HOW TO DO THINGS WITH JUNK: EXAPTATION IN LANGUAGE EVOLUTION[1]

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> *Eine ... wichtige Eigenschaft*
> *aller Lebewesen, die wir bei*
> *der Kenntnis der Spielregeln*
> *des evolutiven Geschehens ohne*
> *weiteres verstehen, ist die*
> *große "Konservativität ihrer*
> *Strukturen. Durch eine Verän-*
> *derung der Lebensweise, beson-*
> *ders wenn sie Anpassungen an*
> *einen neuen Lebensraum erfor-*
> *dert, können alte Struktur-*
> *merkmale sinnlos werden.*
>
> --- Konrad Lorenz (1978:23)

1   Exaptation

One of the less rewarding "interdisciplinary" behaviours is
lifting theoretical concepts from subjects not our own, and
using them in contexts far removed from the originals. Such
borrowings often turn from theoretical claims into sloppy
metaphors, and lead to a kind of vulgar X-ism, the result
of overenthusiastic appropriation with insufficient sense
of the subtlety or precise applicability of the original.
(Spencer's "Social Darwinism" is a nice example, as is vul-
gar-Freudian literary analysis or sociology.)   Linguistics,
being less unique than linguists often think, is no exception.
Praguian and neo-Praguian functionalism may be a kind of vul-
gar Darwinism, erroneously extending the notions of 'adapta-
tion' or 'selection' to the inappropriate domain of language
systems --- see (Lass 1980). But every once in a while
this kind of transfer seems to work (like Darwin's borrowings
from late 18th-century Scottish economic theory); if not
through direct substantive applicability, then by focussing
on new ways of interpreting old data, or providing a basis
for linking disparate phenomena as instances of a (new, puta-
tive) "natural kind".

The term "exaptation" comes from evolutionary biology. It was coined by S.J. Gould and E.S. Vrba (1982) as, in their title, "a missing term in the science of form". In a popular summary, Gould (1983:171) writes:

> "We wish to restrict the term adaptation only to those structures that evolved for their current utility; those useful structures that arose for other reasons, or for no conventional reason at all, and were then fortuitously available for other changes, we call exaptations. New and important genes that evolved from a repeated copy of an ancestral gene are partial exaptations, for their new usage cannot be the reason for the original duplication."

The reference here is to the presence in the cells of many organisms of large amounts of "redundant DNA" in the form of duplicate genes. Gould and Vrba point out that about a quarter of the genome of fruitflies and humans exists in the form of "middle-repetitive DNA", some genes having up to several hundred copies. They (1982:10f) argue that this surplus DNA is of immense evolutionary importance. It serves as a locus for phenotype-neutral genetic change, which can occur while the original DNA goes about its business. But most important from a theoretical point of view, there's no way it could have evolved (without backwards causation) "for the purpose of" providing such a future reservoir. Its use for such things is, in their terms, an exaptation.

A perhaps clearer macro-level example is the development of feathers by the dinosaur lineage ancestral to birds. Since it now seems that Archaeopteryx was either flightless or a very poor flyer (judging among other things from the architecture of its shoulder-girdle), and yet was fully feathered, it can be argued that feathers originally developed as a thermoregulatory device for warm-blooded proto-birds living in high latitudes, and were later opportunistically capitalized on or coopted for flight -- (Bakker 1975, Ostrom 1979). Exaptation then is the opportunistic cooptation of a feature whose origin is unrelated to its subsequent use.

One of the consequences of this view is that organisms
(and I suggest that the same applies to other historically
evolved systems, like languages) may in their structure
show a certain amount of "bricolage". They are to some
extent cobbled together, and the remnants of earlier cob-
blings can be recobbled into new structures. Konrad Lorenz
(1978:25) has a lovely image of an organism growing by evo-
lutionary accretion. It begins like a pioneer's shack,
which serves as the nucleus of a grand new structure gra-
dually erected around it. In the course of time the
original shack becomes a kind of junkroom, and eventually
nearly every room in the growing house gets used for some
non-original purpose. We see in an organism "eine Menge
Baumerkmale, die Überbleibsel einer 'Anpassung von gestern'
sind". A typical exaptation is the redeployment for a new
purpose of one of "yesterday's adaptations".

The important methodological point that Gould and Vrba make
is that a totally "selectionist" evolutionary theory is
constraining and heuristically unproductive. By not insis-
ting on the "utility" of all parts of an organism, but
allowing for "nonaptations" (features of no purpose, doing
nothing) as well as conventional adaptations, they (1982:13)
permit organisms the freedom to evolve: "the path of evolu-
tion --- both the constraints and the opportunities ---
must be largely set by the size and nature of this pool of
potential exaptations".

I want to apply this same kind of thinking to language
change. Rather than viewing languages in the classical
"structuralist" way as (almost) systems où tout se tient,
I would rather see them as Gould (1983:101) suggests we
see organisms: "bundles of historical accidents, not per-
fect and predictable machines". That is, to see language
change as "mosaic evolution"; as Gould (ibid.) puts it,
"an animal's parts are largely dissociable, thus permitting
historical change to proceed".

I suggest that organic exaptation has a linguistic parallel, which may throw some light on the strategies languages use in their development. The idea may allow us to recognize a common strategic thread running through well known but previously not related (or relatable) phenomena. We may already know that X and Y exist; but if we're on the right track we get somewhere interesting by recognizing X and Y as previously unconnected instances of Z. I think there is a reasonably common sort of language change, occurring in many diverse guises, that can insightfully be seen as a kind of exaptation. So, with all the caveats proper to cross-disciplinary transfers, I will use the term, with a certain looseness, to highlight a particular kind of historical development.

I will illustrate with two examples from the history of Germanic. They have neither been generally recognized as odd (which on reflection they certainly are), nor as simi-lar (which they can be argued to be). The first involves the redeployment of the morphological exponents of an ori-ginal aspect opposition as markers of number concord; the second the downgrading of a syntactic contrast to mark the morphophonological properties of certain stem-classes.

A simple abstract case (to be fleshed out in the next sec-tion) will illustrate the general principle. Say a lan-guage has a grammatical distinction of some sort, which it codes by means of morphology. Then say this distinction is jettisoned, prior to the loss of the morphological mate-rial that coded it. This morphology is now, functionally speaking, junk. There are three things that can in princi-ple be done with it:
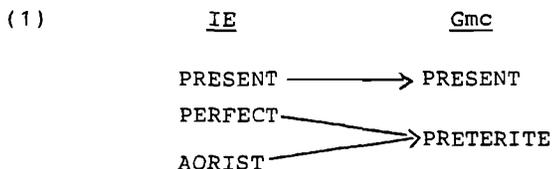
    (i)   Dump it entirely.

    (ii)   Keep it as marginal garbage or nonfunctional/ nonexpressive residue ("suppletion", "irre-gularity").

    (iii) Keep it, but instead of relegating it as in (ii),

use it for something else, perhaps equally
systematic.

Option (iii) is linguistic exaptation. The point is of
course that it is an option. Languages may operate "waste-
fully", by dumping material that no longer does anything
particular, or in a "conservationist" mode, by recycling.
This may be a useful parameter for the typology of change.

2   From semantics to concord: the strong verb preterite

One of the great innovations characterizing Germanic is the
destruction of the Indo-European aspect system. This was
replaced by one based solely on tense-contrast, with no
grammaticalized aspects. In crude outline, the IE present
remained as the Germanic present, and the two "past" cate-
gories, perfect and aorist, merged to form a new, conflated
preterite:[2]

(1)   <u>IE</u>   <u>Gmc</u>

             PRESENT ──────────⟶ PRESENT
             PERFECT─────────
                               ⟶PRETERITE
             AORIST──────────

In the weak verb, the aorist/perfect merger is not only
semantically complete: it also involves dumping of the
morphological material that coded both categories. Even
the earliest forms, like NWGmc *talgidai* "I carved"
(Nǿvling Clasp, c. 200 AD: Antonsen 1977:30) show no sign
of either IE perfect or aorist morphology. This form for
instance shows only a root with inherent *o*-grade vocalism
(*/dolgh-/: cf. Skr *daláyati* "he splits", L *dol-á-re*
"hew", OIc *telgia* "carve" < */talɣ-ja-/) --- plus the
usual weak preterite machinery of stem + theme-vowel /-i-/
+ tense-suffix /-d-/ + personal ending.   At the

beginning of Germanic attestation then the merger and loss
of original morphology is complete (on the exponents of
the morphology see below). The new suffixal preterite took
over the combined semantic ranges of both aorist and per-
fect (or better, the distal time-deixis underlying them)
and instantiated it in a totally novel way.

The strong verbs however were more conservative, and re-
tained --- in a drastically altered capacity --- a major
portion of the original contrast-instantiating morphology.
To see what happened we have to look back at one important
pattern of morphological coding of aspect in Indo-European,
viz. ablaut. Many verbs showed a standard pattern in which
e-grade of the root coded present, o-grade coded perfect,
and zero-grade coded aorist (whatever other material might
have been involved). The type could be Greek present indi-
cative active 1 sg λείπ-ω "I leave", perfect λέ-λοιπ-α ,
aorist έ-λιπ-ον . The stem here is obviously /l_ip/, so
that ει /ei/ = e-grade, οι /oi/ = o-grade, and λιπ-
/lip-/ represents zero. That is, "zero" in the sense that
the stem-vowel has deleted, and the /-i-/ represents not a
"vowel" (morphophonemically) but part of the root.

There is however another common aorist type, which shows
lengthened (usually e-) grade, and appears in an important
class of Latin perfects which stem from earlier aorists
--- see (Buck 1933:par. 413). Examples are present e-
grades ĕd-ō "eat", vĕn-i-ō "come", lĕg-ō "read",
perfects ēd-ī, vēn-ī, lēg-ī. (These are to be disting-
uished --- historically --- from secondary lengthenings
in velar-final stems with old sigmatic aorists like
rēx-ī < */reg-s-i:/ and stems in /-n/ like mān-s-ī <
*/man-s-i:/, presents rĕg-ō "rule", mān-e-ō "remain".)

The important thing for our purposes is the existence in IE
of at least one important pattern of aspect marking in which
the present has e-grade of the root, the perfect o-grade,
and the aorist either zero or lengthened e-grade:

(2)   PRES   PERF   AORIST

            e   ~   o   ~ $\begin{Bmatrix} \emptyset \\ e: \end{Bmatrix}$

.

With this as background, consider the vocalic patterns of
the Germanic strong verb classes I-III, here illustrated
from Gothic and Old English: PRES = present system (exem-
plified by the infinitive), $PRET_1$ = preterite 1, 3 sg,
$PRET_2$ = preterite 2 sg and plural --- for the usage and
discussion see (Lass & Anderson 1975:ch. I):

(3)   PRES $PRET_1$ $PRET_2$

    I "bite"   ⌠ Go beit-an   bait   bit-um
                   ⌡ OE bīt-an   bāt   bit-on

    II "bid"   ⌠ Go -biud-an   bauþ   bud-um
                   ⌡ OE bēod-an   bēad   bud-on

    III "help"   ⌠ Go hilp-an   halp   hulp-um
                   ⌡ OE help-an   healp   hulp-on

Some etymological comment may be useful for perspective.
In class I, where Gothic ⟨ei⟩ = /i:/, both Go, OE /i:/
go back regularly to IE */ei/ (Go *steigan*, OE *stīgan*
"ascend" = Gr στείχω). In class II, Go /iu/, OE /eo/
reflect */eu/ (-*biudan*, *beodan* Gr πεύθ-ο-μαι "inquire").
Go /au/, OE /æa/ ⟨ēa⟩ continue */au/ (Go *aukan*, OE
ēacian "increase" = L *augeō*); and Gothic /i/ in class
III PRES shows a general raising of IE */e/. For $PRET_1$,
Germanic */a/ as in *halp* and the first elements of the
nuclei in *bait*, *bauþ* can represent not only IE */a/ (Go
akkrs "field" = L *ager*) --- but also IE */o/ (Go *ahtau*
"eight" = L *octō*). On this basis PRES in classes I-III
reconstructs with root */e/ and $PRET_1$ with root */o/: they
can be seen easily as continuations of IE present *e*-grade
and perfect *o*-grade respectively.

Now to PRET$_2$. Germanic /uR/ (where R = nasal or liquid)
typically reflects an IE zero-grade */R/: Go *wulfs*, OE *wulf*
"wolf" < */wl̥k^w-ó-s/ (cf. Skr *vr̥k-á-h*). Thus the root /u/
in class III goes back to a syllabic resonant, while the
/i/ in class I and the /u/ in class II are residues left
by the deletion of the nuclear vowel in /Vi/, /Vu/ stems,
i.e. *bit-* is parallel to Gr λιπ , etc.

Now if PRES and PRET$_1$ reconstruct as stemming respectively
from IE present and perfect (as far as the sources of their
nuclear vowels are concerned), then the zero-grade in PRET$_2$
is unlikely to reflect anything but a zero-grade aorist.
Aside from anything else, it's more parsimonious to keep
everything in the family. And since there is nothing in
Germanic (or IE) historical morphophonology to support an
alternation /a/ ~ /u/ (or /o/ ~ ∅) as a primary marker of
number, the only reasonable source for the whole vocalic
pattern is the old verbal ablaut. (This is of course a
handbook commonplace, since the strong verb classes are
typically referred to as "Ablautsreihen"; but the argu-
ment is rarely if ever made fully explicit.) So behind
the class I-III alternations we can see an early Germanic
archetype of this kind:

(4)		PRES	PRET$_1$	PRET$_2$
	I	-eiC-	-aiC-	-iC-
	II	-euC-	-auC-	-uC-
	III	-eRC-	-aRC-	-uRC-

And this in turn reflects a pre-Germanic archetype:

(5)		PRES	PERFECT	AORIST
	I	-eiC-	-oiC-	-iC-
	II	-euC-	-ouC-	-uC-
	III	-eRC-	-oRC-	-R̥C

Class I then is directly equivalent to the old alternation
pattern λεⲥπ-, λοⳑπ- , λⳑπ- , and so on (the labels
"I-III" for IE do not of course reflect a "system" of verb
classes, but their origin types). The first three classes
continue the classic ablaut series */e/∼ */o/∼ ∅, with later
changes leading to the attested stem-shapes.

Classes I-III have roots with a heavy syllable (/-VVC/,
/-VCC/). The situation is slightly different with classes
IV-V, which continue a type with a light root syllable.
These also show what we can now recognize as an o-grade per-
fect in $PRET_1$, but a lengthened e-grade in $PRET_2$. Given
the reasonably unambiguous pairing of perfect/aorist in
I-III, and the o-grade perfect in IV-V, this is a straight-
forward interpretation:

(6)			PRES	$PRET_1$	$PRET_2$
IV	"bear"	Go	baír-an	bar	bēr-um
		OE	ber-an	bæ r	bæ r-on
V	"eat"	Go	it-an	at	ēt-um
		OE	et-an	æ t	æ t-on

Go ⟨aí⟩ = [ɛ], a predictable reflex of */e/ before /r/;
Go /e:/, OE /æ:/ continue IE */e:/, as in L ēd-ī, itself
an old aorist. We can now add to the archetypes (4-5) the
following:

(7)		GERMANIC			IE		
	PRES	$PRET_1$	$PRET_2$		PRES	PERF	AOR
IV	-eR-	-aR-	-e:R-		-eR-	-oR-	-e:R-
V	-eC-	-aC-	-e:C-		-eC-	-oC-	-e:C-

The IE-to-Gmc development can be diagrammed as follows
(taking class III as an exemplar --- only phonological
details will vary from class to class):

(8) IE   PRES   -eRC-   PERF   -oRC-   -RC-   AORIST
                                              °

                                    PRET

     Gmc PRES   -eRC-   PRET₁ -aRC-   -uRC-   PRET₂

The scenario encapsulated here would seem to be:

    (i)   Loss of the (semantic) opposition perfect vs.
           aorist.

    (ii)   Retention of the diluted semantic content 'past'
           shared by both (i.e. loss of aspect, retention
           of fundamental time-deixis).

    (iii) Retention of the morpho(phono)logical expo-
           nents of the old categories perfect and aorist,
           but divested of their oppositional meaning.

    (iv)   Redeployment of the now semantically evacuated
           exponents as a marker of a secondary (concor-
           dial) category, number. In effect, re-use of
           the now "meaningless" old material to bolster
           an already existing concordial system, but in
           a quite new way.

After the merger (i), the remnants of the perfect/aorist
ablaut system, divorced from the opposition they instan-
tiated, are historical junk. They are pressed into the
service of a new linguistic function (which was in fact
always coded anyhow, though mainly by suffixes), rather
than being dumped altogether. (The dumping of the system
comes later, when the redundant vowel-grade + suffix coding
of plurality is lost in most Germanic dialects, with re-
tention only of suffix as in German or Dutch, or loss of
number marking completely as in English and Afrikaans.
Only Icelandic maintains the distinction still, as in
class I *bíta* "bite", PRET₁ *beit*, PRET₂ *bitum*, class II
bjóða "offer", PRET₁ *bauð*, PRET₂ *buðum*, etc.)

What is of prime interest here is the conceptual novelty:
ablaut in the IE sense was never used for this kind of
thing before. Indeed, given its original conditioning
factors (syntactic category in some cases, position of ac-
cent in others) it never could have been. With the break-
up of both the original aspect system and the function of
ablaut itself, the old forms were available for cooptation.[4]

3   From syntax to (mostly) morphology: Afrikaans adjectival -e

My second case is not so much one of massive exaptation of
an old system as a new and conceptually innovative form of
inflection, with no concordial (and virtually no semantic)
function. But it is still exaptive, in that the surface
exponents of an old contrast (if in a rather degraded form)
are retained, and pressed into a quite new service.

All Germanic languages except English show some remnants
of the old Germanic adjectival inflection. (English kept
something of it until about 1400   --- see (Mustanoja
1960:275ff)). Despite complex local developments, such as
a dual declension ("strong" vs. "weak")[5] the principles
are more or less those of standard IE adjective inflection:
the adjective is an "empty" category, all of whose inflec-
tions are concords. The triggers of these concords are
syntactic: features of the whole NP such as definiteness
or quantification, or features of the head noun, such as
(surface) case, number, and gender.

The historical background of the Netherlandic adjective
system is obscure. In particular, we have only fragmentary
attestation of the declension in the one corpus that could
in a way be called "Old Dutch" --- the Old Low Franconian
Laws and Psalm translations.[6] The general inflectional
principles of the older-style dialects can however be il-
lustrated with OLF examples:

Lass, 44

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(9) (i)   an   all  -  ero    erth  -  on        [Ps. 18:4]
          to   ALL  -  fem    earth -  weak
                       dat     fem      oblique
                       sg               fem
          "to all the earth"

   (ii)   fan  ho   -  on     himil -  i         [Ps. 18:6]
          from HIGH -  masc   heaven - masc
                       dat     masc    dat
                       sg               sg

          (Texts from (Markey 1976).)
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By Middle Dutch, the strong/weak adjective distinction had
been lost --- see (Van Loey 1970b:269f). The adjective
often took its oblique form from the inflected article,
and both endingless and inflected forms were used in the
same context. We can however extract a generalized para-
digm, of this type:

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(10)                 m          n          f         pl

          NOM        -e         -e         -e        -e
          GEN        -(e)s      -(e)s      -er       -er
          DAT        -en        -en        -er       -en
          ACC        -en        -e         -e        -e
```

Even though both historical weak and strong forms could be
used in the same context (des goed-en/goet-s man-s "the
good man's"), and there was great messiness and variation,
and even though the system (or lack of it) seems quite
innovative with respect to earlier Germanic models, it is
still --- and this is the vital point --- a morpho-
syntactically based one. Even in modern Dutch, where the
control of adjective inflection is wildly different from
anything that was possible in Old or Middle Germanic, the
triggers for adjective inflection are still of roughly the
same type.

So much for early background. Since the developments in
Afrikaans are late (post-17th-century), we will not be
concerned in detail with older systems and their decay and
alteration, but with the type of late pattern that Afri-
kaans deviates from, and the nature of that deviance. For
17th-century Dutch, despite an enormous amount of varia-
tion,[7] we can extract some fairly clear principles, not
unlike those still in operation. The old three-gender sys-
tem had generally broken down, and collapsed to a two-way
opposition "common" vs. neuter, signalled primarily by the
definite articles: common *de* vs. neuter *het*. Aside from
survivals of the old genitive and dative inflections, the
adjective was essentially either endingless or in -*e*.[8]
Since the Afrikaans system is built entirely on the con-
trast Adj-∅ vs. Adj-*e*, I will restrict my remarks to this.

The primary controls on the presence vs. absence of -*e* were
(a) the gender of the head noun (neuter favoured lack of -*e*),
and (b) the nature of the determiner (if any): indefinite
and quantified nouns favoured -*e* if common and zero if neu-
ter. Definites were (and still are) variables. Preferen-
tially neuters are endingless, and commons take -*e*, as do
(tendentially) plurals of both genders.

The system was obviously more complex and subtle than this,
but the neuter/common and indefinite/definite as well as
singular/plural oppositions make the point. The condition-
ing of -*e* vs. -∅ is purely morphosyntactic (or lexico-
semantic in the case of gender). But even when an "inter-
nal" property of a noun (like gender) is involved, it is
the syntagmatic environment or "external" environment that
determines the shape of attributive adjectives. (Predi-
cate adjectives in any case are endingless.)

In early Afrikaans (Proto-Afrikaans, <u>Kaapse Nederlands</u>, or
whatever one wishes to call the language from 1652 to about
1750), the Dutch system collapsed completely, and was re-
placed by something totally novel. The first stage of this

process was the loss of grammatical gender. The erosion
of the *de/het* distinction was already underway in the 17th
century, and both *de* and *het* were replaced by the genera-
lized *die* by about 1740. The reorganization of the adjec-
tive system to be described below was complete in essence
by around 1775 (Raidt 1983:149f).

Now it would seem likely that once the basic trigger of
gender was lost, the distribution of *-e* would for a time
be close to random. Each adjective "had" a form in zero
(the base or predicate-position one), and one in *-e*, and
the absence of gender-specification should reasonably al-
low for either one surfacing in a given context. That is,
one might expect indefinite neuters in *-e* like *een kleyn-e
stuk* "a little piece", *witt-e water* "white water", and
zero-ending commons like *een ander plaats* "another place",
een yzer harpoen "an iron harpoon", alongside the "correct"
types *een kleyn N_n*, *een ander-e N_c*. And indeed, in the
"transition" period between the Dutch and Afrikaans systems
this is precisely what we do find. (The "deviant" forms
are from (Scholtz 1981:129), which gives an excellent his-
torical overview).

This kind of distribution should, if we go by the example
of similar cases like that of Middle English, lead to a
stabilization of one or the other form, in *-e* or ending-
less. Once the primary conditioning factor has gone, we'd
expect the exponents of the contrast to go as well ---
especially since there is good documentary evidence for a
period of extremely messy and "senseless" (i.e. apparently
non-deterministic) variation. But this is not what hap-
pened. Afrikaans not only did not lose the Adj-$\emptyset$/Adj-*e*
contrast, it restabilized it and redeployed it in a new
and complex (and more rigid) system, at a different gram-
matical level. The now "baseless" contrast was coopted in
the service of a conceptually novel inflectional system,
with no real Germanic precedents. In particular, the new

system is nonsyntactic: definiteness, quantification, num-
ber, presence or absence of predeterminers, case (and of
course gender) play no role.

Following Raidt's basic analysis (but not her (1983:184-6)
specific taxonomy), we can describe the new system as fol-
lows. First and foremost, the domain for inflection is the
particular adjective itself, not its syntactic environment.
A given adjective is generally either inflected or unin-
flected in all attributive contexts.

Class I: Categorically inflecting

(i) **Morphologically complex adjectives.** The first dicho-
tomy is based on morphological structure: any polymorphe-
mic adjective (with one major exception --- see below)
takes attributive -e. Thus *ge-heim* "secret", *open-baar*
"public", *be-lang-rik* "important". The syntax of the NP is
irrelevant: thus *ʼn geheim-e resep* "a secret recipe",
geheim-e resepte "secret recipes", *baie geheim-e resepte*
"many/very secret recipes", *die/hierdie geheim-e resep/-te*
"the/this/these secret recipe(s)", etc. The only syntactic
feature relevant (here as elsewhere) is that inflection
occurs only in attributives. Predicate adjectives are
endingless, as in *die resep/-te is geheim* "the recipe(s)
is/are secret".

The main exception is also morphologically conditioned.
Comparative adjective forms are endingless, regardless of
whether the base form inflects or not: *ʼn geheim-er resep*
"a more secret recipe", *ʼn groot boek* "a big book"/*ʼn groot-
er boek* "a bigger book". Comparatives in fact fall in with
obscured complex adjectives like *ander* "other", *lekker* "de-
licious", which are endingless ("obscured" in the sense
that *-er* is not perceived as a suffix, even if historical-
ly it is).

(ii)   **Morphophonemically complex adjectives.** The next cut
is between morphophonemically "complex" and "simple" adjec-
tives, i.e. those with variant stem-allomorphy and those
without it. Adjectives with only one stem-allomorph are
generally endingless (if they do not fall under I, (i).
Those with alternants take -e. In fact, as will become ob-
vious, this is rather a chicken-and-egg setup: it's only
the preservation of the inflected forms that allows the
alternations to persist, since they are all conditioned by
final vs. non-final position. The main groups are

(a)   Cluster-simplification alternators. Dutch already
      had a tendency to simplify some foot-final obstruent
      clusters, as can be seen in *vos*, *os* compared to their
      English cognates "fox", "ox". Afrikaans has carried
      this further, deleting (<u>inter alia</u>) the stop in any
      coda-cluster containing a stop and fricative (in
      either order): thus *pos* "post" vs. Dutch *post*, *plaas*
      "place" vs. Dutch *plaats*, and so on. In Afrikaans
      the deletion takes place only if the cluster is abso-
      lutely final in the foot, i.e. if both obstruents in-
      volved belong to the coda of the same (strong) sylla-
      ble. Thus *vas* "fast", *sag* "soft", *reg* "right",
      "straight", inflected *vast-e*, *sagt-e*, *regt-e*, i.e.
      /fɛs   fɛstə, sɛx   sɛxtə/, and so on. The role of
      syllable-position can be shown as follows (these re-
      presentations are indifferently either historical or
      synchronically "underlying", as you wish):

      (11)

	vas	*vaste*	*sag*	*sagte*
Base	[fɛst]	[fɛ[st]ə]	[sɛxt]	[sɛx [t] ə]
	↓		↓	
Deletion	Ø		Ø	

      In *vast-e* the /st/ cluster is ambisyllabic, since /st/
      is a permissable syllable-initial. In *sagt-e* the /xt/
      is partially split by a syllable boundary since /xt/

is not a legal initial. But in both cases the cluster
as a whole is not uniquely in the coda of the first
syllable in the disyllabic form. (On the notion of
syllabification invoked here see (Lass 1984: para.
10.3.5f), (Anderson & Ewen 1987:par. 2.3).)

(b)   Auslautverhärtung alternators. As a typical conti-
nental West Germanic language, Dutch shares with Ger-
man and has bequeathed to Afrikaans a medieval rule
of final obstruent devoicing: both the categorical
effect of the rule on surface phonotactics, and a set
of morphophonemic alternations involving it. Typical
alternating cases are *blind* /blɪnt/ "blind", inflec-
ted *blind-e* /blɪndə/, *hart* /hɛrt/ "hard, loud,
quick", inflected *hard-e* /hɛrdə/, *doof* /döəf/
"deaf", inflected *dowe* /döəvə/ (cf. non-alternating
hart /hɛrt/ "heart", pl. *hart-e* /hɛrtə/). The re-
presentations here are "surface phonemic" in the sim-
plest sense, not "underlying". Afrikaans spelling
apparently vacillates, as we can see from "morphopho-
nemic" *hard/hard*-e vs. "phonemic" *doof/dowe*.

(c)   Medial syncope alternators. In Dutch, and to a larger
extent Afrikaans, single consonants (preferentially
/d/ and /x/ < /ɣ/) tend to delete medially in the foot
(i.e. when they are not exhaustively in the coda of
the strong syllable, but form an ambisyllabic "inter-
lude"). Examples are *weer* "again" (cf. G *wieder*),
voël "bird" (cf. Dutch *vogel*). This syncope produces
alternations in adjectives that retain final *-e*:
droog /dröəx/ "dry", inflected *droë* /dröə/, *dood*
/döət/ "dead", inflected *dovi-e* /döəjə/. Synco-
pated /d/ usually leaves a palatalized residue /j/
behind it (so also *goed* "good", inflected *goei-e*), but
there are a few cases where it doesn't, as in *ouer*
"older" (cf. Dutch *ouder*).

Some items in this group tend to behave like class I, with
their syncopated forms lexicalized as new attributives
without -e. Raidt (1983:145) cites *dooi* 'dead' and occa-
sionally *vroe* /fru/ "early" (unsyncopated *vroeg* /frux/)
as colloquial variants.

There are a few other items that do not belong specifically
to these classes, but show stem-alternants: a typical exam-
ple is *nuut* /nyt/ "new", inflected *nuw-e* /nyvə/.

Taking this group as a whole, it is interesting to note, as
a theoretical sidelight, that we have here a clear case of
linguistic change acting to **maximize** allomorphy, in the
most straightforward possible way. It would have been so
"easy" to drop the forms in -e (as was in fact done with
so many other adjectives). It is curious that in a lan-
guage that has done so much radical hatchet-work on its
paradigmatic structure (losing all its verb inflections for
person and number, for instance), the simplification (or
"simplification") of the adjective declension should have
resulted in the preservation of a host of minority para-
digm-types.

Class II: Categorically non-inflecting

The bulk of these are monosyllabic, ending in obstruents
like *diep* /dip/ "deep", *los* /los/ "loose", vowels like
blou /blœ̈u/ "blue", sonorants alone like *geel* /xëəl/
"yellow", or sonorants in clusters with other consonants
like *dronk* /droŋk/ "drunk". A few of these noninflecting
adjectives are polysyllabic, either in -er like *ander*, *lek-
ker* (see above), or comparatives. Though Raidt gives a
detailed structural survey of this class, it is really
necessary only to specify two features: morphologically
simplex (non-comparative) and having only one stem form.
Class II is thus a residual "elsewhere" category, by and
large.

There are a few adjectives (mostly in -el) that do not fit
comfortably into either class, but display the exaptive
strategy in an interesting way. In these, two related
meanings may be differentially coded by presence or ab-
sence of -e. A good example is *enkel* "single". In colloca-
tion with *man* "man" it can have two senses, signalled by
inflection: n *enkel man* "an unmarried man" vs. n *enkel-e*
man "a solitary man".   (Thanks to Melinda Sinclair for
this example.) This is a marginal exaptation for semantic
purposes, which is not very widespread. Other -el adjec-
tives seem to vary without semantic consequences, though
the conditions are obscure. It does however seem that -el
rather favours -e overall. Raidt's (1983:145) judgement
that it is "fast unmöglich, etwas Bestimmtes ... zu sagen"
is a reasonable provisional one. It may be that -el is
optionally perceivable as a kind of pseudo-suffix, which
would allow /eŋkəl/ to be interpreted as either *enkel* or
enk-el (on the model of the nominal -(s)el that appears in
words like *stelsel* "system", *mengsel* "mixture" --- cf. *stel*
"set, suite" or as verb "place, adjust", *meng*   "alloy,
blend, mix").

So the rules *controlling* -e (categorical or variable) cru-
cially involve the following:

(a)   morphological structure (simple vs. complex);

(b)   paradigm structure (alternating vs. non-alternating);

(c)   lexico-phonological idiosyncracies like -er disal-
      lowing -e regardless of morphology;   doublets like
      those for *enkel*.

This throws into relief the conceptual novelty (unique as
far as I know in Germanic): all the information controlling
addition or non-addition of -e is internal to the adjective
itself as a word-form or to its morphophonemic paradigm.[9]
In the earlier (syntactically based) inflectional system,
the information controlling suffixation was essentially syn-

tagmatic: nature of determiner, features of head noun, etc.
The exaptation here is the "internalization" or "introjec-
tion" into the adjective itself of the inflectional triggers,
using the inherited, formerly syntactically controlled -e
purely "locally", as a marker of adjective class. Globally,
one could say that the inflectional locus has shifted from
the syntax to the lexicon. (Assuming, that is, that morpho-
phonemic alternations are lexically coded, not produced syn-
chronically by "abstract" derivations. On an abstract ana-
lysis, class I adjectives would still exert lexical control,
but for the alternators this would be in terms of "under-
lying" properties, not paradigmatic ones.)

The exaptive scenario here begins with the loss of gender.
When common and neuter nouns are no longer distinguished,
the -e was first exapted as nearly exclusively a marker of
plurality in the head noun. In the 15th century, partly as
a consequence of the generalized loss of final /ə/ (which
did not happen in Dutch or Afrikaans), the -e was lost, and
the adjective became invariable. English is thus "waste-
ful" with respect to this piece of inherited structure,
Afrikaans is "conservationist" --- see par. 1.[10]

4   Epilogue: the joys of idleness

The patterns of change discussed here display an important
property of evolving systems (not only linguistic ones):
useless or idle structure has the fullest freedom to change,
because alteration in it has a minimal effect on the use-
ful stuff. Major innovations often begin not in the front
line, but where their substrates are doing little if any
work. (They also often do not --- but this is simply a
fact about nondeterministic systems.) Historical junk, in
any case, may be one of the back doors through which struc-
tural change gets into systems, by idle material getting
re-employed.

Most importantly, however, mere "uselessness" is not it-
self either a determinate precursor of exaptive change or
--- conversely --- a precursor of loss. Historical relics
can persist, even through long periods of "senseless"
variation. And it is impossible to predict, solely on the
basis of such idleness or inutility, that anything at all
will happen. (That such predictions can be made if we get
the right theory is an endemic delusion of historical lin-
guists --- see the arguments in (Lass 1980:chs. 2-3).)
Examples of the persistence of idle and nonexapted struc-
ture are easy to come by. One is the -s ending of the
English present indicative singular. In the course of its
evolution, English has lost all the non-tense morphology of
the verb except this suffix. It now has none of the "infor-
mative" concordial function that verb suffixes had in
earlier times (actually, before it was -s, while it was
still -th), when English had a freer word-order than it
does now, and subject pronouns were not obligatorily ex-
pressed. This relic inflection not only has no "communica-
tive" function in the sense of actually serving to under-
write the parsing of potentially ambiguous structures; it
is a systemic excrescence. (Other languages with similar
excrescences or asymmetries may clean them up. Afrikaans
did by losing all its verb morphology, and Swedish and
Danish did by extending one ending --- originally that
of the present 2 sg --- to the whole paradigm.) We might
note however that the -s ending can be exapted for socio-
linguistic purposes, as an indexical marker of "vernacula-
rity" in some dialects, where it is extended to all person/
number forms --- see (Cheshire 1982:ch. 4) on this use in
nonstandard Reading English.

We should in fact not be surprised at the retention of his-
torical junk over long periods. Despite neo-Praguian claims,
e.g. by Martinet (1955:49ff) --- see (Lass 1980:91ff) ---
that there is a kind of "expense of energy" in the mainte-
nance of oppositions that predisposes to loss of items with

low functional load, there is really no evidence whatever
that linguistic systems have "thermodynamic" properties of
this kind. It doesn't take any "energy" (even the meta-
phor is inept) to maintain historical residues, no matter
how useless they may be at a given moment. The zero option
is to do nothing at all with them, and they do no harm just
lying there. The enormous redundancy of linguistic systems
may be a function not just of communicative efficiency (the
greater the redundancy, the more chance of overcoming the
effects of channel noise). Indeed much of the redundancy
we find may have no teleology behind it, but is simply the
product of historical inertia. Nonaptations persist because
there's no particular problem in keeping them, and there
may even be "work" to do in getting rid of them. If these
nonaptations or adaptations fallen into desuetude can be
later exapted for something else, well and good. But there
is no particular reason either to do this or not to. Like
so much else, this is a matter of the "creative" freedom
available to historically evolved systems, precisely because
of their complexity and innate conservatism. As Lorenz
(1978:25) remarks in his discussion of the junkroom-in-the-
mansion alluded to in par. 1, one of the reasons that an-
cient material persists is that it's very hard to dismantle
a house while you're still living in it:

> "Die als solche erkennbaren historischen
> Reste bleiben schon deshalb erhalten, weil
> der Bau nie ganz abgerissen und neu geplant
> werden konnte: Das war gerade deshalb un-
> möglich, weil er dauernd bewohnt und inten-
> siv benützt wurde."

With luck, however, you can redecorate.

NOTES

1. The term "evolution" in this paper is not used in the
    vulgar progressivist sense of (directional) change
    with increasing "fitness". The evolution of a system
    is simply its story over time, normally the product
    of variation and differential survival of variants. In
    this sense parallels between organic and linguistic
    change seem fair. This paper owes a large (imperso-
    nal) debt to the writings of Stephen Jay Gould who,
    though a paleontologist and not a linguist, is pre-
    eminently a historian and has an eye for the kind of
    problems and ideas that make historiography worthwhile.
    Closer to home, I am grateful to Roy Pheiffer for ad-
    vice and assistance on matters Netherlandistic, and to
    Rudie Botha and Melinda Sinclair for comment and dis-
    cussion.

2. Earlier scholars tried, often desperately, to derive
    the whole of the strong preterite from the IE perfect.
    For technical discussion and the standard arguments
    for the role of the aorist, as well as a good survey
    of the earlier literature, see (Prokosch 1938:56f).
    Whether the IE aspect system as I give it is "origi-
    nal" or a secondary development is not germane. If
    the kind of system that shows up in Greek, say, is a
    late development, the loss of aspect in Germanic is
    loss of a secondary opposition, part of a cyclic pat-
    tern of loss and restoration of aspect --- see (Lass
    1987:ch. 6).

3. I omit the strong verb classes VI and VII, as their
    historical root structure (probably with a laryngeal)
    does not allow the old patterns to surface clearly.
    Both classes show the same (long) vocalism in $PRET_1$/
    $PRET_2$, which makes them historically uninformative

for our purposes, just like the weak verbs. A typical
case is Class VI "bake", OE PRES *bacan*, PRET$_1$ *bōc*,
PRET$_2$ *bōcon*, where both length and quality distinc-
tions have been lost. This could in fact be referred
to an old pattern */bHeg-, bHog-/, etc., but the argu-
ments are too complex to go into here --- see (Lass
& Anderson 1975:49ff) where we try to resurrect the
laryngeal as a synchronic abstract segment.

4.   The redeployment of morphology after a category break-
     down does not of course have to be systematically
     exaptive. When the IE nominal ablaut deteriorated,
     there was in certain declensions a near-random redis-
     tribution of formerly conditioned vowel grades, often
     on a lexeme-by-lexeme basis. So for instance the
     word "tooth" in Germanic shows both *o*-grades (OE
     tōþ < */tanθ-/ < */dont-/, OHG *zand*, OIc *tǫnnr*) and
     zero-grades (Gothic *tunþus* < */tunθ-/ < */dn̥t-/).   For
     discussion of this problem see (Lass 1986).

5.   The strong declension had a rich paradigm, the adjec-
     tive carrying some marking for case, number and gender
     (cf. modern German *gut*, *gut-er*, *gut-es*, *gut-em*, *gut-en*,
     etc.).   This tended to appear in collocations with no
     pre-adjectival determiner, or where the determiner it-
     self was inflectionally ambiguous. The endings large-
     ly derive from nominal or pronominal case/number suf-
     fixes (e.g. G -*es* for masc/neuter genitive sg). The
     weak declension was much less highly differentiated,
     and borrowed its morphology from the weak (*n*-stem)
     nouns (cf. German *des gut-en Mann-es*, *dem gut-en Mann*).
     This was used most often where the concordial or cate-
     gorial information was carried by the determiner, and
     the adjective inflection mainly marked the contrast
     nominative vs. oblique. The intricacies of this dis-
     tinction, which varied enormously from dialect to
     dialect, will not concern us here.

6. There are a few other fragments as well: one famous
   West Flemish sentence in an 11th-century English MS
   (Schönfeld 1932) and a handful of others (Sanders
   1972). Old Low Franconian (9th-10th centuries) is
   the only substantial evidence for a "Proto-Netherlan-
   dic" ancestor of the cluster of textual traditions
   arising in the late 12th century and conventionally
   called Middle Dutch --- see (Van Loey 1970a:xxxix ff),
   (Raidt 1980:chs. 3-4). This complex cluster, with its
   not entirely clear antecedents, is the ancestor of
   the equally complex and heterogeneous "17th-century
   Dutch" that formed the input to Afrikaans.

7. It is hard to specify exactly what the Afrikaans in-
   put was like, since there were many regional and
   social varieties of the not-yet-standardized 17th-
   century Netherlandic complex involved. There is at
   this stage little point in trying to reconstruct a
   fully systematized Early Modern Dutch morphology in
   general. I give below only enough details to make
   the main points. Modern standard Dutch shows an
   essentially cognate and conservative system. For the
   Afrikaans input see (Raidt 1983). Other two-way sys-
   tems of Adj-∅ vs. Adj-e can be seen in Frisian and
   Yiddish.

8. The modern system is essentially the same: zero vs.
   -e except for relics of old datives and genitives in
   lexicalized expressions and archaizing styles ---
   see (Rijpma & Scheuringa 1969:par. 117).

9. The structure of a paradigm may serve as a trigger for
   or brake on change. E.g., one of the major constraints
   on final /ə/ deletion in Yiddish nouns was the plura-
   lization class they belonged to. Most nouns with
   final /ə/ lost it in late medieval times (e.g. *harts*
   "heart", cf. OE *heorte*, G *Herze*). The main exceptions

were those nouns belonging to the *s*-plural class (so
kàčke "duck" < Pol *kaczka*, pl *kačke-s*). Other retained
/ə/ were (parts of) morphologically non-root material,
e.g. in the diminutive suffix *-ele* (*ges-ele* "little
street"). For details see (Lass 1978).

10. The variation in some *-el* adjectives with respect to
-e may suggest that Afrikaans will in time go the way
of English, and level all adjectives to zero-inflec-
tion. Aside from noun plurals, the adjectival *-e* is
the only productive inflexional category in Afrikaans
(unless you count the *ge-* prefix on past tense verbs,
which always cooccurs with an auxiliary).

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