The Southern Shift: monophthongization of /ay/ → [aː] led to lowering/hacking of /ey/ and /iːy/.
Monophthongization is thus the triggering event (Labov 1994) for the chain shift.
Monophthongization is overall disfavored before voiceless consonants;
but the specific relationship between pre-voiced (PRICE) and pre-voiceless (PRICE)
differs in different parts of the South (Fridland 2003, Thomas 2001).

A modular feedforward architecture of phonology (cf. Bermúdez-Otero 2014, Fruchwald 2013) distinguishes phonetically and phonologically controlled patterns:

• Phonological rules manipulate discrete, categorical phonological entities.
• Outputs of phonological rules are still represented as discrete structural entities.
• Phonetic implementation rules map these to concrete physical articulations.
• Phonetic rules operate gradiently over continuous phonetic space.

A vowel chain shift is a change in phonetic implementation;
this means the entities involved need not be phonemes per se, but any discrete phonological segment, potentially an allophone of another phoneme (Dinkin 2011).

This implies…

• if the Southern Shift is a pull-chain as described…
• and if the modular feedforward account of chain shifts is correct…
• then the relationship between PRICE and PRIZE must have originally been gradient—
a continuum from more diphthongal to more monophthongal.

If the shift had originated with distinct diphthongal and monophthongal allophones,
the original /ay/ position would still be occupied, not leaving space for /ey/ to lower.

So: Was Southern /ay/-monophthongization a phonetically gradient process?

Look at the Inland South, where ANAE (Labov et al. 2006) suggests the shift originated.
ANAE phonetic data contains 13 speakers from Inland South cities, interviewed 1995–6: Birmingham, Ala. (2); Linden, Ala.; Ashland, Ky.; Asheville, N.C. (2); Greenville, S.C. (2); Chattanooga, Tenn. (3); Knoxville, Tenn.; Huntington, W.V.
ANAE reports high rate of monophthongal PRICE in Inland South.
This would not be expected if PRICE & PRIZE were distinct allophones from the outset—
if they were, there’d be no reason for PRICE to “catch up” with PRIZE.

We measure glide target of each /ay/ token, at 5/6 of vowel duration.
(Measurements are normalized using log-mean normalization parameter from ANAE.)

None of the Inland South speakers has categorical allophonic distinction—i.e., one cluster of all PRICE tokens and one of all PRIZE tokens.

Patterns attested in the data:

• Gradient single cluster reaching from more diphthongal to less diphthongal
• All /ay/ uniformly monophthongal
• 2 discrete diphthongal/monophthongal allophones, but PRICE varies between them

Sample Inland South /ay/ glide targets. Belle shows gradency, Horace uniform monophthongization,
Kristen two robust allophones, Thelma mostly monophongs with a few isolated diphthongs.

Kristen B. from Greenville, S.C. is the only one to robustly show two allophones;
a couple others have mostly monophongs with a handful of isolated diphthongs.
If /ay/-monophthongization originated as variable but discrete, like Kristen’s system,
we’d expect to see that pattern in the oldest speakers in the data.

But all three of the oldest speakers (born 1928–35) have gradient distributions.

This indicates that the earliest stage of /ay/-monophthongization visible in ANAE was a gradient process with diphthongs & monophthongs as part of a single distribution.
The diphthongal edge of that gradient distribution is still less diphthongal (i.e., has a lower glide target) than a typical non-Southern speaker’s /ay/—
i.e., it’s not the case that diphthongal /ay/ just stays in place.

What about the speakers who do appear to have two different allophones—e.g., Thelma?

Probably, monophthongization has gone to completion, but a diphthongal variant is
re-introduced from above as a correction to the standard, which is used occasionally.
Whether this is the case for Kristen, and she just corrects to the standard more often,
or whether she just has a different system, is hard to say.
Pushing earlier into the history of the Inland South:
Three speakers born 1896–1922 in western N.C. and eastern Tenn., interviewed 1974 by Ron Butters, show gradient monophthongization with no PRIZE/PRICE differentiation. (Data retrieved from SLAAP archive—see Kendall 2007—and measured at ¼ of vowel duration.)

Beyond the Inland South:

**Raleigh, N.C.** is outside the Inland South (ANAE) / South Midland (Kurath 1949). Southern Shift has been retreating there since 1950s (Dods worth 2013), but *oldest speakers* will show early status of /ay/ in a non–Inland South city. Look at six oldest speakers sampled by Dodsworth (2013), born 1925–1939; glide target measured at ¼ of vowel duration.

The majority of them have much more discrete distinction between diphthong PRICE and monophthong PRIZE than Inland South speakers of similar age.

Sample of oldest Raleigh /ay/ glide targets (excluding ninth, nineteen, ninety). 1925 and 1927 have non-overlapping discrete PRICE/PRIZE; 1928 has possibly gradient pattern.

Use effect of vowel duration to approximate phonetic targets:
assume vowels of longer duration tend to hit closer to phonetic targets.

In *Raleigh*, PRICE is more diphthongal with increasing duration; PRIZE usually isn’t. In *Inland South* older speakers, PRIZE and PRICE don’t differ in effect of duration.

Therefore, in Raleigh, PRIZE and PRICE are often phonologically distinct allophones; in the Inland South, they’re (at least originally) part of a single phonological entity.

**Conclusion:**
The hypothesis that /ay/ is one phonological unit in the early Inland South is supported.

Our data are consistent with a picture wherein:
• /ay/-monophthongization is the triggering event for the Southern Shift;
• chain shifts operate as predicted by a modular feedforward phonological architecture;
• the Southern Shift originated in the Inland South region.

Labov (2007) notes diffusion need not maintain structure or chain-shift causality: In Raleigh, *discrete allophonic alternation* between PRICE and PRIZE is long-standing; monophthongization may have diffused there from Inland South, becoming discrete, or may have originated there independently with a different phonological structure. The Southern Shift needs monophthongization of PRICE to trigger /ay/-backing; presumably the chain shift originated in the Inland South, and then diffused to Raleigh and other non–Inland South parts of the South.

**References:**