Re-evaluating zero: When nothing makes sense

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This paper deals with the notion of zero, a concept widely used in linguistic literature but scarcely justified. A zero constitutes the presence of some linguistic element when nothing is actually there phonologically. However, it is imperative that one be cautious in postulating zeros in order to make proper generalizations. Therefore, this paper examines the notion of zero, presents necessary and sufficient selection criteria, and, ultimately, applies these to the imperative/infinitive-contrast of spoken Danish. It will be shown that these criteria will better capture the fundamentals of this verbal distinction in spoken Danish.

1. Introduction

> The nothingness of nothing is plain; but we need to understand that error <u>is</u> nothing, and that its nothingness is not saved, but must be demonstrated in order to prove the somethingness – yea, the allness – of Truth. (Eddy 1875/1994: 346:6-13, her emphasis)

Throughout the years, philosophers, scientists, mathematicians, astronomers, etc. have strived to grasp a better understanding of the notion of *nothing*. It has indeed been the philosophical conundrum of the idea of the *nothingness* of *nothing* that has fascinated everyone working on *nothing*. That is, what is a *nothing* and how does it manifest itself? Questions like these have not been left untouched by linguists who just as other thinkers have struggled to make something out of it. Most significantly, it has been the introduction of the notion of zero morphemes[1] which contrasted with the plain *nothingness* of *nothing*, as stated above, could be described metaphorically as the *somethingness* of *nothing*. The use of the concept of zero in linguistics can be traced back at least two thousand years, when the Indian grammarian Pānini first employed it in his account of Sanskrit.

Today, and at least for some considerable time, the notion of zero has been used extensively, and it has thus gained a firm ground in linguistic theory and description – in both formalism as well as functionalism. However, it is imperative that one be extremely alert in proposing zeros. That is, postulating the *somethingness* of a perceptible and discernible *nothing*.

The aim of this paper is as follows. I will investigate some of the general uses of the concept of zero in linguistic literature and discuss when it can be justified to talk about the presence of some linguistically meaningful element in the absence of corresponding phonetic substance. My theoretical angle will be to focus on the conditions proposed by William Haas in his *Zero in linguistics description* from 1957, in which he sets up certain constraints for postulating zero. Then I will try to determine whether it is reasonable to propose zero, as has been done so often by various Danish grammars (Allan, Holmes, and Lundskær-Nielsen 2002), in the Danish imperative in those instances of Danish where the infinitive and the imperative conflate. Hence, can this be accounted for by the conditions proposed by Haas? I will come to the conclusion that proposing zero in the imperative is not only wrong at the level of orthography but just as wrong at the phonological level. Instead, I will propose a zero

infinitive in order to capture certain important generalizations which traditional grammars seem to have overlooked.

The structure of this paper is as follows. I begin, in section 2, with a concise history of the use of zero in linguistics and with what I, based on Haas' conditions, take to be misuses. Furthermore, since zero has been used extremely extensively in linguistics, I can of course only touch upon the surface. However, the ones I single out are indeed fairly common and can thus quite easily be seen as the pivots of the wrongly proposed zeros. Then, in section 3, I will outline the conditions for postulating zero proposed by Haas and evaluate these by considering McGregor's (2003) reappraisal of the notion of zero, in which he suggests that zero is in fact a misleading mathematical metaphor. Finally, in section 4, I will discuss the case of the Danish imperative and show why this cannot be adequately described in terms of the notion of zero. In doing this, I will show that we need to go beyond the level of orthography to the level of Danish phonology in order to capture the differences and similarities between the two. We thus need to introduce the notion of *stød* – a particularly interesting phenomenon in Danish with distinguishing character. This is due to the fact that orthography does not give us exact clues as to when, why, and where the *stød* may occur, and hence no clues as to when the imperative and infinitive of a particular verb conflate.

2. A brief history of the use of the notion of zero

The notion of zero in present day's linguistics is more or less accepted as a valid concept. The vast majority uses it in descriptions of various languages, but few, however, justify using it. Thus, many, it seems, employ it according to the very general definition, which can be found in practically every linguistic encyclopaedia. Accordingly, we find the following and, indeed, very common definition of zero in Crystal (1999: 372, his emphasis):

> An abstract unit with no physical realization in the stream of speech; also called a **null element**. The term is commonly used for the absence of a morpheme in contexts where one would normally occur; […] A **zero morph** is sometimes proposed to handle singular/plural alternations in such nouns as sheep, where no change is involved.

And were we to look in Matthews (1997), we would find a more or less identical definition, which in fact uses the exact same example, *sheep*, to illustrate what is taken to be the realization of the plural morpheme by a zero morph.

The fundamentals of this widespread definition, which is common knowledge to any linguist, I believe, can be traced back some two thousand years, around 600 B.C. and 300 B.C., to the Indian grammarian Pānini who was the first to employ this descriptive device (Robins 1997: 152-163). In his description of the morphology of Sanskrit, he represented apparently irregular forms as more regular at the more abstract levels of representation and analysis by postulating a morpheme represented by a zero morph. He thus proposed an underlying grammatical representation of the noun, in which he, by rules of deletion, could account for those instances where a particular form had no corresponding phonetic realization.

One of the more famous applications of zero is Saussure's analysis of the Greek nominative case forms like *phlox* (/phlóks/), *flame*, which according to him was to be analysed as containing a zero suffix in order to best account for cases where the root and the stem appeared to be identical (Robins 1997: 163). By representing *phlox* as /phlóg-Ø-s/

(analogously to *hīppos* (/hīpp-o-s/)), any confusion was avoided. Thus the stem and the root were kept distinct from one another, even though they were phonetically identical (Saussure 1983/2000: 185 [255-256]).

The heyday of zero, however, was the epoch of post-Bloomfieldian American structuralism (McGregor 2003: 77). The concept was invoked vigorously in such different domains as phonology, morphology, and syntax.

Regarding the noun, Eugene A. Nida postulated a zero morph in those cases where there was no apparent plural suffix – in cases such as *sheep*, *trout*, *elk*, *salmon*, and *grouse*. Thus the absence of an overtly marked plural morph was described as a zero in order to account for the conflation of the singular (no absence) and the plural (absence) (Nida 1967/1946: 46). Some linguists did in fact also try to invoke a zero singular suffix in English, which was said to contrast with the regular plural suffix (Haas 1957: 38). However, if this was the case, it would mean that *sheep* in the singular would have a morphemic zero and in the plural an allomorphic zero. Hence, this line of reasoning should be avoided, or else the description of language would become overly sprinkled with zeros simply for the sake of structural congruence and balance (Nida 1967/1946: 46, footnote).

Another example of use of zero in post-Bloomfieldian morphology was the application of zero in order to account for suppletive verbal forms such as *went*. Bernard Bloch actually proposed that the semantic difference between *go* and *went* (as in *I go* vs. *I went*) was to be located in the difference between the presence of a zero suffix in *went* and the absence of any such suffix in *go*. Thus, all English verbs which in general were considered to take no preterit suffix were better analysed as taking a zero suffix. Hence, what it all came down to was a choice between zero present and zero absent (Haas 1957: 34-35). As I will show below, this indeed is a highly problematic application of the concept of zero.

Far from the post-Bloomfieldian American structuralism, Grammaticalization Theory – the theory that functional elements develop out of lexical elements and that this process is gradual and by and large irreversible – has indeed also made extensive use of the notion of zero (Lehmann 1995: 171-173). Linguists working on Grammaticalization seem to apply zero in a very familiar manner. That is, they appear to invoke zero when some concept in the process from a lexical to a functional element loses its expression substance – its phonetic realization. Consequently, zero is used as some sort of sign of phonetic reduction to nothing. In that sense, it seems that zero is employed when accounting for the rather common phenomenon in Grammaticalization Theory that in the course of development some physical realization gets lost. Thus when *X* turns into *Y* which in due time develops into Ø Lehmann states that the *significans* and *significatum* of a grammatical formative have become zero (Lehmann 1997: 171)[2].

The notion of zero is, however, not universally accepted and some linguists actually believe that it should be rejected completely (Matthews 1974: 123-124). Instead it must be accounted for differently. Thus Matthews states (Matthews 1974: 124, his emphases):

> If the zero morph of <u>come</u> is a device for saying that a morpheme Past Participle is not marked, a zero morph in <u>men</u> must be interpreted similarly as saying that Plural is not marked. But that is the opposite of what we wanted to say. […]In neither <u>come</u> nor <u>men</u> can the presence of Past Participle or Plural be indicated by something that is not there.

Instead Matthews opts the explanation that these forms are merely exceptions and that they should not be accounted for by the notion of zero. Matthews thus explains the relationship

between *come* (present tense) and *come* (past participle) analogously to that of *sail* and *sailed*. That is, the latter is mediated by an operation ($X \rightarrow X + $ [d]), exemplifying that [d] is the past participle marker, whereas the former is described by ($X \rightarrow X$), indicating that the past participle in this case has no marker and that the relation is one of identity.

Now, so far we have seen some of the widely used applications of zero. We have seen various different environments, in which zero has been invoked, with at least one thing in common, namely that of postulating some abstract underlying form representing some concept when there, in fact, is no corresponding phonetic substance. However, seeing that it is indeed impossible for me at this point to list all the different zeros that have been proposed in the linguistic literature since the dawn of time, a brief look at a linguistic encyclopaedia will show how extensively it has been used. Matthews (1997: 409) illustrates this perfectly by containing concepts such as:

i. zero relative pronoun: *the men* [*Ø I saw*] vs. *the men* [*who I saw*]
ii. zero anaphora: relation in which a phonetically null element is seen as linked by anaphora to an antecedent, as the Italian *Gianni dice che viene* (lit. 'Gianni says that comes')
iii. zero derivation: process of word-formation in which there is no change to the form that undergoes it: e.g. *fish*$_{NOUN}$ $\rightarrow$ *fish*$_{VERB}$

This is only a random selection of the many different applications of the concept of zero.

In the following I will concentrate on Haas (1957) in which he gives an account of the great abuse of zero in linguistics. Instead he proposes certain conditions under which it is reasonable to invoke zero, and thus illustrates that it is necessary to be extremely cautious in proposing zero.

3. Re-evaluating zero

In some cases it does in fact seem appropriate to postulate zero when a linguistic element has no corresponding expression substance present, but one needs to be cautious in doing so, because often, it seems, zero has been proposed when, if truth be told, it had been more correct to talk about plain nothing.

3.1. *Haas' criteria for proposing zero*

> […] if the acoustic property of an element be zero, what will then be left to it of the properties characterizing a 'linguistic element'? If not its acoustic appearance, what is there to indicate it presence? (Haas 1957: 33)

This question is indeed a central notion in Haas' article. That is, he addresses the question of motivating the presence of an element of speech if it turns out to have no acoustic realization. He by and large felt that the post-Bloomfieldian American structuralists had greatly abused the concept of zero. According to Haas, they had applied it extensively in various different domains, apparently without being aware that their zero features, established by generalizations only, did not seem to be presented as elements of speech (Haas 1957: 50).

Recall Bernard Bloch's above-mentioned account of the difference between *go* and the suppletive *went* in *They go to church* vs. *They went to church*. The semantic difference is supposedly to be located in the contrast between, on the one hand, the presence of zero in *went* and, on the other hand, the absence of zero in *go*, which means that the two forms are made synonymous. Thus, two obvious carriers of a semantic distinction are put out of action, deprived of their semantic significance and distinctive value, ousted by the introduction of two ghosts - presence of zero and absence of zero (Haas 1957: 35). Cases such as these are obviously not ideal for proposing zero since zero cannot and should not be postulated in those cases where postulating it would give rise to a contrast between presence and absence of zero. Haas thus states that if the presence of zero is supposed to contrast with its absence, then the distinction is one of indiscernibles (Haas 1957: 36).

This leads Haas to reject the paradigmatic criterion – that zero can be postulated if some, apparently, nothing in the signifier of a morpheme occurs in paradigmatic contrast with overt forms that contrast with it semantically – as a sufficient criterion. It proves itself to be inadequate according to Haas. That is, it correctly allows plausible zeros, such as the zero participle in *cut*, which semantically stands in paradigmatic contrast with *–ing* in *cutting*. However, illegitimate zeros, such as a zero suffix in *went*, must be excluded, since, if accepted, a situation arises in which presence of zero and absence of zero contrast, and as stated above such a distinction is one of indiscernible and should thus be prohibited. Accordingly, semantic differences must be correlated with phonological so that differences between meanings can be located in differences between forms. Haas does, however, not reject the paradigmatic criterion altogether. That is, he acknowledges that it is indeed a necessary condition for identifying zero.

In his quest for necessary as well as sufficient criteria for postulating zero, Haas tries to determine the form of a zero. That is, what is the form like, and how to detect it? By requiring that all linguistic elements, zeros or non-zeros, satisfy the same two general conditions, he can determine the so-called form. The conditions are (Haas 1957: 41):

    i.   A linguistic element must have a *form* of its own, identifiable as 'the same' in different environments, and

    ii.   it must have *distinctive value*, i.e. contrast with others, in some of its environments. (Two elements are said to 'contrast', if substitution of one for the other in the same environment results in different messages.)

A zero must thus be identifiable *only by its distinctive value* – as all other linguistic elements. However, this, Haas states, necessarily implies that zero is a secondary element. It proclaims marginality, since it presupposes other elements distinct from itself. Thus zero is only supposed to contrast with overt elements, never with acoustic zero. Consequently, zero can have recognizable form only by having distinctive value. To put it differently: while an overt segmental element can have form as well as distinctive value, even though it might be the only realization of a particular morpheme – thus contrasting with silence – zero cannot. It is only by contrast to non-zero elements that it is distinguished from plain nothing (Haas 1957: 41-42).

Even though zero must contrast with morphemes having actual phonological realizations as well as not being in paradigmatic contrast with anything else with no phonological form, it does not quite seem to do the trick – so to speak. This is due to the fact that these conditions appear to allow a zero singular suffix in contrast with a genuine plural

suffix in English (Haas 1957: 46). That is, the contrast between *cat+Ø* and *cat*+s is not rejected by the conditions stated so far. However, cases such as this should preferably be excluded because otherwise we would have to accept an extremely large number of unmotivated zeros. Thus, an additional criterion which would keep us from detecting zeros almost everywhere in language was needed.

Haas thus proposes that the contrastive omission must have a morphemic value which is shared by morphs other than zero. This is the so-called alternation-rule which states that "[O]ne of the alternants of a given morpheme may be zero; but no morpheme has zero as its only alternant" (Haas 1957: 37). This takes care of cases such as the zero singular suffix in English since there is no overt singular marker. Consequently, Haas proposes that (i) *distinctive omission of overt forms* and (ii) *overt alternants to this operation* are the conditions to be satisfied, if one wants to postulate a genuine zero (Haas 1957: 49). In other words[3]:

  i. Zero must occur in paradigmatic contrast with overt forms that contrast with it semantically
  ii. Zero can only ever be an allomorph of a morpheme in contrast with other substantive allomorphs; it can never be the sole realization of a morpheme

This, then, makes it obvious that these conditions will only be satisfied by a morph of a particular morpheme. That is, a morph contrasting with an overt morph occurring in common environments, as well as synonymity with an overt morph occurring in different environments (Haas 1957: 49).

Haas himself states that these constraints limit the occasions of establishing zeros, but that it is necessary due to an incorrect idea of the importance of mere alternations. Such zeros, Haas explains, should rather be identified as *class-index zeros*, thus taking care of classification of particular elements to certain classes and not themselves being the objects of analyses (Haas 1957: 51). That is, unlike the type of zero[4] I have accounted for above, this *class-index zero* cannot be segmented as an element of speech.

Now, these criteria should accordingly be a useful tool which should help us avoid postulating zero when what is in fact present is *plain nothing*. We should, furthermore, be able to determine which of the many proposed zeros in linguistic literature are more accurately described in terms of *nothingness*. Consider, for instance, two of Greenberg's famous universals, numbers (35) and (38), respectively (Greenberg 1966: 94-95):

  (35) There is no language in which the plural does not have some nonzero allomorphs, whereas there are languages in which the singular is expressed only by zero. The dual and the trial are almost never expressed only by zero.

  (38) Where there is a case system, the only case which ever has only zero allomorphs is the one which includes among its meanings that of the subject of the intransitive verb.

Are these alleged zeros in fact zeros in terms of Haas' criteria, or are they better described as being *plain nothings*? The criteria would undoubtedly invoke the latter explanation since these zeros, it seems, are said to be the sole realization of the morpheme in question.

A particularly interesting case of zero which seems to be accepted by Haas criteria is the case of the Welsh singular/plural-distinction. This is due to the fact that an allomorphic

zero seems to be present in both the singular as well as the plural. Thus depending on the inflection class, plural can be formed by adding suffixes such as *-au*, *-iaid*, *-eodd*, and *-od*, just to name a few. Yet, there is a group of high-frequent plural nouns where the plural is unmarked for number, unlike the singular which receives a special singular suffix[5] (Haspelmath 2002: 117, 134-135, and 244). The question is then, in terms of the criteria proposed by Haas, whether this means that plural in these cases is marked by zero, or whether singular in the typical scenario is marked by zero? Apparently, it seems, both zeros are admitted by the conditions, seeing that in the former the unmarked plural occur in paradigmatic contrast with overt forms that contrast with it semantically, and, furthermore, it is not the sole realization of the plural morpheme. Likewise, in the latter case, the normal singular also occurs in paradigmatic contrast, as well as not being the sole realization of the singular morpheme due to the presence of a singular suffix in these high-frequent plural nouns. Furthermore, we cannot say that the Welch case is a distinction of indiscernibles between these two allomorphs, seeing that they always seem to appear separable from one another and therefore never contrast. This line of reasoning leads us to acknowledge the presence of an allomorphic zero in both singular and plural. Consequently, unlike English in which zero should preferably be avoided in both singular as well as plural, we find that Welsh contains an allomorphic zero singular and an allomorphic zero plural at the same time.

3.2. *Re-evaluating zero – McGregor on Haas: the strength of his conditions*

McGregor recognizes the applicability of Haas' conditions in dismissing some of the wrongly proposed zeros by the post-Bloomfieldian American structuralists. However, he is not completely satisfied with the second condition as it makes the constraints on zero too strong. McGregor (2003: 85) states:

> Criterion (ii) weeds out many currently accepted zeros, including many instances of zero third person bound pronominals in languages in which no substantive form ever shows up, and only condition (i) is satisfied. It also excludes zeros of ellipsis. Thus I cannot accept both conditions. Nevertheless, Haas is clearly correct that condition (i) by itself is insufficient.

As an alternative, he proposes that the "non-distinction of indiscernibles" constraint[6] be applied. This, too, disqualify various zeros permitted by criterion (i), just as did criterion (ii). However, this, as he shows, does not preclude various zero third person bound pronominals. He illustrates this with examples from *Gooniyandi* where "an overt alternant to the operation of absence of the overt form need not necessarily be a contrasting allomorph, but could include some accompanying index" (McGregor 2003: 95). That is, we do not have to recognize alternating allomorph contrasting with a zero allomorph. A non-allomorphic index can also do the job and thus indicate the presence of zero elsewhere. Consider (McGregor 2003: 94):

(1)   *ward-ji*
        ward-j/i
        go-3SG.NOM/I
        'He/she/it went'

(2) *barn-bindi*
    barn-Ø + bindi
    return-3SG.NOM + BINDI
    'He/she/it returned'

In (1), above, *wardji* can be segmented into *ward-* meaning 'go' and +I being a verbal classifier. From this he concludes, by comparing *wardji* with *barn-bindi* in which +BINDI is a verbal classifier, that the status of the *j*+ as a morpheme is uncertain (McGregor 2003: 92-95). Thus *j*+ could be taken as an index of there being a zero in *barn-bindi* (*barn-Ø + bindi*) since this apparent zero is invoked via the indexation of the discernible *j*+ in *wardji*. Hence, a reinterpretation of Haas' second criteria in which something tangible for the recognition of a zero is of vital importance. This means that zero need not necessarily only be an allomorph which existence depends solely on other substantive allomorphs. Its status as a secondary element is therefore questionable, seeing that it can in fact be the sole realization of a particular morpheme. Thus, the conditions proposed by Haas have been refined and made somewhat weaker in order not to lose significant generalizations[7]. Accordingly, he proposes that the notion of *usefulness* be important when postulating zero. Whether or not it is useful depends on the theory applied (McGregor 2003: 115)[8].

    However, McGregor is not all that pleased with the term *zero* which he believes to be a wrongly applied mathematical analogy. That is, zero in arithmetic was originally a positional symbol indicating "no value". Thus, whereas the mathematic zero has substance but no meaning, the linguistic zero is, according to him, entirely misleading, seeing that it has meaning but no substance – the exact opposite. Instead, he proposes that the term *zero* be replaced by the more appropriate term *gap*, equivalent to what is effectively an unfilled element in a construction (McGregor 2003: 111-114). Furthermore, he suggests that the best morphemic analogue to the mathematical zero is dummy use of morphemes like *it*[9], since both of these have substance but no apparent meaning. I am not sure whether it is indeed necessary to rename this concept due to discrepancies with the mathematical analogy. Thus, whether zero refers to something with separate location but with no value, as in mathematics, or it refers to an apparent something with no phonetic realization, as in linguistics, does not matter to me. Most importantly, we now have necessary and sufficient criteria for postulating zero.

    A misleading mathematical analogy or not, I am relatively content with it and will thus in the following, regardless of terminological discrepancies, retain the term (segmental) *zero* when arguing why it is neither possible nor reasonable to propose zero in the imperative of some Danish verbs compared to the infinitive – in colloquial Danish.

4. The Danish imperative and zero

In this section I will try to show whether or not it is reasonable to postulate zero in those cases of spoken Danish in which the imperative and the infinitive conflate – in terms of the criteria proposed so far (Haas 1957, McGregor 2003). I will first of all, in section 4.1, show why it is necessary to go beyond the level of orthography to the level of Danish phonology in order to make adequate generalizations. Subsequently, I will, in section 4.2, give an account of the Danish *stød* – an interesting but also extremely complicated phenomenon, phonetically as well as phonologically. Then, in section 4.4, I will show how the Danish verbs can be

classified into six different classes in terms of presence or absence of *stød*. Finally, in sections 4.5 and 4.6, I will try to determine, based on the criteria just dealt with as well as the general principles of the notion of *stød* in Danish, whether or not it is indeed reasonable to invoke the notion of zero as an explanatory device.

4.1. *Orthography is not enough*

In its entirety, the Danish verbal system is not that difficult. It consists of three finite forms (the *present tense*, the *past tense*, and the *imperative*) and three non-finite forms (the *infinitive*, the *present participle*, and the *past participle*) (Allan, Holmes, and Lundskær-Nielsen 2002: 238). Orthographically, the infinitival ending is an *-e*, except in some 28 cases where the stem itself ends in a vowel[10] (Grønnum 2001:18-190). The imperative, on the other hand, has no ending what so ever, regardless of the stem ending in a vowel or a consonant. This means that in the 28 cases of missing infinitival *-e* the infinitive and the imperative conflate (e.g. "to walk": $gå_{IMP}$ *vs.* $gå_{INF}$). This has made some schematize the difference between the two as follows in table 1 (Allan, Holmes, and Lundskær-Nielsen 2002: 244)[11]:

Infinitive	Imperative
-zero (v.st.)	-zero
-e (c.st.)	

Table 1

Their claim is that the Danish infinitive contains an allomorphic zero and the Danish imperative a morphemic zero[12] – bear in mind, table 1 is based solely on orthography. However, it does not capture some general tendencies about the *consonant stem verbs* in colloquial spoken Danish. This means that some *consonant stem verbs* do in fact, in colloquial spoken Danish, conflate with the infinitive[13]. This is due to the fact that the infinitival *-e* is not always pronounced in colloquial talk. Thus, the generalization that in colloquial talk the imperative and infinitive of verbs like *huske, hoppe, kysse* (remember, jump, kiss) and many more *do* conflate, unlike verbs such as *spise, komme, elske* (eat, come, love), is lost. Therefore, we need to go to the level of phonology and show that the latter do not conflate since there is a *stød* in the imperatives and not in the infinitives, while the former conflate due to there not being a *stød* in neither the imperative nor the infinitive.

By invoking the notion of *stød* as an explanatory device, I will show whether its presence can be seen as some kind of indexation of zero in the imperative of those verbs in which the infinitive and the imperative conflate.

4.2. *The Danish stød – what is it and how does it work?*

Phonetically, the *stød* is an irregularity in the laryngealization which affects the periodicity as well as the amplitude (Grønnum 2001: 73 & 172). This modification of the vibrations of the vocal chords only occurs in voiced sounds, which effectively means that a syllable containing a *stød*[14] either has a long vowel or a short one immediately followed by a voiced consonant. These conditions are what is called *stødbasis*[15].

I can of course not go through all the conditions for *stød* in Danish, but some things need to be clarified. First of all, the *stød* distinguishes words such as [ˈmæːlʌ ˈmæːʔlʌ

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man   man?] *maler* (noun: painter), *maler* (verb: paint(s), present tense); *man* (indefinite pronoun), *mand* (noun: man). However, even though it may separate the semantics of two lexemes as well as signalling morphological structure/complexity[16], it is not a segment in the same way as are [pʰ tˢ kʰ f s] and there are, according to Grønnum, six reasons why this is so (Grønnum 2001: 174-175):

    i.   when a *stød* is present, its position in the syllable is predictable
    ii.   there is never more than one *stød* per syllable
    iii.   *stød* does not occur in non-stressed syllables[17]
    iv.   *stød* is absent from the stem of certain inflections, derivations, and compounds
    v.   *stød* is present in the stem of certain inflections and derivations
    vi.   the stød is movable in the certain syllable structures

    Grønnum (2001: 177) gives the following outline (table 2) of *stød* in Danish lexemes, grouped according to phonological structure – the translations are mine:

Oxytone lexemes[18]				
I	II	III	IV	V
$-\breve{V}C_{[-voi]}C_0$ short vowel + phonetically unvoiced consonant(s)	$-\breve{V}$ short vowel in open syllable	$-\breve{V}C_{[+voi]}$ short vowel + *one* phonetically voiced consonant	$-\breve{V}C_{[+voi]}C^n_1$ short vowel + a phonetically voiced consonant + one or more following consonants	$-V:C_0$ phonologically long vowel, with or without following consonants
[kʰaḍ] *kat*	[ja] *ja*	[tˢal] *tal* or [hal?] *hal*	[hal?s] *hals*	[se:?] *se* [vi:?s] *vis*
no *stødbasis*	no *stødbasis*, but does get a long vowel and *stød* in some inflections	*stød* is not predictable	*stød*; with the exceptions of words with /r/ plus /{p t k f s}/	always *stød*
Paroxytone lexemes				
schwa in last syllable			full vowel in last syllable	
VI	VII		VIII	
$-VC_0ə$ last syllable open	$-VC_0əC_{[+son]}$ last syllable closed by sonorant consonant		$-VC_0V_{[full]}C_0$ last syllable open or closed	
['hu:lə] *hule* (noun)	[ɔ:ḅən] *åben* ['vɔ:ʔḅən] *våben*		['næ:ḅo] *nabo* ['vi:sɔm] *visum*	
no *stød*; isolated exceptions	*stød* is not predictable		no *stød*	

Table 2

This outline will form a basis for the investigation of whether it is reasonable to postulate zero in the Danish imperative, which we in table 1, in section 4.1, saw was the case. However, compared to their representation of Danish grammar (Allan, Holmes, and Lundskær-Nielsen 2002), I go beyond the level of orthography, to that of phonology, in order to account for what is going on in spoken Danish. I will thus invoke Grønnum's outline of *stød* in Danish lexemes in order to systematize the class of Danish verbs according to their phonological structure as well as the presence or absence of *stød* in the imperative and/or infinitive.

4.3. *The notional system*

As I have already mentioned above in section 4.1, the infinitival *-e*, which orthographically must be present, is often not pronounced in colloquial standard Danish. In order for the reader of this paper to have no problem disambiguating the infinitive from the imperative, I will, however, still represent this *-e*. Furthermore, I will only give a phonetic transcription of the various words when necessary, and I will additionally symbolize the *stød* orthographically by an apostrophe ('), as in the English *I'm*, *I've*, *you're*, *s/he's*, and *Peter's*, etc. Thus, in a representation of a word such as *forfølge* [fɔˈføl?jə] (chase), the infinitive will be written as *forfølg'e* and the imperative as *forfølg'*. It is therefore very important that the reader remember that this infinitival *-e* is only present here for argumentative and presentational purposes in order to keep the two apart.

4.4. *The verb stem system*

Traditional Danish grammars, such as *Danish: A Comprehensive Grammar* (Allan, Holmes, and Lundskær-Nielsen 2002), typically divide the Danish verbal system into different conjugations – depending on various things, such as types of suffixes, regularity vs. irregularity, vowel alternations in the stem, etc. This is, in all fairness, based on orthography. I will below propose an additional, phonological system that, however, does not exclude or reject the traditional, conjugational system. This system will better account for the relationship between the infinitive and the imperative, and will thus help us determine whether it is reasonable to postulate zero in the Danish imperative – not only at the level of orthography, at which zero often has been invoked, but also at the level of phonology.

Based on Grønnum's outline of *stød* in Danish lexemes (2001: 177), table 2, I propose a verb stem system which will account for the occurrence of *stød* in the infinitive and the imperative respectively. Compared to traditional sketches of the morphological correlation between the infinitive and the imperative, in which three verb stem classes are proposed (Allan, Holmes, and Lundskær-Nielsen 2002: 301)[19], I propose six such verb stem classes. I define the first two as so-called *vowel stem classes* and the last four as *consonant stem classes*. The six verb stem classes, which I will elaborate further on below, can be schematized as follows:

	Oxytone/Paroxytone	Infinitive	Imperative
Vowel stem$_1$	V	*Stød*	*Stød*
Vowel stem$_2$	V	no *stød*	*Stød*
Consonant stem$_1$ (monosyllabic)	III, IV, V	no *stød*	*Stød*
Consonant stem$_2$ (monosyllabic)	I, III	no *stød*	no *stød*
Consonant stem$_3$ (polysyllabic)	III, IV, V	*Stød*	*Stød*
Consonant stem$_4$ (polysyllabic)	I, III	no *stød*	no *stød*

Table 3

4.4.1. *The vowel stem verbs*
These two classes are indeed not very big. Altogether, they include no more than 37 verbs (Grønnum 2001: 188) and are to my knowledge all monosyllabic.

The first one, which I call *vowel stem class* 1, consists of 28 verbs of which the infinitive and the imperative conflate. None of these therefore contain the infinitival *-e*. To name a few, these are verb such as: *se'* (see), *gø'* (bark), *tro'* (believe), and *få'* (get). All of them contain *stød* in the infinitive as well as the imperative and do therefore conflate not only at the orthographic/morphological level but also at the phonological level. As can be seen from the outline above, all these verbs belong to *Oxytone lexemes* V and do therefore contain a *stød*.

The second class, *vowel stem class* 2, consists of only nine verbs. In this class the infinitive and the imperative never conflate. This is also reflected in the orthography in which the infinitive does contain an *-e* even though, and unlike *vowel stem class 1*, it is preceded by another vowel. To illustrate, consider: *a'* vs. *ae* (stroke/pat/caress), *di'* vs. *die* (suck/nurse), and *sku'* vs. *skue* (see/look). There is thus no *stød* in the infinitive of these nine verbs, whereas it is present in the imperative.

Thus, what we have seen about the presence or absence of *stød* in the infinitive and the imperative of *vowel stem verbs* does not seem to tally completely with the single *vowel stem class* proposed by Allan, Holmes, and Lundskær-Nielsen – that is, in some verbs in *vowel stem verbs* the infinitive and the imperative do not actually conflate, not only phonologically but also orthographically. This is why I propose the necessity of two such classes.

Now, turning our attention to the classes of *consonant stem verbs*, we will try to decide whether the picture resembles that of the *vowel stem verbs* or not.

4.4.2. *The consonant stem verbs*
As stated earlier, I believe that four *consonant stem classes* are enough to account for the relationship between the infinitive and the imperative. These will, as the following will show, make it possible for me to generalize and state what I believe to be the truth about the alleged zero in the Danish imperative. That is, elucidating to what extent it is reasonable to invoke zero in the Danish imperative, as has been done so often by various different grammarians.

The first two *consonant stem classes* are monosyllabic, and in order to determine whether a *stød* is present in the infinitive and/or the imperative we should thus make reference to the *Oxytone lexemes* in the outline presented by Grønnum (table 2). The last two *consonant stem classes* are polysyllabic in nature, however, this does not necessarily mean, as Grønnum (2001: 190) indicates, that the presence or absence of *stød* is to be found in the *Paroxytone lexemes*. More on this later, when accounting for *consonant stem class* 3 and 4.

Consonant stem class 1 is to my knowledge by far the largest of all the six verb stem classes. It covers lexemes from *Oxytone lexemes* III, IV, and V. Just to name some of the verbs which belong to this *consonant stem class*, consider: *ka'ld* vs. *kalde* (III: call) *kom'* vs. *komme* (III: come), *el'sk* vs. *elske* (IV: love) *tæn'k* vs. *tænke* (IV: think), *spi's* vs. *spise* (V: eat), *ta'l* vs. *tale* (V: speak). As can be seen from the examples just given, the *stød* only occurs in the imperative and not in the infinitive. The size of this class is thus illustrated by the fact that this *consonant stem class* contains lexemes differing wildly between different types of *stødbases* such as: short vowel + phonetically voiced consonant (III)[20], short vowel + phonetically voiced consonant followed by an additional consonant (IV), and phonologically long vowel with or without successive consonants (V).

Consonant stem class 2 is indeed not that large, but it is, however, rather interesting. This is because it is the only one of its kind in which the imperative does *not* contain a *stød*. The verbs of this *consonant stem class* belong either to *Oxytone lexemes* I, and do therefore not have a *stødbasis*, or to *Oxytone lexemes* III, in which case it seems that only short vowels followed by a non-sonorant consonant are without *stød* in the imperative[21], consider: *byg* vs. *bygge* [ˈbyg(ə)] (III: build), *hop* vs. *hoppe* [ˈhɔb(ə)] (III: jump), *husk* vs. *huske* [ˈhusg(ə)] (III: remember), *kys* vs. *kysse* [ˈkøs(ə)] (I: kiss), *skub* vs. *skubbe* [ˈsgåb(ə)] (III: push) *tak* vs. *takke* [ˈtɑg(ə)] (III: thank), *tis* vs. *tisse* [ˈtis(ə)] (I: pee), and *visk* vs. *viske* [ˈvesg(ə)] (III: whisper) – just to name a few.

Consonant stem class 3, which I define as polysyllabic, consists of two types of verbal forms. Firstly, prefixed monosyllabic stems, and secondly, genuinely polysyllabic stems. Thus, the former are the verbs from *consonant stem class* I but in this case prefixed. Consider: *bespi's* vs. *bespi'se* (feed), *forføl'g* vs. *forføl'ge* (chase/pursue), *forø'g* vs. *forø'ge* (increase), *fremel'sk* vs. *fremel'ske* (grow/encourage), and many more. What all these verbs have in common is the fact that the *stød* is not lost in the infinitive which was the case in *consonant stem class* 1. This shows, Grønnum argues, that the relevant division is in front of the infinitival *-e*, and not between prefix and root. Thus, it is *bespi's+e* and not **be+spi'se* because otherwise the *stød* would have been lost (Grønnum 2001: 190-191 & 194). The second type of verbs in this class is genuinely polysyllabic stems, such as: *arbej'd* vs. *arbej'de* (work), *eksemplificé'r* vs. *eksemplificé're* (exemplify), *kassé'r* vs. *kassé're* (discard/reject). In this case, too, the *stød* is not lost in the infinitive, which, then, indeed is the general picture of *consonant stem class* 3.

Lastly, *consonant stem class* 4 could in fact be aggregated with *consonant stem class* 2, seeing that they behave similarly in terms of having no *stødbasis*. Actually, this last class is in reality prefixed verbs from *consonant class* 2, but I have chosen to keep them apart so the differences between the two polysyllabic classes are more obvious. Illustrating verbs from this class, consider: *afhug* vs. *afhugge* (cut/chop off), *befæst* vs. *befæste* (fortify). I have not come across any verbs belonging to this class which are polysyllabic even without the prefix. Ultimately, this illustrates that *consonant stem class* 4 is rather small.

This does, then, give us the nice overview of the liaison between the infinitive and the imperative, which I presented in table 3 above. By referring to the presence or absence of *stød*, this table thus accounts for the fact that the pronunciation of the infinitive and the imperative of many verbs in spoken Danish conflates – thereby disregarding the orthographic infinitival *-e* as an appropriate indexation of the verbal differences in spoken Danish. Even though it is evident that *stød* in terms of verb stem classes occurs more often in the imperative than in the infinitive, and that the reverse holds for the absence of *stød*, it is still

the case that in four out of the six proposed classes the infinitive and the imperative conflate in the case of presence or absence of *stød*. Only in *vowel stem class* 2 and *consonant stem class* 1 are the two kept distinct from one another. The question is then how we are supposed to deal with such facts when it comes to the notion of zero.

4.5. *Zero imperative or not zero imperative? That is the question*

In this section I will account for the notion of zero in relation to the Danish imperative. I will briefly start by illustrating why it is wrong to invoke the concept of zero in the imperative at the level of orthography. Thereafter, based on what has been summarized in table 3, I will show why it is not reasonable to postulate zero in the imperative of spoken Danish.

4.5.1. *The (dismissal of the) orthographic zero imperative*
Allan, Holmes, and Lundskær-Nielsen (2002: 244 & 308) assume the presence of a zero in the imperative of all Danish verbs – and also a zero in the infinitive of all vowel stem verbs, thus disregarding my *vowel stem class* 2. In terms of the criteria proposed by Haas, this orthographic zero imperative can easily be dismissed due to the fact that there is no alternant allomorph at all to this alleged zero, and one of the criteria, as must be kept in mind, is indeed that zero can never be the sole realization of a particular morpheme – it requires other substantive allomorphs. Furthermore, this orthographic zero imperative does not meet the requirements of McGregor's refined Haasian criteria either. He proposes that zero need not necessarily have alternant allomorphs, but instead some sort of indexation. This effectively means that it can in fact be the sole realization of a morpheme. However, in the case of the orthographic Danish imperative there is no indexation whatsoever, as was the case in *Gooniyandi*. Hence, the imperative and the stem is thus one and the same thing and it is thus more appropriate to speak of plain nothing than of zero in this particular case which, it seems, is what Allan, Holmes, and Lundskær-Nielsen mean – illustrating yet again the general misconception of the notion of zero.

4.5.2. *The phonological zero imperative*
As is evident from table 3, and this is indeed supported by Grønnum (2001), the concept of *stød* is unquestionably a general trait of the imperative. That is, the majority of verbs have *stød* in their imperative form, and the ones lacking it can simply be accounted for due to their phonological structure which either has no *stødbasis* or is unpredictable in terms of the occurrence of *stød* (*Oxytone lexemes* 3). Thus, in these cases, I do not find it appropriate to talk of the *stød* as if it has been left out since this implies that speakers have a choice between *stød* and no *stød*. This is not the way it works, because if, due to phonological structure, a lexeme has no *stødbasis* then speakers cannot decide to insert one anyway, so to speak. Consequently, the imperative is more adequately described as being the stem, a fact which is supported by Grønnum (2001: 188-190). This effectively means that the differences between verbs containing *stød* and those containing no *stød* in the imperative should not be accounted for in terms of the notion of zero. What we find is rather that the presence or absence of *stød* in the imperative is simply due to the phonological structure of the lexeme in question.

     Haas' criteria would indeed also reject any attempt to postulate zero in the imperative due to the lack alternant allomorphs. That is, the absence of *stød* is not due to a choice made by the speaker – it is a general consequence of the phonological structure of the various lexemes. He would thus not, I imagine, assign the morphemic value of "imperative" to the

stød and thereby argue for a zero imperative in the absence of any *stød*. The criteria proposed by Haas would therefore, as I have accounted for, elucidate the plain nothing of the imperative by reference to the fact that the imperative *is* the stem, and that there without a doubt exists no substantive allomorph that would indicate otherwise.

Thus, by reference to Grønnum's outline of the presence or absence of *stød* in Danish lexemes according to their phonological structure (table 2) as well as to my own schematization of the Danish verb stem classes (table 3), I have shown that the concept of segmental zero does not adequately account the Danish imperative. What is really there is plain nothing, regardless of whether a *stød* is present or not. Consequently, equating the imperative with the stem accounts for the constant monomorphicity of the imperative due to there being no inflectional segment indicating the imperative mood. Rejecting the zero imperative in Danish may thus be a surprising conclusion for some but clearly the best way to account for the Danish imperative.

Since the imperative and the stem seem to be one and the same, it, then, begs the question whether a zero infinitive is actually a better and more accurate way to account for the many instances of conflation between infinitives and stems in spoken Danish? An interesting question, and one I have never encountered before – possibly because the orthographic infinitival *-e* does not allow this generalization. That is, the presence of this *-e* covers up the fact that in reality many infinitives conflate with the stem. Thus, in the following, I will attempt to decide whether it is reasonable to postulate zero in the infinitive. I will start by arguing that if this line of argumentation, and thus this kind of zero, is to be accepted by the Haas' as well as McGregor criteria, then certain things must be kept in mind or else zero in the infinitive will be dismissed from the very beginning. I will look at the level of orthography, and then, in dealing with the phonological level, I will readjust table 3 so that it will show to what extent this line of reasoning is preferable.

4.6. *Zero infinitive*

At this point it is necessary to keep in mind that the stem and the imperative are one and the same, and therefore, quite daringly and indeed controversially, I propose that the imperative, as an inflectional category, is non-existing. That is, in Danish there is no substantive morph indicating the presence of the imperative inflectionally. Thus, being a morphologically empty category in terms of having no substantive morphs contrasting with others semantically, I suggest that it is inflectionally absent. I am, however, not rejecting the concept of imperative in Danish grammar; I am simply arguing for a conflation of the imperative and the stem. In other words, the imperative only has distinctive value syntactically and pragmatically, but not inflectionally, thereby being non-existing as an inflectional category.

If we do not accept this rejection of the imperative as an inflectional category, then postulating zero in the infinitive is out of the question, since the zero would then contrast with the nothing of the imperative in many cases, as we have seen in table 3. This kind of distinction of indiscernibles is, according to Haas, not preferable, as I have accounted for above, section 3. However, by disregarding it as an inflectional category and making it equal to that of the stem, we have the possibility of greatly generalizing between the infinitive and the stem by invoking zero as an explanatory device at the phonological level – generalizations which are not possible to make at the level of orthography.

4.6.1. *The orthographic zero infinitive*

Accepting the non-existing inflectional imperative as an adequate description of the relationship between the stem and the imperative and thus making the inflectional differences opaque, makes it possible to generalize greatly between the infinitive and the stem. At the level of orthography, as I have accounted for above, only 28 verbs conflate with the stem and these can therefore be described as having a zero infinitive – those which I have classed as *vowel stem class* 1. Furthermore, this zero infinitive morph is not the sole realization of the infinitive morpheme, seeing that the standard allomorph is the familiar infinitival *-e*. Thus, it is sanctioned by both of Haas' criteria, because it is not the only realization of the morpheme and it occurs in paradigmatic contrast with overt forms that contrast with it semantically.

4.6.2. *The phonological zero infinitive*

Now, it is imperative that the reader be aware that the phonological zero infinitive does not rest in either the presence or the absence of *stød*. That is, this zero may contain a *stød*, but it may just as well be without it. What matters is that zero represents the lack of separate phonological location, so we are able to decide which verb stem classes can be adequately described as containing a zero infinitive.

   Only in two of the six verb stem classes do the infinitive and the stem not conflate. These are *vowel stem class* 2 and *consonant stem class* 1, and in both of these is it the lack of *stød* in the infinitive compared to the presence of *stød* in the stem that must be taken to be the so-called separate phonological location. The differences and similarities in terms of presence or absence of *stød* between the infinitive and the stem can thus be summarized as follows:

	Oxytone/Paroxytone	Stem	Infinitive	Indexation
Vowel stem$_1$	V	**stød**	**stød**	**no change**
Vowel stem$_2$	V	*stød*	no *stød*	change
Consonant stem$_1$ (monosyllabic)	III, IV, V	*stød*	no *stød*	change
Consonant stem$_2$ (monosyllabic)	I, III	**no stød**	**no stød**	**no change**
Consonant stem$_3$ (polysyllabic)	III, IV, V	**stød**	**stød**	**no change**
Consonant stem$_4$ (polysyllabic)	I, III	**no stød**	**no stød**	**no change**

Table 4

This "change" in *vowel stem class* 2 and *consonant stem class* 1 points to the presence of the zero infinitive. In other words, "change" is the overt alternant which indicates that "no change" in the other four verb stem classes can be correctly construed as a sign of zero in the infinitive. However, it is not an allomorph, as Haas argues must be the case (Haas 1957: 49) – it is but an indicator. But, McGregor, as I have shown, argues in the case of the *Gooniyandi* third person bound pronominals that the solution lies in the prerequisite that there be some overt indexation of the alternation – but not necessarily alternating allomorphs. Thus, even though *vowel stem class* 1 and *consonant stem class* 3 contain a *stød* in the infinitive and *consonant stem class* 2 & 4 do not contain a *stød*, they are all best described as being a zero infinitive – regardless of this is expressed via *stød* or not. That is, the pivotal requirement is whether presence or absence of *stød* in the infinitive of any of the verb stem classes is a sign of change in the expression substance, and hence an indicator of a zero infinitive when no change occurs.

This shows that by invoking the notion of zero in the description of the relationship between the stem and the infinitive in spoken Danish, it is possible to capture some great generalizations which would be lost if we did not postulate zero at the phonological level. That is, standard descriptions of Danish morphology do not capture these facts, and there are two reasons why this is so. Firstly, they work at the level of orthography at which the stem/imperative and the infinitive never conflate, except for those 28 verbs. And secondly, they do not invoke the concept of zero correctly. Instead, as I have done, by equating the imperative with the stem, rather than postulating a segmental zero as the only morph of the morpheme "imperative", I have been able to describe adequately when the stem and the infinitive conflate, as well as when they do not, via the notion of zero.

Summing up, what matters when invoking zero in a description of the relationship between the stem and the infinitive is not that one necessarily has to find realizations of overt allomorphs. What matters is that one can find some index indicating that somewhere in the paradigm the relationship is best described by postulating zero and this is exactly what I have shown is the case in the Danish infinitive. That is, by acknowledging "change" as being something with separate phonological location, it is possible to ascribe zero to "no change", and thus capture a generalization which traditional, morphological descriptions of Danish grammar seem to overlook.

5. Conclusion

My conclusion is a warning that the concept of zero, or gap as suggested by McGregor, has been invoked wrongly in descriptions of the relationship between the stem, the imperative, and the infinitive in Danish. That is, postulating that the imperative can be adequately described in terms of zero is not only wrong at the level of orthography but also at the level of phonology – no index has been found, as is required by McGregor's criteria.

However, in order to capture the fact that in spoken Danish the infinitive and the stem/imperative conflate in certain verb stem classes, I have proposed an equation of the imperative with the stem so that the imperative effectively has no inflectional value. That is, choosing the imperative of any verb is simply choosing the bare stem. Accepting this sign of equation between the two – something which is also accepted in Grønnum (2001) – makes it possible, instead, to invoke the concept of zero in the description the relationship between the stem/imperative on the one hand and the infinitive on the other. Thus, postulating zero at the phonological level between these two, as I have illustrated, is, it seems, the best way to adequately capture the generalization that the latter, in colloquial talk, sometimes conflates with the former and sometimes not.

Consequently, the surprising conclusion is that the concept of segmental zero is not an adequate explanatory device in the description of the Danish imperative, neither at the level of orthography nor at the level of phonology. However, I have demonstrated that it is indeed an adequate (and required) tool in the description of the relationship between the stem and the infinitive in colloquial talk, and that without it, these facts will be hard to account for.

Finally, it seems, there is no consensus amongst linguists as to what the concept of zero is, and how to invoke it in an adequate and uniform manner. That is, as I illustrated in section 2 and 3, its applications differ wildly. Common criteria for postulating zero are thus required, or else we run the risk of having too many different zeros – a mere trash can category, where the different zeros, ultimately, are not even analytically related. Such a situation should

preferably be avoided as the notion of zero will, no doubt, lose its distinctive and descriptive value altogether. At this point, it seems that McGregor's refined Haasian criteria are helpful in detecting those problematic zeros which should be accounted for differently even though there is *nothing* in the expression substance – that is, the *nothing* that is. However, whether they in the long run stand up to the test and thus never allow descriptively problematic zeros is indeed an interesting question. If they do not, the criteria must be modified in order to be able to account for the newly arisen situation.

Notes

[1] In this paper I will not question the status of the morpheme as a linguistic unit. I will instead assume that it is indeed a liable concept. For a more detailed account of its status, see Bauer (1999).

[2] Furthermore, Givón proposes a cyclic wave of the following kind (Givón 1979: 208-209): *Discourse > syntax > morphology > morphophonemics > zero*. Here, too, it seems that zero simply refers to the loss of physical realization.

[3] This is a re-formulation of Haas' two conditions and has been taken from McGregor (2003: 84).

[4] Zero segmental element (McGregor 2003: 82).

[5] Such as *dail* (leaves) vs. *dailen* (leaf), *mefus* (strawberries) vs. *mefusen* (strawberry), and *tywys* (corn) vs. *tywysen* (ear of corn) (Haspelmath 2002: 244)

[6] However, he recognizes that the "non-distinction of indiscernibles" constraint unfortunately admits some dubious instances of zero – i.e. zero singular suffix for English nouns (McGregor 2003: 87).

[7] These refined conditions would still avoid invoking zero in Greenberg's universals. Even though zero can now appear as the sole realization of a morpheme it still needs some kind of index indicating it presence, and that does not seem to be the case in universals 35 and 38.

[8] Mithun invokes a pragmatically based discourse account of zero in bound pronominals (Mithun 1986) and Du Bois a functional/economical explanation of zero in the absolutive case in Sacapultec in which speakers avoid what he calls "double positives" – avoidance of the presence of an overt argument a in the free position as well as an overt cross-referring pronominal in the verb (Du Bois 1987: 215). From a theoretical perspective, these also seem to be useful zeros in that they explain some language-internal tendencies as well as some cross-linguistic tendencies.

[9] Such as *It is raining* or *It is Peter who loves Suzy* (clefting).

[10] Some verbs get an infinitival –*e* even though they consist of a vowel stem – such as *die* (to suck).

[11] Abbreviations: v.st. = vowel stem and c.st. = consonant stem.

[12] Thus, a distinction of indiscernibles which should be avoided, as stated by Haas (1957: 36).

[13] Furthermore, in some *vowel stem verbs* the imperative and the infinitive do not conflate.

[14] I will phonetically represent the *stød* as [?].

[15] This does, however, not necessarily mean that a syllable with *stødbasis* actually has a *stød*. Something may disqualify its presence (Grønnum 2001: 175).

[16] Thus accounting for why [tˢals], but [ɟal?s] not, is morphologically complex (Grønnum 2001: 173)

[17] With very few and indeed very general exceptions.

[18] Oxytone: stress on last syllable. Paroxytone: stress on penultimate syllable

[19] One vowel stem class ("to walk": $gå_{IMP}$ → $gå_{INF}$) and two consonant stem classes – one ordinary ("to help": $hjælp_{IMP}$ → $hjælpe_{INF}$) and one with doubling of final consonant in the infinitive before the infinitival *-e* ("to come": kom_{IMP} → $komme_{INF}$).

[20] In Grønnum's outline it is illustrated that it is not predictable whether the lexemes in *Oxytone lexemes* III do or do not contain *stød*. Thus, verbs of this class containing *stød* in the imperative belong to *consonant stem class* 1, if no *stød* in the imperative they belong to *consonant stem class* 2.

[21] If not, these verbs, it seems, belong to *consonant stem class* 1.

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