Handout 3

Week 4

Inflection and derivation in a concatenative system:

Bauer p. 39 (2.16.2) Hippisley p 28.-48

Morphologists all but agree on how to distinguish inflection and derivation, and it is perhaps reasonable to think that this issue deserves to be taken very seriously when considering affixes in a concatenative morphology.

As a rule of thumb, inflection is taken to be a process which **does not change the 'meaning'** of a lexeme, in that it **does not create a new word**, but rather 'inflects' it, which means that it produces a word-form of the same lexeme but with different **grammatical/syntactic values** for features like number and tense.

Derivation, on the other hand, is considered to be a process which **gives rise to new lexemes**, with **new meanings different that the original lexeme whence it is derived**.

However, much of the debate revolves around a viable strategy to demarcate the borders between inflection and derivation, and perhaps there is no such border, if we conceive of this difference as a **continuum**, wherein inflection, strictly syntactic/grammatical (but how do we define that anyway?) is on one end, and compounding is on the other. Here, derivation by means of affixation can be seen as something that has no strict beginning or end point.

First, let us define what inflection is. If the affix provides information that does not change the meaning of the word, but rather provides a **morphological output for a syntactic input**, it may be called an inflectional affix. Think of the word 'start'. The syntax provides some attributes which need to be addressed by morphology. Here, the syntax tells us that our word 'start' is a verb (rather than a noun, for example). Once the syntax provided us with the fact that this is a verb, morphology waits for a syntactic input on [tense] and/or [aspect]. Let's say the syntax provided the feature [past] for tense and [simple] for aspect. Here, morphology does its job by providing morphological content for the syntactic input, in which case it is the suffix '-ed'. The morphology here needs to address some idiosyncratic attributes of the verb. For instance, with the example of 'start', the morphology first processes the fact that this verb is 'regular', i.e. the morpheme to be added, which corresponds to [past] and [simple] is some variant of '-ed'. Next, the fact that this verb ends with an alveolar stop is 'acknowledged', and since the morpheme to be added also contains an alveolar stop, morphology solves this issue by inserting an epenthetic vowel here, and we end up with the **allomorph** /ɪd/ for [past] and [simple].

This somewhat lengthy explanation provides an account of an inflectional process, as well as a justification for allomorphy.

Other syntactic attributes that call upon inflectional morphology for aid include:

Number: cat [singular] ➔ cat [plural] = cat + '-s' = cats ('-s' is an inflectional suffix)

Gender: Italian bello [masculine] 'beautiful' → bello [feminine] = bell- + '-a' = bella ('-a' is an inflectional suffix)

Some problems with this approach:

First off, a smaller problem to deal with here is why the masculine form should be considered 'default' in Italian. Morphologists do not agree that this is always the case. Perhaps the default form is the feminine (or some historical neutral form with a different morphemic realization), wherefrom the masculine is the inflected form. Perhaps the default form is completely uninflected, i.e. we start off with the root 'bell-' and wait for further syntactic input on gender in order to inflect it with '-o' if it is masculine, and '-a' if it is feminine.

This takes us to a bigger problem: Gendered words in Italian are usually considered to be the domain of inflectional morphology, but this is not the case in English.

English does have a suffix '-ess', and less commonly '-trix' for creating feminine nouns, but these are not considered inflectional suffixes. This is because '-ess' can only be used with a closed set of nouns, and is generally **not highly productive**. For example, a 'hostess' is the female counterpart of a 'host', but a '*professoress' is not the female counterpart of 'professor' (cf. Italian 'professoressa' as opposed to 'professore', however). A female lion is a lioness, but a female camel is not a *cameless. Thus, gender cannot be designated as an inflectional category in English, but is rather a derivational one, as the words which contain these suffixes are usually considered new lexemes and not word-forms of the original 'default' masculine words.

In Romance languages, however, we know that gender is an inflectional category because of **agreement** and/or **concord**. For example, the presence of the masculine '-o' in nominals forces the definite article to be 'lo' if the noun starts with the clusters /sp/ /st/ /sk/ /nj/ /pn/ /ps/ /ks/ /ts/ /dz/ or /j/, and 'il' otherwise. On the other hand, the presence of the feminine '-a' forces the definite article to be 'la'. This is also what happens with the indefinite article: 'un' for masculine nouns ('uno' if the noun starts with the aforementioned clusters, see above), and 'una' for feminine nouns. Likewise, if the noun is masculine, say, 'ragazzo' 'boy', then the adjectives which can be used to modify this noun can only be inflected for the masculine, e.g. 'un bell(o) ragazzo', otherwise, for 'ragazza' 'girl', it would be 'una bella ragazza'. This is called **concord**. **Concord** here gives us evidence that gender is an inflectional process in Italian.

No such concord exists in English.

Yes, some outlying cases of gendered adjectives exist, such as beautiful (fem.) and handsome (masc.), but this is not so common an occurrence that we'll consider it concord. Also cf. The smart girl vs. the smart boy.

Another problem arises here; if English is a language which does not systemically employ concord, where concord is defined strictly as a nominal relationship (NOT verbal agreement), how do we know what is inflectional and what is derivational?

If we take the definition above to be what differentiates inflection and derivation, i.e. creating new meanings, what is to be considered a new meaning?

Why is number, i.e. the suffix '-s' considered inflectional, while the suffix '-er' as in the agentive marker considered derivational?

Why can't we say that the suffix '-er' is required by the syntax via an input feature [agent]?

Likewise, why can't we say that the plural suffix '-s' is creating a new meaning when added to words, like 'cat' 'cats' where the former's meaning is 'one cat' and the latter is 'more than one cat'?

Perhaps a 'safe' route we can take here is **productivity**. Inflectional morphology, by virtue of being somewhat 'extra-morphological', in that it is idiosyncratically determined by the syntax, may be thought of as infinitely productive. This means that the productivity of inflection is not bound by the finiteness of the lexicon. In other words, it should be theoretically possible to inflect any word in the lexicon, as these inflections are outside of it (the lexicon). Features like number in English and gender in Italian are inflectional because any noun in the lexicon may have the value [singular] and [plural] in English and [masculine] and [feminine] in Italian, which means that the respective inflectional suffixes in these languages can be added to any noun in the lexicon, i.e. infinitely productive. Derivation, however, is much more bound by the lexicon. Because 'playable' is something which can be played, i.e. 'play' (v.) + '-able' (adjectival), then this word is possible, but '*bringable' is not something which can be brought, and '*riseable' is not something which can be risen, therefore, '-able' is bound by what the lexicon allows. This is not the syntax's job anymore, but rather what the lexicon of a certain language permits.

However, consider the agentive '-er' in English. It is virtually 'addable' to any verb, with the exception of copular verbs like 'be' and 'become', as well as 'cost'. Does this mean that '-er' should be considered an inflectional suffix on account of it being quasi-infinitely productive?

What about prefixes such as 'post-' meaning 'after', which can also be virtually added to any word to create the meaning of 'after X'?

Hence, productivity is not a foolproof method of distinguishing inflection and derivation, either.

One last thing that we may be able to consider here is that inflection is required by the syntax, while derivation is tied to semantics. Semantics is what tells us that a certain verb, with regard to its own idiosyncrasies, requires one or more arguments. It is also semantics that tells us what kind of arguments this verb requires, e.g. an agent external argument (subject). This, then, could be thought of as a motivator for derivation.

What about category changing suffixes?

Consider the adjective 'modern'. The noun derived therefrom is 'modernity', that is 'modern' + '-ity' (noun forming suffix). This is said to be a derivational process, not an inflectional one. Why can't we say, instead, that this is inflection? We are basically inflecting the adjective 'modern' and changing it from an adjective to a noun, as can be shown 'syntactically':

Modern (adj.) + [noun] OR Modern (adj.) + [nominalize].

Compounding:

So far, we have discussed inflection and derivation, both of which include affixation of a *bound morpheme to a free morpheme*. **Compounding**, however, sits at the extreme end of derivation. This includes adding **two free morphemes to create one new lexeme**. For example, 'mouse' and 'pad' gives us 'mousepad'. Whichever element takes the plural marker is supposed to be the 'head'. This means that in 'mousepad', it is 'pad' that is the head, since the plural would be 'mousepads' and not 'micepad', and because a 'mousepad' is a type of pad, not a type of mouse.

In a concatenative morphology, although it is easy to segment compounds into their constituent free morphemes, it is important to determine factors like headedness, meaning and inflection.

Think of the compound verb 'stir-fry'. Are you stirring or frying? Perhaps the same method here holds applicability value: Inflection falls on 'fry' not on 'stir' as we say 'He is stir-frying the vegetables' and NOT 'he is stirring-fry the vegetables'.

And while it may seem that the rightmost element is always the head and target of inflection, consider the compound 'passerby' where this is a type of 'passer', not a type of 'by'. Here, the leftmost member is where inflection falls, i.e. 'passersby' and not '*passerbys'.

What about compounds that trigger a change in the relative stress on one of the free morphemes?

Consider the free morpheme 'man': It can be used to form compounds like 'policeman' 'iceman' 'horseman' 'Superman' etc.

And while the full vowel in 'man' may be pronounced in some compounds that include it as a suffix, in other compounds, it can only be pronounced with a schwa. This represents an extreme case of the inflection/derivation/compounding cline. This is how grammaticalization works. Here, we can witness the free morpheme 'man' transforming to a suffix '-man'. This is where compounding starts becoming derivation. Perhaps no further clarification is needed to differentiate compounding from inflection, as the borders are quite clear and unmistakable.

Question: Think of the word 'technocrat'. Is this one morpheme? Or is it 'techno-' + '-crat'? Is this compounding? Is this derivation? Which morpheme is the head?

With this in mind, we should discuss some characteristics of prefixes and suffixes:

1. Prefixes are *usually* derivational, while suffixes are inflectional.

2. Suffixes *can be* **stacked**, i.e. a stem can have more than one suffix attached to it; prefixes are usually unstackable.

3. Suffixes *tend* to **grammaticalize**, prefixes do not.

Week 5

Inflection and derivation in a non-concatenative system:

McCarthy 1979 p. 248-254, 284-286

It might be easier here to start with inflection, as the notion of derivation in a non-concatenative framework needs to be reassessed.

With the idea that inflection is syntactically determined and serves a grammatical purpose, we will try to stick to the most 'conventional' inflectional categories:

1. Verb tense conjugation according to person and number

2. Possession

3. Gender

4. Number (nominals)

5. Definiteness (or lack thereof)

First, some examples will be given and the constituent morphemes will be segmented and analyzed:

1. Verb tense: (Lebanese) Arabic has two main tenses, regardless of aspect.

A. The Past (perfective): It is taken to be the 'default' tense, it is also called perfective. To conjugate for person and number, suffixes must be added at the end of the verb:

'katab' 'to write' Form I

1st sg 'katab-t' 'I wrote'   1st pl 'katab-na' 'we wrote'

2nd sg masc 'katab-t' 'you (m.) wrote'   2nd sg fem 'katab-te' 'you (f) wrote'

3rd sg masc 'katab-Ø' 'he wrote'   3rd sg fem 'katab-it' 'she wrote'

2nd pl 'katab-to' 'you wrote'   3rd pl 'katab-o' 'they wrote'

Evidently, the data shows that verb conjugation is a concatenative process whereby the suffixes added to the end of the verbs have specific segmentable morphemic realizations and meanings.

B. The Non-Past/ Present (imperfective): The regularity and concatenation by which the perfective operates is a bit trickier here. Observe the data that follow:

1st sg '(b)i-ktub 'I am writing'   1st pl 'ni-ktub 'we are writing'

2nd sg masc 'ti-ktub' 'you (m.) are writing'   2nd sg fem 'ti-ktub 'you (f) are writing'

3rd sg masc 'yi-ktub' 'he is writing'   3rd sg fem 'ti-ktub 'she is writing'

2nd pl 'ti-ktb-o 'you are writing'   3rd pl 'yi-ktb-o' 'they are writing'

If we assume that the imperfective form is derived from the perfective, then the case for concatenation in the verbal paradigm falls apart, because the stem, taken to be 'katab' in the perfective, is changed to 'ktub' and 'ktb' in the imperfective.

If, however, we claim that the imperfective form is non-derived, then perhaps a case can be made for concatenation on the basis of the prefixes we see in the data.

2. Possession: It is likewise a concatenative process. Observe the data below:

'kteb' 'book (n.)'

1st sg 'kteb-e' 'my book'   1st pl 'kteb-na' 'our book'

2nd sg masc 'kteb-ak' 'your (m.) book'   2nd sg fem 'kteb-ik' 'your (f.) book'

3rd sg masc 'kteb-o' 'his book'   3rd sg fem 'kteb-a' 'her book'

2nd pl 'kteb-kon' 'your book'   3rd pl 'kteb-on' 'their book'

Again, it is clear that the inflectional process of possession is concatenative in Arabic.

3. Gender: It is an inflectional category in Arabic, as the words do not create new, separate meanings, but rather triggers a gender switch from masculine to feminine (cf. the discussion on Italian).

To form the feminine of a noun, the suffix '-a/-e' is added.

This is clearly a concatenative process where the suffix can be assigned a meaning [feminine]. However, many nouns containing the suffix are [feminine] but have no [masculine] counterpart. These are usually borrowed words like 'fetura' 'receipt' from Italian 'fattura', or 'marka' 'brand' etc.

4. Number: This is possibly the most indecisive of all inflectional categories in Arabic.

Some masculine nouns receive a plural suffix '-in' and **most** feminine nouns '-et/-at'. However, many masculine and many neuter nouns conform to a plural template. Consider the data below:

'falleħ' 'farmer' → 'falleħin' 'farmers'

'leʕib' 'player' → 'leʕbin' 'players' (the syncope here is purely phonological)

BUT

'zalame' 'man' → 'zɪlɪm' 'men'

'walad' 'kid' → 'wled' 'kids'

'žoz' 'husband' → 'žwez' 'husbands'

'estez' 'teacher (masc.)' → 'ʔasetze' 'teachers'

'kaleb' 'dog (masc.)' 'kleb' 'dogs'

This is evidence that, no matter how compositional inflection in Arabic may appear, it is still not completely concatenative.

The pervasive nature of non-concatenation in Arabic morphology shows that it is a well-developed system where templates make up the major part of word formation in the language.

5. Definiteness: An Arabic nominal which is indefinite is the bare nominal itself, which means that there is no indefinite article. An indefinite dog is 'kaleb', while a definite 'the dog' is 'lkaleb'. 'L-' is a prefix that attaches to Arabic nominals assigning the inflectional feature [definite].

With this, we may safely assume that the rest will be non-concatenative.

Derivation: Coining new words in Arabic is relatively productive on the basis of its different templates. These templates, however, almost always change the vocalic melody of the stem. For this reason, we consider Arabic word formation to be non-concatenative.

Active participles: $C_1aC_2iC_3$ or $C_1eC_2iC_3$ (the difference is phonological).

Passive participles: $maC_1C_2uC_3$

Passives/ Middle voice: $nC_1aC_2aC_3$

Bare noun/ Infinitival: $C_1aC_2eC_3$

Gerund: $tiC_1C_2iiC_3$

Form I (basic): $C_1aC_2aC_3$ or $C_1iC_2iC_3$ (the difference is NOT phonological).

Form II (causative or intensive): $C_1aC_2C_2aC_3$

Form III (associative, done with someone or to someone else): $C_1aaC_2aC_3$ or $C_1eeC_2aC_3$ (the difference is phonological).

Form IV (causative, mostly lexicalized): $ʔaC_1C_2aC_3$

Form V (passive/reflexive of form II): $tC_1aC_2C_2aC_3$

Form VI (reciprocal of form III): $tC_1aaC_2aC_3$ or $tC_1eeC_2aC_3$ (the difference is phonological).

Form VII (passive, see above).

Form VIII (reflexive, form I): $C_1taC_2aC_3$

Form IX: Lexicalized, not productive.

Form X (estimative): $staC_1C_2aC_3$

Diminutive: $C_1C_2eeC_3$/ $C_1C_2ayC_3$ (dialectal difference in pronunciation).

These are the most common derivational processes in Arabic. A question about productivity arises here. Is it the case that for every root in the language, all of these derivative forms exist?

The answer is a simple no. The reason for this is that these derivational forms are interconnected.

For example, form VI is the reciprocal of form III. What this entails is that for form VI to exist, there must be a form III first, but it is not guaranteed that every root may have a form III. So, if for a certain root there exists no form III, then by association, there can be no form VI for that root either. Thus, unlike inflection, derivation is not fully productive and is interdependent on the existence of associated forms.

This derivational system is drastically different from what's found in concatenating languages. In the latter, derivation is achieved by adding one or a series of affixes. Here, derivation is reached by means of templates.

Question: Is segmentation still possible somehow?

Infixes could be involved here.

First, let us explain what infixation is. Infixation is the insertion of an affix anywhere other than the periphery of the word, i.e. NOT at the beginning NOR at the end of a word.

An example of infixation in English would be '-bloody-' or '-fucking-' as in 'abso-fucking-lutely'. Another example would be the plural '-s' in the word 'passersby', inflected from the singular form 'passerby'.

Infixation in a concatenating language is easier to segment and categorize. The pivotal point here is that meaning can be assigned and designated in the infixes mentioned above. So, '-bloody-' and '-fucking-' both serve as intensifiers, hence [intensification] may be assigned to them.

However, the fact that Arabic also uses infixation must be investigated. Check Form VIII above. The '-t-' which occurs after C_1 in Form VIII is supposedly an infix. Two points must be elaborated on here. First, if we indeed decide to segment Form VIII into 'C_1-t-aC_2aC_3', then what exactly is the meaning we are assigning to the infix '-t-'? The answer to this question may be found in the meaning of Form VIII itself. Form VIII is reflexive, so the reflexivizing particle must be that '-t-', since the vocalic melody remains unchanged as per Form I.

Secondly, if we believe in the vowel-less root system, then 'C_1-C_2-C_3' is initially a series of consonants without vowels, and only acquires these vowels after derivation. How do we explain the rest of the vowels associated with the derived forms of roots?

The answer to that may be found in McCarthy's 1979 autosegmental analysis of Arabic morphology.

This theory claims that different elements of the derived forms map unto separate tiers.

For example, the root tier is found in 'k-t-b', which is associated with the consonantal slots in a given template.

The vowels with which the derived forms surface are on a separate melodic/vocalic tier.

Week 6

Prefixation and Suffixation between the two systems:

After this lengthy discussion on inflection and derivation in both systems, we should be able to outline some general properties of prefixation and suffixation in said systems, and then compare them to one another.

First, on prefixation in a concatenative system:

Prefixes in English cannot be stacked, that is, only one prefix can be assigned to a word. There are very limited applications of outlying prefixes which can reoccur, such as 're-', 'post-' and 'pre-'. As for 're-', it seems that doubling is possible, because of the productivity of this prefix qua verbal iteration, i.e. to do something again. This means that you can do something again after having done it once, even twice. So, if you played a song, you can replay it. If you had replayed it already, you can 're-replay' it, in which case the repetition here is of the latter 'replay' and not the former 'play', which perhaps points to the fact that 'replay' is itself considered the whole word and not an instance of 're-' + 'play' in the case of 're-replay'. This is very similar to what is going on with words like 'post-postmodernism'. Here, it is expected that 'postmodernism' has lexicalized as a word, i.e. one unit and not a series of 'post-' + 'modernism'. The construction of a term such as 'post-postmodernism' as what comes after postmodernism is possible. There is doubt, however, that a form with more than one reduplicated instance of the prefix is possible. This means that you can 're-replay' a song but not 're-re-replay' it, or to conceive of what comes after what comes after postmodernism as in 'post-post-postmodernism'.

Another feature of prefixation in English seems to be their inherent derivational nature. No English prefix holds an inflectional value; all inflectional affixes are suffixes.

Prefixes tend not to grammaticalize, but this is less relevant now.

Prefixes, though being derivational, do not trigger a change in word class.

Prefixes, by virtue of not being inflectional, do not usually trigger stem allomorphy or suppletion. *(Can we verify this? Can we find counterexamples to debunk it?)*

Secondly, on suffixation in a concatenative system:

Unlike prefixes, suffixes may freely stack. Perhaps this is a feature of their mixed nature, i.e. being inflectional and derivational. Consider the stem 'care' (n). We may add the suffix '-less', thereby creating the adjective 'careless', and then add another suffix '-ness' to derive the word 'carelessness' 'the quality of being careless'.

Question: Can you think of other instances of suffix stacking?

Next up, we will restate the fact that suffixes are of a mixed nature, in that they can be inflectional or derivational.

Suffixes usually grammaticalize (cf. English possessive).

Question: Can you think of examples of lexicalized (grammaticalized) suffixes in your native language?

Suffixes may or may not trigger a change in word class. This is treated as derivation by some linguists, and inflection by others.

Suffixes, by virtue of being the morphological manifestations of inflection, may trigger stem allomorphy or suppletion. *(Can we verify this?)*

Question: Can you think of stem allomorphy/ suppletive forms triggered by inflectional needs in English? What about other languages?

Thirdly, on prefixation in a non-concatenative system:

Since non-concatenating languages are systematically templatic, their repertoires of affixes are usually limited.

In Arabic, the definite article 'L-' is inflectional, while the prefix 'st-' as in Form X (estimative prefix) is derivational.

Consider the root 'h-b-l' 'related to stupidity'. Form X is 'stahbal' 'to act in a foolish way', the gerund of Form X is 'ʔisteC$_1$C$_2$eeC$_3$', hence 'ʔistehbeel' 'acting in a foolish way'. Furthermore, we may add the definite prefix 'l-' to form 'lʔistehbeel' 'acting in a foolish way, definite'. Here, we were able to stack three different prefixes in a row, something which is not possible in English.

Repeating a point mentioned above, prefixes in Arabic can be inflectional or derivational, however, it should be noted that the definite article is possibly one of the few inflectional prefixes in Arabic (if not the only one).

No change of class can be triggered, as the morphological system operates on the basis of abstract roots rather than the addition (concatenation) of morphemes.

Stem allomorphy/ suppletion is triggered by the requirements of derived forms, which is independent of affixation in a non-concatenating language.

Finally, on suffixation in a non-concatenative system:

Suffixes, like prefixes, may be freely stacked. Consider the word 'mxadde' 'pillow', a suffix '-et' is added to form the plural 'mxaddeet' 'pillows', after which the possessive '-kun' may be added to form 'mxaddeetkun' 'your PL. pillows'.

Unlike prefixes, however, suffixes cannot be derivational; Arabic suffixes are strictly inflectional.

More investigation is needed on the status of suppletive forms/ stem allomorphy and their relationship to what is required by either inflection or derivation.