A/an and the: allomorphy or phonology?

Marjorie Pak  
LSA Annual Meeting
mgpak@emory.edu  
Emory University January 5, 2014

English a/an is at first sight a very simple alternation: use an before a vowel, otherwise a (1). But is this alternation **phonological** (2a) or **allomorphic** (2b)?

1) **an** apple, **an** interesting book  vs.  **a** book, **a** very red apple

2) a. PHONOLOGICAL:  \( \emptyset \rightarrow n / \_\_ #V \) (n-insertion) or  \( n \rightarrow \emptyset / \_\_ #C \) (n-elision)  
   (Hurford 1972/1974; Perlmutter 1970; Venneman 1974)

   b. ALLOMORPHIC:  
   \( D[-\text{def}] \leftrightarrow \text{an} / _\_ \_ V... \)
   \( \leftrightarrow \text{a} / \text{elsewhere} \)

The obvious problem with the phonological approach is its lexical restrictedness: a/an is the only context where /n/ alternates with \( \emptyset \) in English (3) (Joseph 1997). So it seems simpler just to store a and an as suppletive allomorphs than to posit such a highly specialized phonological rule.

3) a. No general n-insertion:   * my idea\( n \) is, *San\( n \)tan and Rudolph
     b. No general n-elision:    * fountain(\( \emptyset \)) pen, * ope(\( \emptyset \)) door

On the other hand, allomorphy is typically a word-internal phenomenon, but a/an needs to ‘see’ across the word boundary. Once we admit phrasal or external allomorphy into the grammar, we need to ask: What are its implications and restrictions?

According to Mascaró (1996a, 1996b, 2007), external allomorphy provides a special context where phonologically optimizing effects may emerge (TETU). In his OT-based analysis, both a and an are listed as (suppletive) allomorphs of D[-def]; since they are equally faithful, the choice between them is determined by hiatus-avoiding markedness constraints (Mascaró 1996b: 517):

4)  

<table>
<thead>
<tr>
<th>{a,an} book</th>
<th>ONSET</th>
<th>NO-CODA</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \emptyset ) a.book</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>an.book</td>
<td>*</td>
<td>**!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>{a,an} egg</th>
<th>ONSET</th>
<th>NO-CODA</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.egg</td>
<td>**!</td>
<td>*</td>
</tr>
<tr>
<td>( \emptyset ) a.n egg</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Other proposed cases of allomorphy as TETU (Mascaró 1996a, 1996b, 2007; Lee 2009)

a. French \( \text{bo~C vs. bel~V} \) (beau mari, bel enfant ‘good-looking husband/child’)  
   (also nouveau/nouvel ‘new’, ce/cet ‘this’, ma/mon ‘my’, vieux/vieil ‘old’, etc.)

b. Catalan personal definite: \( \text{an~C vs. l~V} \) (en Wittgenstein, l’Einstein)

c. Northwest Catalan \( \text{lo~C vs. l~V} \) (lo pà, l’àmo, ‘the owner/bread’)

d. Ribagorçan Catalan \( \text{ésto/ifo~C vs. étst/íf~V} \) (ésto ñiβre, étst ñome ‘this book/man’)

e. Moroccan Arabic \( \text{C~u vs. V~h} \) (ktab-u, xʕa-h ‘his book/error’) (also i/ja in 1SG)

f. Korean \( \text{C~i vs. V~ka} \) (sok-i ‘inside, NOM’, so-ka ‘cow.NOM’) (Lee 2009)

g. Basque N~du, else tu (argi-tu ‘clear up’, ilun-du ‘darken’) (also dar/tar, ko/go, tik/dik)
Here I look at an alternation that is strikingly similar to *a/an* but far less studied: */ði*/ and */ðə*/ in the English definite article (henceforth *THE*). The basic pattern (5) and the underlying syntactic structures are nearly identical to *a/an*, and assuming that tense vowels are diphthongized, we could view it as hiatus-avoiding on par with *a/an* (Britain & Fox 2009):

5) */ði(j)/ apple, */ði(j)/ interesting book vs. */ðə/ book, */ðə/ very red apple

Despite its initial similarities to *a/an*, I argue that THE is not a case of external allomorphy, but is derived by a structurally restricted vowel-reduction rule.

- I adopt a serialist architecture with allomorphy preceding various kinds of ordered phonological rules, including morphosyntactically restricted phonological rules.
- I show that this model provides a more complete account of the distribution of *a/an* and THE, including the fact that their surface forms are not always phonologically optimizing.

1. */ði* → */ðə* is a relatively natural phonological rule.

In deciding whether a given alternation is phonological or allomorphic, we consider (*inter alia*):

i. to what extent the alternants resemble each other phonologically
ii. to what extent the alternation is lexically and/or morphosyntactically restricted

These are both gradient criteria, so the clearest cases will be at the extremes. Korean *i*/*ka* (4f) is a clear example of allomorphy because (i) the alternants *i* and *ka* are so dissimilar that neither can be plausibly derived from the other phonologically; and (ii) the alternation is restricted to a single morpheme.

What about THE?

i. */ði/* and */ðə/* are phonologically identical except one has a full vowel where the other has */ə/.
ii. This *V~ə* alternation is not restricted to a single morpheme (although it is restricted).

Unlike *a/an* or Korean *i*/*ka*, THE can be phonologically derived by a relatively natural phonological rule – one of unstressed-vowel reduction, a cross-linguistically well-precedented phenomenon (Crosswhite 2004).

*V~ə* alternations are found in many other contexts in English, with */ə/ typically showing up unstressed and before consonants (Chomsky & Halle 1968:111ff):

6) a. *Stylistic variation:* believe, behave, relax, emergency, eraser, enormous, eleven

- While *a/an* and THE have many properties in common, THE is not idiosyncratic or arbitrary to the same degree as *a/an*.
- If we treated THE as suppletive allomorphy, the phonological similarity between */ði/* and */ðə/* would have to be viewed as accidental, as would its parallels to other *V~ə* alternations (6).
Our CHILDES corpus study shows that:
(MacWhinney 2000; see Appendix)

i) Children don’t use prevocalic an or /ði/ consistently until after age 5. (Until they do, they generally insert a glottal stop between /ə/ or /ðə/ and the following word, e.g. a ?elevator.)

ii) Adults are less consistent with THE than with a/an (an adult who never says a apple may sometimes say /ðə/ apple) (p < .0001).

iii) Despite this less-consistent input, children acquire THE slightly earlier than a/an. ¹

Conceivably, children are noticing parallels between THE and other V~ə alternations in English (e.g. (6)) and are therefore able to acquire THE more easily than the unprecedented and arbitrary a/an.

7) JO (5;2): if you don’t want me to take th[ə ʔ]elephant, let me have this one.
   E (3;6): I want you to take th[ə ʔ]el[ə]phant. This elephant.
   JO: I don’t want th[i] elephant. I wanna have the horse. (Sawyer 2-28-92)

2. Analysis

In laying out a phonological analysis of THE, the challenge is to:

- represent the parallels between əi–ə, beauty–beautiful, etc. as non-accidental – e.g. by deriving all these alternations from a single vowel-reduction rule (V[-stress] → ə /__C)

- but avoid an analysis that overgenerates. THE is an exceptional case: [-low] vowels don’t usually reduce word-finally (or even nec. word-internally) (Chomsky & Halle 1968:111):

     b. but cf. th/ə/ happ/i/ness

The informal observation is that the behaves like ‘part of’ the following word for the purposes of vowel reduction.

¹ Newton & Wells 1999 report similar results in a study of spontaneous speech, sentence repetitions and story repetitions by 94 British 3- to 7-year-olds. The frequency of adult-like an lagged behind the frequency of adult-like /ði/ by approximately 5-15 percentage points at every age (e.g. 27% vs. 35% at age 3, 80% vs. 89% at age 7).
I adopt a **derivational (serialist) model of PF**, in which (morpho-)syntactic structures are converted to phonetic strings by a series of PF operations, including:

- **Linearization** (word-internal and phrasal)
- **Vocabulary insertion** (exponention of functional heads, including allomorphy)
- Limited structural **readjustments** (e.g. ‘cliticization’ or local dislocation)
- **Phonological rules** of various kinds

I also assume that:

i) Syntactic structures – including internally complex words – are spelled out in **phases** instead of all at once (Chomsky 2000 et seq., Marvin 2002, Embick 2010).

ii) **Phonological rules apply at different stages in PF and thus have access to different kinds of information** (Kaisse 1985, Seidl 1999, etc.). Specifically, phonological rules apply as phases of increasing size are spelled out and linearized (Pak 2008).

**Phonological analysis of THE:** English has a cyclic, word-internal **vowel reduction** rule (VR).

\[V[-stress] \rightarrow \bar{o} [\_C] \quad (VR)\]

VR applies once on each word-internal phase, to the phonetic material currently being spelled out. It does not affect material spelled out on previous phases (cf. Marvin 2002).

In the derivation of *happiness*, \([a [\sqrt{\text{HAPPY}}] \emptyset]\) is spelled out first: /haepi/. VR does not apply to /i/ because there is no following C.

On the next cycle, \([n -\text{ness}]\) is spelled out. VR may apply within \([n -\text{ness}] /n\bar{e}\) but cannot render changes to the previously spelled-out phonetic structure /hæpi/.

During spell-out of DP...

a. **D is cliticized to the following word** via Local Dislocation (cf. Embick 2010:87ff):

\[D \sim [a [\sqrt{\text{HAPPY}} + \emptyset] + \text{ness}] \rightarrow [D [n [\sqrt{\text{HAPPY}} + \emptyset] + \text{ness}]]\]

b. Vocabulary insertion: \(D[+\text{def}] \leftrightarrow \overset{\text{d}}{i}\)

c. VR applies to \(\overset{\text{d}}{i}\). Its context is met by the /h/ in /hæpi/, so \(\overset{\text{d}}{i} \rightarrow \emptyset d\)

Children are assumed to start out with one form for \(D[+\text{def}], \overset{\text{d}}{a}\), and eventually learn a grammar with underlying \(\overset{\text{d}}{i}\) that undergoes VR. Adults continue to go back and forth between these grammars at varying rates depending on dialect, register and other factors (Britain & Fox 2009).
3. Extensions, including vowel reduction in the indefinite article (/æn/ → /ən/, /e/ → /ə/)

Since the VR rule in (9) is limited to stressless vowels, it automatically accounts for alternations like (10) – function words that retain their full vowels when stressed:

    b. I delivered a letter /tú/ Bill, not from Bill.
    c. He c/ə/n finish early, but he won’t.
    d. I voted f/æ/r it, not against it.

Notably, /a/an also shows up with a full vowel when stressed. Although /a/an is often implicitly assumed to be a two-way alternation: /ə/ ~ /ən/, many adults also have the forms /æ(j)/ and /æn/, which alternate with /ə/ and /ən/ (resp.) following the same pattern as the, to, etc.:

11) a. I want /æn/ apple, not two apples.
    b. I want /æj/ book, not two books.

In the architecture adopted here, we can lay out a two-step derivation for /a/an that accounts for all four forms. After article cliticization (#a on p. 4), The suppletive allomorphs e and æn are inserted; then vowel-reduction applies. (The derivation of THE involves the same steps, but only one allomorph is inserted at Step 1.)

![Diagram](https://via.placeholder.com/150)

Under an exclusively allomorphic analysis of /a/an and THE, however, we would have to:

i) assume four-way allomorphy for /a/an (e, æn, a, an)
ii) posit a series of vocabulary-insertion rules that insert full-vowel variants when [+stress] and a variants when [-stress] – but leave this correspondence unexplained.

As further support for this two-step derivation, notice that the D[-def] variant /æj/ shows up not only when stressed and pre-consonantal (11b) but also *before the pause-fillers uh/um* – without an intervening silence:

12) I’d like /æj/ um... a large coffee and a croissant.
    This is /æj/ uh... part of a trailer truck. (Braunwald ale33)

---

2 Notice that there is almost no phonological resemblance between e and æn, suggesting that Step 1 of /a/an may indeed be a case of true allomorphy (criterion (i) from p. 2). A phonological treatment deriving all four forms from /e/ is possible, but it would require *two* highly idiosyncratic rules preceding vowel-reduction: n-insertion (2a) and vowel lowering/laxing (e → æ).
This is also a context where /ði/ is used:

13) And from the-uh /ði, jo/ spectator point of view it looks like airplanes going in all directions. (Clark & Fox Tree 2002: 103)

As noted by Clark & Fox Tree (2002), uh and um act like ‘normal’ words in many respects. They are visible for most phonological rules – e.g. Flapping:

14) Bu/r/ uh ... I think tha/r/ uh ...

But unlike other V-initial words, uh and um do not trigger insertion of an in D[-def]. Why not?

15) a. I’d like /æ, ?*an/ um...
   b. I’d like /æ, an/ umbrella.

In the current model, we can hypothesize that interjections like uh and um are not present at the stage when vocabulary insertion applies to D[-def], but are added later in the PF derivation. ³

16) Derivation of I’d like /æ/ um...
   a. Linearization of DP: D[-def] (nothing follows D[-def] at this stage)
   b. Vocab insertion: D[-def] ↔ e ( _V context for æn isn’t met; so e is inserted)
   c. Pause-filler insertion: e um
   d. Vowel reduction: e um (NA because _C context isn’t met)
   e. Glide insertion: ej um

4. More rule-ordering effects: a/an and THE are not always phonologically optimizing.

As noted in section 2, when children use a/ðo prevocally, they frequently insert /ʔ/ (17). Adult speakers of dialects with variable a/an and THE also use /ʔ/ in this context (Gabrielatos et al. 2010, Britain & Fox 2009).

17) a. he has [ə ʔ] allergy       (Braunwald 3-05-28b)
   b. if you don’t want me to take [ðo ʔ] elephant       (Sawyer 2-28-92)

/ʔ/ in (17) seems to be a hiatus-breaking mechanism, which is eventually replaced (variably or categorically) by /n/ in D[-def] and /j/ in D[+def].

However, /ʔ/ has another function in many varieties of English: it is frequently found at the beginning of a prominent (e.g. pitch-accented) V-initial syllable (Garellek 2012).

18) He’ll fall asleep ʔAnywhere.

Notably, this ‘emphatic /ʔ/’ can be used in non-hiatus contexts – including after an or ði:

19) a. That’s an ʔéxcellent idea.
   b. What an ʔidiot.
20) a. That was ði/ ʔóther guy.
   b. She’s got the knobs for ði/ ʔár conditioner.   (Braunwald 1-05-10)

³ Cf. Rotenberg’s (1978) treatment of parentheticals in e.g. This is a(*n), although I hate to admit it, very silly idea.
Under an analysis of *a/an* (and/or THE) as TETU (Mascaro 1996b, ex. (4)), such utterances are problematic. *[nʔ]* is not a possible onset in English, so (19b) must be syllabified as \textit{an.ʔidiot}. But \textit{an.ʔidiot} should be beaten by either \textit{a.ʔidiot} or \textit{a.n idiot}, since it has more NO-CODA violations:

\begin{tabular}{|c|c|c|}
\hline
 & ONSET & NO-CODA \\
\hline
\textit{an.ʔidiot} & ** & ** \\
\textit{a.n idiot} & ** & * \\
\textit{a.ʔidiot} & ** & * \\
\hline
\end{tabular}

In the current model, Emphatic /ʔ/ Insertion can be analyzed as a relatively late, optional phonological rule, applying well after both Vocabulary Insertion and Vowel Reduction.

22) a. Vocab insertion (D[-def] $\leftrightarrow \text{æn} / \_\_\_V...$) \textbf{æn idiot}  \\
    b. Vowel reduction \textbf{an idiot}  \\
    b. Emphatic /ʔ/ Insertion (optional) \textbf{an \ ʔidiot or \ an idiot}

Now consider Flapping again. Flapping can be shown to apply even later than (and be blocked by) Emphatic /ʔ/ Insertion:

23) a. That’s Fa\[r\] Albert.  \\
    b. That’s Fa\[t, *r\] ?Albert, not Flat Stanley. (Flapping blocked by /ʔ/)

As a late rule, Flapping is dependent on the (final) surface phonetics of an utterance: if /t/ is followed by /ʔ/ on the surface, it cannot become a flap.

\textit{A/an} and THE, while they may play a role in creating optimal syllables, do not operate on surface phonetic strings in the same way as Flapping. In the current model, this is because their pronunciation is determined by early rules and thus cannot be affected by later PF processes.

5. Conclusion

My analysis uses a Local Dislocation rule that effectively makes D[+def] ‘part of the same word’ as the following segment. This rule is very similar to the rule of Article Cliticization for French \textit{l’arbre}, \textit{l’ancien regime}, etc., proposed in Embick 2010:87ff, and we might ask if something similar could be at work in other cases of apparent external allomorphy – e.g. those listed in (4), English \textit{a/an}, and prepositional alternations like (24) (Britain & Fox 2009):

24) a. I’m flying t/u/ Atlanta. (/u/ before V)  \\
    b. I’m flying t/a/ Dallas. (/a/ before C)

An important area for further inquiry concerns the locality conditions that Local Dislocation is subjected to – what kinds of heads can undergo Local Dislocation? Can they be internally complex? Can they be phonologically ‘heavy’? etc...

\textbf{Take-home message:} External allomorphy may be needed for instances of true suppletion. But there are good reasons to treat some alternations phonologically. I argued that English THE is \textbf{not external allomorphy}, but derived by a structurally restricted phonological rule. This treatment allows us to…
− recognize parallels between THE and other V ~ a alternations
− account for the distribution of the indefinite-article forms /e/ and /æn/ (as well as a/ən).
− explain various rule-ordering effects observed with a/an, THE, pause-fillers and /ʔ/,
  including the fact that a/an and THE are not always phonologically optimizing.

Acknowledgements
Thanks to David Embick, Kim Edmunds, Ian Kirby, Chris Naber, my anonymous LSA reviewers,
and the audience at the December 2013 Emory Linguistics Colloquium for helpful feedback
and discussion. Thanks to Kim Edmunds, Chris Naber and Greg Tracy for help with
CHILDES corpus data retrieval and coding, and to the Emory Program in Linguistics for funding
for this project. Finally, thanks to the CHILDES database contributors (see Appendix) for the
corpus data presented here.

Appendix: CHILDES corpus information

<table>
<thead>
<tr>
<th>Corpus</th>
<th>Children (N)</th>
<th>Adults (N)</th>
<th># a/an tokens</th>
<th># THE tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bliss, L. (1988). The development of modals. The Journal of Applied Developmental Psychology, 9, 253–261.</td>
<td>3 (5;4, 4;6, 6;1)</td>
<td>1</td>
<td>7</td>
<td>--</td>
</tr>
<tr>
<td>Braunwald, S. R. 1993. Differences in two sisters' acquisition of first verbs. ERIC Document Reproduction Service.</td>
<td>2 (1;0-6;0, 4;0-7;0)</td>
<td>3</td>
<td>171</td>
<td>319</td>
</tr>
<tr>
<td>Brown, R. (1973). A first language: The early stages. Cambridge, MA: Harvard University Press.</td>
<td>2 (2;3-4;10, 2;3-5;1)</td>
<td>10</td>
<td>794</td>
<td>--</td>
</tr>
<tr>
<td>Ervin-Tripp</td>
<td>12</td>
<td>9</td>
<td>80</td>
<td>53</td>
</tr>
<tr>
<td>Kuczaj, S. (1977). The acquisition of regular and irregular past tense forms. Journal of Verbal Learning and Verbal Behavior, 16, 589-600.</td>
<td>1 (2;4-5;0)</td>
<td>3</td>
<td>336</td>
<td>--</td>
</tr>
<tr>
<td>MacWhinney, B. (2000). The CHILDES Project: Tools for analyzing talk. Third Edition. Mahwah, NJ: Lawrence Erlbaum.</td>
<td>2 (0;6-8;0, 0;7-5;6)</td>
<td>2</td>
<td>365</td>
<td>543</td>
</tr>
</tbody>
</table>

4 Tokens of THE were only retrieved from corpora with audio recordings.
|----------------|---------------------------------------------------------------------------------------------------------------|

**References**


