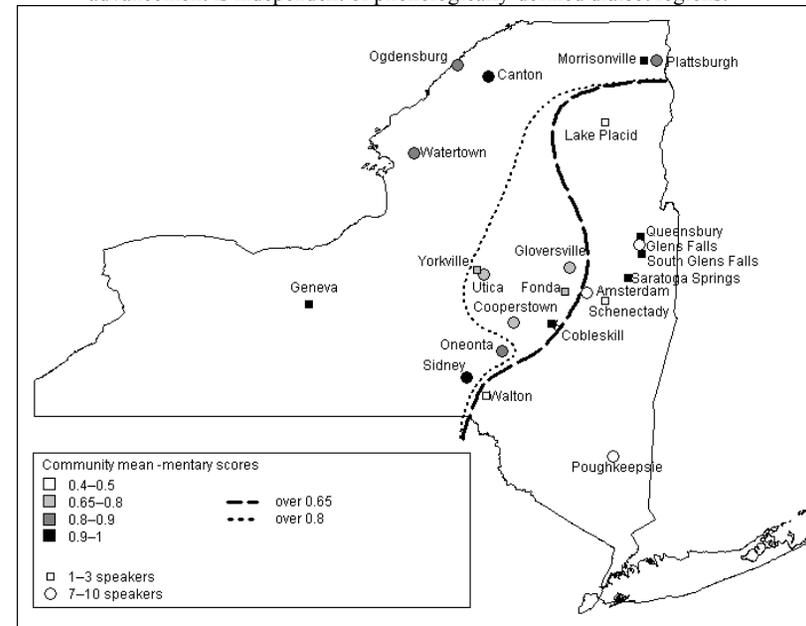
- 74% of (oIC) tokens produced with /oh/
- Only /o/ is used for (oIC) in Hudson Valley core; only /oh/ in Inland North fringe
- Outside HV core, speakers born later than 1957 use /oh/ exclusively for (oIC)

Diffusion of merger per Herzog’s Principle does not cause merger in recipient community’s minimal-pair judgments immediately; rather, diffusion leads to long-term phonetic and phonological changes that cause merger in perception in late stages. NCS does not protect from merger because fronting/backing of /o/ is a **reversible** sound change (Labov to appear), while raising of tense /oh/ is a **unidirectional** change.

Diffusion of raising of non-prenasal /æ/ blocked by featurally distinct prenasal allophone, but diffusion of backing of /o/ not blocked by featurally distinct phoneme /oh/. Labov (1994): in diffusion of merger, unmerged speakers “suspend” the distinction. But in discrete allophony, distinction is productive and can’t be “suspended”.

Analogical change toward secondary stress on *-ary* in words such as *eleméntary*:

- 79% of all *-mentary* tokens have penultimate secondary stress
- Least affected *-mentary* lexeme, especially among older speakers, is *elementary*: more frequent words are more resistant to analogical change
- Penultimate secondary stress least prevalent at eastern edge of NY State; advancement is independent of phonologically-defined dialect regions:

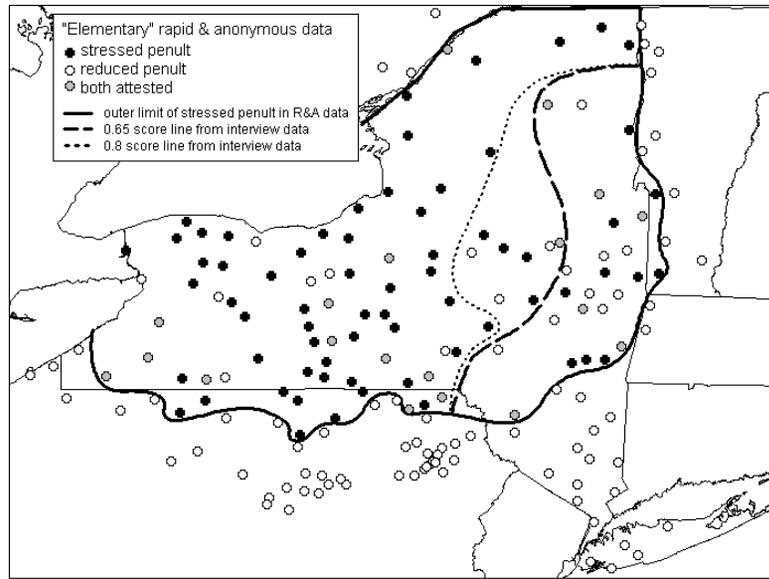


Weighted percentage of secondary-stressed penultimate for *-mentary* words; all sampled communities are over 40%

Demonstrates that pronunciation of a **bound morpheme** can be the **object of diffusion**: in area where *-mentary* is seemingly newer, more frequent word still lags the change; this is expected for diffusion at the morpheme level but not at the lexical level. Evanini (to appear) finds *-mentary* in far western New York as well.

Rapid anonymous telephone survey on *elementary* (Dinkin & Evanini to appear):

- Called school offices across New York State to elicit the word *elementary*
- *-mentary* stress pattern more or less corresponds to all of **Upstate New York**. Since diffusion of lexical features is less phonologically constrained, perhaps lexical isoglosses are more likely to match popularly-recognizable regions like “Upstate”: compare *soda/pop* boundary separating Central and Western NY (Campbell 2003).



Results of rapid & anonymous *elementary* phone survey (Dinkin & Evanini to appear)

Summary of key findings:

- NCS found in communities with SWNE-based settlement origins, as far east as Glens Falls and as far north as Ogdensburg
- Other communities show diffusion of some NCS features, but not much /æ/-raising
- Discrete prenasal allophone of /æ/ may be what blocks raising of non-prenasal /æ/
 - A synchronic phonological rule can protect two allophones from “merger” through diffusion; distinct phonemes don’t have this protection
- However, discrete nasal allophone can coexist with NCS in Inland North fringe
- Small villages near the dialect border often less dialectologically focused than cities
- Tensing before /g/ is eliminated in diffusion of NYC /æ/ system, streamlining the rule
- NCS does not appear to prevent diffusion of low back merger, but raised /oh/ does, probably because of general principles of vowel shifting
- Diffusion of merger need not affect speakers’ phonemic perception immediately
 - Merger can proceed by phonological transfer and approximation simultaneously
- Stressed-penult *-méntàry* is found throughout Upstate New York
- Lexical isoglosses may correspond to popularly-known regional boundaries instead of phonologically-defined dialect areas

Defining dialect boundaries as **obstacles to diffusion** gives dialect boundaries an ontological status as a **cause**, not just a description, of dialect diversity.

References:

- Ash, Sharon (2002). “The distribution of a phonemic split in the mid-Atlantic region: Yet more on short A”. *U. Penn Working Papers in Linguistics* 8.3:1–15.
- Bermúdez-Otero, Ricardo (2007). “Diachronic phonology”. In Paul de Lacy (ed.), *The Cambridge Handbook of Phonology*, 497–517. Cambridge University Press, Cambridge.
- Boberg, Charles (2000). “Geolinguistic diffusion and the U.S.–Canada border”. *Language Variation and Change* 12.1:1–24.
- Boberg, Charles (2001). “The phonological status of Western New England”. *American Speech* 76:3–29.
- Campbell, Matthew T. (2003). “Generic names for soft drinks by county”. Available at <http://www.popvsoda.com/countystats/total-county.html>; viewed 9 October 2009.
- Chambers, J.K. (1994). “An introduction to dialect topography”. *English Word-Wide* 15.1:33–53.
- Dinkin, Aaron J. & Keelan Evanini (to appear). “An elementary linguistic definition of Upstate New York”. Paper to be presented at NVAW 38, Ottawa.
- Dinkin, Aaron J. & William Labov (2007). “Bridging the gap: Dialect boundaries and regional allegiance in Upstate New York”. Paper presented at Penn Linguistics Colloquium 31, Philadelphia.
- Donlon, Hugh P. (1980). *Amsterdam, New York: Annals of a mill town in the Mohawk Valley*. Donlon Associates, Amsterdam, N.Y.
- Evanini, Keelan (to appear). *The permeability of dialect boundaries: A case study of the region surrounding Erie, Pennsylvania*. PhD dissertation, University of Pennsylvania. Available at <http://www.evanini.com/keelan.html>.
- Frothingham, Washington (ed.) (1892a). *History of Fulton County*. D. Mason, Syracuse, N.Y.
- Frothingham, Washington (ed.) (1892b). *History of Montgomery County*. D. Mason, Syracuse, N.Y.
- Herold, Ruth (1990). *Mechanisms of merger: The implementation and distribution of the low back merger in eastern Pennsylvania*. PhD dissertation, University of Pennsylvania.
- Kerswill, Paul (2002). “Koineization and accommodation”. In J. K. Chambers, Peter Trudgill, & Natalie Schilling-Estes (eds.), *The handbook of language variation and change*. Blackwell, Malden, Mass.
- Kurath, Hans (1949). *A word geography of the eastern United States*. U. of Michigan Press, Ann Arbor, Mich.
- Labov, William (1994). *Principles of linguistic change, volume 1: Internal factors*. Blackwell, Malden, Mass.
- Labov, William (2007). “Transmission and diffusion”. *Language* 83.2:344–387.
- Labov, William (to appear). *Principles of linguistic change, volume 3: Cognitive and cultural factors*. Blackwell, Malden, Mass. Available at <http://www.ling.upenn.edu/phonoatlas/PLC3/PLC3.html>.
- Labov, William, Sharon Ash, & Charles Boberg (2006). *The atlas of North American English: Phonetics, phonology, and sound change*. Mouton/de Gruyter, Berlin.
- Platt, Edmund ([1905] 1987). *The Eagle’s history of Poughkeepsie: From the earliest settlements 1683 to 1905*. Dutchess County Historical Society, Poughkeepsie, N.Y.