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MORPHOTACTICS OF TURKISH VERB SUFFIXATION

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1. Introduction. Turkish is a typical example of the languages that fall into Sapir's 'complex pure-relational' category (Sapir 1921 : 142). In his terminology, it is agglutinative in technique and synthetic in structure showing very little fusion. Long strings containing sometimes more than twenty derivational and inflectional suffixes may occur in Turkish as suffixation is practically the sole morphological process.¹ Morphotactics, then, should have an important place in any discussion of Turkish structure.²

The difficulty in making statements on the tactics of suffixation increases in direct proportion to the number of suffixes, various restrictions placed on their occurrence, and the relative order in which they appear. It seems that the structure of Turkish verbal combinations represents the extreme on such a scale. The main objective in the present treatment is to arrive at a set of tactic statements that may account for all possible verbal combinations.³ Suffixes occurring in these combinations may express reciprocal, reflexive or causative relationships, voice, tense, mode, aspect, negation, interrogation, person, and number; or they may even function as nominalizers and adverbializers. Consequently, a characteristic feature of Turkish is that it has single word constructions expressing more semantic elements than in other languages such as English, German, or French.

Ordering of words and larger syntactic units is fairly flexible in Turkish. The examples below illustrate the relative freedom of word order in a basic sentence consisting of a subject, object, and verb :

¹ An extreme case, though rather forced but perfectly grammatical, is the following adverbial which contains twenty three suffixes :

Öl-üm-süz-leş-tir-tir-il-e-me-yebil-in-en-ler-de-ki-ler-den-mi-ymiş-ler-ce-sin-e 'Is it as if they are of those that belong to the ones which one may not be able to get immortalized?'

² Most works on the Turkish grammar (e.g. Dery 1941, Voegelin and Ellinghausen 1943, Banguoğlu 1974) do not deal with morphotactics systematically. Others, including specialized or partial treatments (e.g. Swift 1963 : 112-14, Lewis 1967 : 152-53, Sebüktekin 1971 : 22), offer fairly explicit but brief statements on the topic. Gleason (1961 : 112-16) makes extensive use of Turkish verb suffixation for illustrative purposes in his discussion of morpheme 'orders'.

³ The data is the writer's own idiolect. Occasionally some forms were checked with other native speakers from Istanbul.

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<u>A</u>	<u>B</u>	<u>C</u>	
<u>subject</u>	<u>object</u>	<u>verb</u>	
Ben	onu	gördüm.	I saw him.

The remaining possible arrangements of A, B, and C are also acceptable sentences :

ACB	Ben gördüm onu.	I saw him.
BCA	Onu gördüm ben.	* * *
BAC	Onu ben gördüm.	* * *
CBA	Gördüm onu ben.	* * *
CAB	Gördüm ben onu.	* * *

All these combinations have practically the same semantic content. Changes in word order cause merely stylistic variations denoting degree of emphasis, formal-informal distinctions, careful versus careless speech, afterthought, and the like. The sentence stress, which shifts with considerable freedom, is another device denoting emphasis.⁴

Morphotactic rules which govern the ordering of morphemes within single words, on the contrary, are extremely rigid in their application. The ordering of verbal suffixes, possible combinations they may enter, and restrictions that involve these combinations will be discussed here in some detail. First, however, certain basic definitions, a complete list of morphemes that may form verb stems or fully inflected verbal combinations, and a set of relevant morphophonemic rules are given as prerequisite to the analysis. The formulation techniques of stratificational grammar (Lamb 1966) have been used for economy in making morphotactic statements.

Verbal combinations are phonological words⁵ consisting of a verb stem followed as a minimum requirement by both a participle or tense suffix and a person suffix (See Sec. 4.2). Verbal combinations function as verb predicates in Turkish syntax :

gel-in	Come! (Imperative is unmarked.)
gel-iyor	He's coming. (3rd person singular is unmarked.)
gel-ecek-mi-siniz	Are you going to come?

Verb stems are forms that may precede the two tense suffixes { -dî } and { -sé }, occur by themselves or with a set of personal suffixes { -yin } and { -yiniz } as imperatives, or appear before the six participle suffixes { -ir }, { -ıyor }, { -yacak }, { -meli }, { -miş }, and { -yé }:

⁴ The sentence stress in Turkish cannot occur on words placed to the right of the predicate element. Thus, the following combinations are not possible: *Gördüm onu ben. *Gördüm onu ben. *Ben gördüm onu. *Onu gördüm ben.

⁵ Forms having a continuity of vowel harmony and a compulsory superfix extending over the whole. Phonological words may include more than one morphological word: a verb or substantive form followed by a postclitic, e.g. gel-me-yecek-/-miş-/-se 'If he's not (reportedly) going to come...' (Sebüktekin 1971 : 23).

gel-	come
gél-me-	not come
gel-é-me-	not be able to come

(See Sec. 4.1 for further examples.)

A verb stem may be of three types :

1. It may consist of a single morpheme which is usually monosyllabic. This is commonly called a **verb root** :⁶

gel-	come
iç-	drink
yürü	walk

2. It may be the combination of a substantive root and a de-substantive verb derivational suffix. This is called a **verb base** :⁷

taş	stone (n.)	temiz	clean (adj.)	yine	again (adv.)
taş-lá-	stone (v.)	temiz-lé-	clean (v.)	yine-lé-	repeat (v.)

3. It may include a verb root or a verb base plus one or more de-verb verb derivational suffixes in which case the resulting combination may be called a **proper stem** :

gül-dür-	make s.o. (someone) laugh, cause s.o. to laugh
gül-dür-ül-	be caused to laugh by s.o.
gül-dür-ül-me-	not be caused to laugh by s.o.

(See Sec. 4.1 also.)

The internal structure of verb stems, then, can be formulated as follows :

Type 1 : $V_r < V_s$

Type 2 : $Sb_r S_{Sb \rightarrow V} = V_b < V_s$

Type 3 : $V_r S_{V \rightarrow V}$ or $Sb_r S_{Sb \rightarrow V} S_{V \rightarrow V} < V_s$

Symbols : V_s = verb stem, V_r = verb root, Sb_r = substantive root, $S_{Sb \rightarrow V}$ de-substantive verb derivational suffix, V_b = verb base, $S_{V \rightarrow V}$ = de-verb verb derivational suffix, '<' = 'is included in'

The addition of these formulaic statements will lead to a more compact and all inclusive one :

$$V_r + Sb_r S_{Sb \rightarrow V} + V_r S_{V \rightarrow V} + Sb_r S_{Sb \rightarrow V} S_{V \rightarrow V} = V_s$$

If $Sb_r S_{Sb \rightarrow V}$ is replaced by V_b :

6 There are some roots which may receive either verbal or nominal suffixation : **ekşil** 'sour, go sour' (adjective or verb), **boya** 'paint' (noun or verb).

7 In Turkish verbalization and substantivalization may also operate alternately and more than once : **çöz-** (v.) 'untie, solve', **çöz-üm** (Sb.) 'solution', **çöz-üm-lé-** (v.) 'bring to a solution', **çöz-üm-le-mé** (Sb.) 'bringing to a solution'. The internal structure of such bases is not treated in this analysis.

$$V_r + V_b + V_r S_{V \rightarrow V} + V_b S_{V \rightarrow V} = V_s$$

$$V_r (1 + S_{V \rightarrow V}) + V_b (1 + S_{V \rightarrow V}) = V_s$$

$$(V_r + V_b) (1 + S_{V \rightarrow V}) = V_s$$

2. **Morphophonemics.** The morphophonemic changes that take place within the limits of the innumerable arrangements of verb suffixes are regulated by eight rules:

(1) Syll. i	Syll. $\overset{i}{_}$ /i	bil-dí	He knew.
			gel-dí
Syll. $\overset{ü}{ö}$ ___/ü	Syll. $\overset{ü}{ö}$ ___/ü	gül-dü	He laughed.
		öl-dü	He died.
Syll. $\overset{i}{a}$ ___/i ⁸	Syll. $\overset{i}{a}$ ___/i ⁸	kıl-dí	He rendered.
		kal-dí	He stayed.
Syll. $\overset{u}{o}$ ___/u	Syll. $\overset{u}{o}$ ___/u	bul-dú	He found.
		ol-dú	He became.

This rule is commonly known as 'high vowel harmony'.

Symbols:

'Syll. i' = syllable containing the morphophoneme /i/ ⁹

'Syll. $\overset{i}{e}$ ' = syllable containing the phoneme /i/ or /e/

'||' = in the environment (Notice that '||' is always preceded by morphophonemes and followed by phonemes.)

'/' = becomes, is realized as

'___' = the position of occurrence for the morphophoneme

Thus, the first line in Rule (1) above reads: The morphophoneme /i/ occurring anywhere within a syllable becomes (or is realized as) the phoneme /i/ when it is placed after a syllable containing either /i/ or /e/.

(2) Syll. e	Syll. V ^r ___/e	bil-sé	If he knew...
		gel-sé	If he came...
		gül-sé	If he laughed...
		öl-sé	If he died...
Syll. V ^b ___/a	Syll. V ^b ___/a	kıl-sá	If he rendered...
		kal-sá	If he stayed...
		bul-sá	If he found...
		ol-sá	If he became...

⁸ /i/ is represented by «i» in the Turkish spelling system which is almost completely phonemic. Here, /i/ has been used for convenience.

⁹ Elsewhere morphophonemes or 'archiphonemes' are indicated conventionally by capital letters in order to distinguish them from phonemes: /i/ vs. /I/ (For instance, in Lees 1961).

V^f = front vowel, V^b = back vowel

This rule is commonly known as 'low vowel harmony'.

- | | | | | | |
|-----|---|---|-------|-------------|---------------|
| (3) | k | ∅ | __V/∅ | gel-ecék-mi | Will he come? |
| | | | | gel-ecé-im | I will come. |

Actually /k/ is replaced by a phonetic velar off-glide.

- | | | | | | |
|-----|---|---|---------------------|---------|----------|
| (4) | i | ∥ | V __/∅ | gör-üş- | talk |
| | | | | anlá-ş- | agree |
| (5) | d | ∅ | C ^v __/t | gel-dí | He came. |
| | | | | gít-tí | He went. |

C^v = voiceless consonant

- | | | | | | |
|-----|---|---|---------|------------|---------------|
| (6) | y | ∅ | C __/∅ | yürü-yecék | He will walk. |
| | | | | gel-ecék | He will come. |
| (7) | í | ∥ | V __/n | dené-n- | be tried |
| | | | I __/ín | bul-ún- | be found |

(See the Appendix for the distribution of morphophonemic variants resulting from the operation of Rule (1) through (7) given above.)

(8) This rule is different from the previous ones in that it governs the position of primary stress within verbal combinations. If the stress occurs on the final syllable of a form to which a suffix is being added, it moves to the right depending whether that suffix is of a stressable or an unstressable type (Swift 1963 : 41-43, Lees 1961 : 41-48) :

- | | | | | | |
|--------|---|-----------------|---------|------------|----------------|
| -Sýll. | ∥ | -S _v | /-Sýll. | birák-ma | Don't leave. |
| | | | | birak-tí | He left. |
| | | | | birak-íyor | He's leaving. |
| | | | | birak-acák | He will leave. |

S_v . S_{vv} = vowel(s) of the suffix

If the form to be suffixed has a substantive root¹⁰ stressed on a non-final syllable, the stress either remains fixed in accordance with the rule above or it moves as if the final syllable were stressed. The different position of the stress in the resulting forms marks emphasis :

- | | |
|-----------------------|---|
| Avrúpa-lı-ıaş-tır-dık | We europeanized (them). The emphasis is on the underlying substantive. |
| Avrupa-lı-ıaş-tır-dık | We europeanized (them). The emphasis is on the verb. |

Thus the function of the word stress is made parallel to that of the syntactic stress :

¹⁰ These are words mostly borrowed from European languages.

Avrúpa-lı-laş-tır-dı-k = (Onları) Avrúpalı yaptık. 'We made (them) Europeans.'

Avrupa-lı-laş-tır-dı-k = (Onları) Avrupalı yaptık. 'We **made** (them) Europeans.'

3. **Morphemics.** Suffix morphemes may have two types of allomorphs: morpho-phonemic variants which are determined by phonemic conditions as stated in Sec.2 and morpheme alternants determined by morphemic conditions. All suffixes in Turkish have morphophonemic variants of one kind or the other. A small number of suffixes have one or more alternants which are also subject to morphophonemic variation.

As far as content is concerned, assigning a basic meaning to a suffix may present difficulties. There are instances where one cannot state the appropriate semantic value which may be extremely evasive. Still in other instances one may have difficulty in selecting a basic meaning among several with equal viability.

In the list below, all verb suffixes as well as their morpheme alternants and various possible meanings are given with illustrative examples. In cases where more than one allomorph is listed the first one represents the morpheme. Capital letters in parentheses indicate position classes or subclasses.

3.1 De-verb verb derivational suffixes.

(B₁) { -ış } 'reciprocal', reciprocal or co-operative action, that is action done by more than one actor either in co-operation or in opposition:

bul-	find
bul-üş-	find one another
böl-	divide
böl-üş-	divide stg. (something) between each other
koş-	run
koş-üş-	run in different directions (with sing. or pl. subject)

Or extra effort by a single person:

gir-	enter
gir-ış-	start vigorously, undertake, venture

With meaning changes in the root:

bit-	end
bit-iş-	join 'have ends together'
at-	throw
at-iş-	quarrel 'throw at each other'

This suffix may not occur after all verb bases.

(B₂) { -in } 'reflexive':

giy-	wear, put on
giy-in-	dress oneself, get dressed

Reflexive and passive suffixes are identical in form, that is {-n} and {-în} , after verb bases ending in a vowel or /l/ respectively :

korú-	defend
korú-n-	(1) defend oneself, (2) be defended (by)
böl-	divide
böl-ün-	(1) divide itself (into), (2) be divided (by)

The syntactic environment and semantic restrictions clarify most ambiguities resulting from such overlapping cases.

This suffix, also, may not occur after all verb bases.

(C) {-dir ~ -t} ~ {-ir} ~ {-ér ~ -ért} ~ {-it} 'causative-transitive',¹¹ cause to..., make (let) s.o. do stg. Allomorphic distribution is stable partly in terms of phonemic environment and partly in terms of lists, that is morphemic conditioning, not to be given here (Lewis 1967 : 144-46 and Sebüktekin 1971 : 81) :

gü:	laugh
gül-dür-	cause s.o. to laugh, make (let) s.o. laugh
geç-	pass (intransitive)
geç-ir-	pass (transitive), cause s.o. to pass, etc.
çık-	come out
çık-ár- ~ çık-árt-	cause s.o. to come out, etc.
kork-	fear
kork-út-	frighten

This suffix may be added to intransitive verb stems only.

(D) {-dir ~ -t} 'causative-agentive', get s.o. to do stg. through the agency of s.o., have stg. done through the agency of s.o. An agent marked with the dative suffix {-yé} and a direct object are involved. The agent is the performer of the action :

gül-dür-	make s.o. laugh
gül-dür-t-	get s.o. to laugh through the agency of s.o.
yaz-	write
yaz-dır-	have stg. written through the agency of s.o.

This suffix may be added to all transitive verb stems including those intransitized in (C).

(E) {-dir ~ -t} 'causative-intensive', get s.o. to do stg. through the agency of s.o. The causative meaning is intensified because of the repeated occurrence of formally similar suffixes :

¹¹ There is not just a single 'causative' suffix in Turkish. Functionally and distributionally three different suffix morphemes must be distinguished as listed in (C), (D), and (E) (Sebüktekin 1971 : 81 - 83).

gül-dür-t-tür- get s.o. to laugh through the agency of s.o.

The agent and the performer of the action are not necessarily the same :

yaz-dır-t- have stg. written through the agency of s.o.
('s agent)

Forms where the causative-intensive suffix is used more than once are also heard occasionally : yaz-dır-t-tür-, yaz-dır-t-tür-t-

(F) { -îl } 'passive', the subject is acted upon (after transitive verb stems only) :

Sigara (Ali tarafından) içilir. Cigarettes are smoked (by Ali).

iç- smoke

iç-îl- be smoked

Also 'impersonal' usage, 'one (people, they, etc.)' (after all verb stems) :

(Yemekten sonra) sigara içilir. One smokes cigarettes (after dinner).

'Permissibility' of an action (after all verb stems) :

(Burada) sigara içilir. Smoking is permitted (here).

'Reflexive' meaning (after a restricted number of verb stems) :

göm- bury

göm-ül- bury oneself

Passive and impersonal meanings are not mutually exclusive although they are both expressed by the same suffix. There are cases where { -îl } is repeated twice to represent the two different meanings separately :¹²

boğ-ul-ün- (one) be strangled (by one) (passive + impersonal,
Sebüktekin 1971 : 84)

G) { -yebîlî } ~ { -yé } 'abilitative', capacity or ability 'can, be able to' (Also possibility 'may, might'. See (I) below.) /î/ is used here to indicate non-harmonic /i/. The alternant { -yé } occurs before the negative suffix { -me } :

yap- do

yap-abîl- be able to do, may (might) do (See (I) below.)

yâp-ma- not do

yap-â-ma- not be able to do

(H) { -me } ~ { -mê } 'negative', verb predicate negation. The stressed alternant { -mê } occurs before the { -z } and { Ø } alternants of { -îr } only :

yap- do

yâp-ma- not do

yap-mâ-z He does not do (It).

yap-mâ-m (morphemically { yap-mâ-Ø-m }) I do not do (It).

¹² The problems involving various possible sequences and overlappings of the passive, reflexive, and impersonal suffixes have not been treated in this study.

(I) {-yebil} 'possibilitative', possibility, probability, 'may, might'. This suffix is identical in form with the {-yebil} allomorph of the abilitative suffix which it cannot follow. Therefore, {-yebil} is used to express both ability and probability when the verbal combination does not include the negative suffix {-me} :

yap-	do
yap-abil-	be able to do, may (might) do (Same as the example given above for (G).)
yap-ma-yabil- ¹³	may (might) not do
yap-a-ma-yabil-	may (might) not be able to do

3.2 Verb post-stem suffixes

3.2f Verb prefinal suffixes (participle and tense suffixes)

(J₁) {-ır} ~ {-ér} ~ {-z} ~ {∅} 'aorist', habitual action with unspecified time, future reference denoting guess or promise, historic present. {-z} occurs after the stressed allomorph of the negative suffix {-me} and cannot be followed by first person singular or plural suffixes. Similarly, {∅} also occurs after {-me} and is followed by either first person singular or plural suffix. The occurrence of {-ır} or {-ér} is conditioned morphemically by the verb base :

(her gün) gel-ır	He comes (everyday).
(şimdi) gel-ır	He'll come (now).
(bir zamanlar) gel-ır	(Once upon a time) he comes...
yap-ır	He does (it).
yap-mâ-z, yap-mâ-m	(See examples given above under (H).)
yap-mâ-yız	We do not do (it).

{-ıyor} 'continuative', continuous action in or up to present time, planned future, habitual (assuring), historic present (vivid) :

(şimdi) gel-ıyor	He is coming (now).
(marttan beri) gel-ıyor	He has been coming (since March).
(yarın) gel-ıyor	He is coming (tomorrow).
(her gün) gel-ıyor	He comes (everyday) - I know it for fact.
(geçen gün) gel-ıyor	(The other day) he comes...

{-ecek} 'future', planned or definite future action :
gel-ecék He will (is going to) come.

{-meli} 'necessitative', necessary action 'ought to, must' also used impersonally :
gel-melí He must (ought to) come.
One (people, they, etc.) must (ought to) come.

¹³ Normally {-yebil} keeps its stress despite the preceding unstressable suffix {-me}. This is in violation of the morphophonemic rule governing stress. However, the form yap-ma-yabil- may also occur marking contrast in emphasis (See Sec. 2, Rule (8)).

{ -mîş } 'presumptive-past', non-witnessed past action :
 gel-mîş (It is said that) he came (has come).

(J₂) { -dî } 'past', witnessed past action :

gel-dî He came - I witnessed his coming.

{ -sé } 'conditional', hypothetical (unreal) conditioning or wish :

gel-sé If he came...

(bir) gel-sé If he only came!

(J₃) { -yé } ~ { Ø } 'optative', desire or permission. The { Ø } allomorph occurs before the third person singular suffix { -sîn } :

(Allah) ver-é May (let) God grant.

(Allah) ver-sîn (Morphemically { ver-Ø-sîn }) Same meaning as above.

3.22 Verb final suffixes

3.221 Person-number suffixes

(K₁) { -lér } '3rd person plural' :

gel-ir-lér They come.

(K₂, K₃, N₁, N₂)

{ -m } ~ { -yim } ~ { -yím } '1st person singular' :

gel-dî-m I came.

gel-ír-im I come.

gel-e-yím Let me come.

{ -k } ~ { -yiz } ~ { -lím } '1st person plural' :

gel-dî-k We came.

gel-ír-iz We come.

gel-e-lím Let us come.

{ -n } ~ { -sin } '2nd person singular' :

gel-dî-n You (sing.) came.

gel-ír-sin You (sing.) come

{ -níz } ~ { -siniz } ~ { -yin } ~ { -yiniz } '2nd person plural' :

gel-di-níz You (pl.) came.

gel-ír-siniz You (pl.) come.

gél-in Come (pl.)!

gél-iniz Come (pl.)! (formal) (See 4.224.)

The third person singular is normally unmarked except after the { \emptyset } allomorph of the optative suffix { -yé }:

{-sín } '3rd person singular':
gel-sín (morphemically { gel- \emptyset -sín }) Let him come.

Morphemic conditions for various alternants of all person-number suffixes belonging to K_2 , K_3 , N_1 , and N_2 should be noted here:

K_2 : { -m }, { -k }, { -n }, { -níz }, occur after { -dí }, { -sé }, { -ydi }, { -yse }.

K_3 : { -yím }, { -lím }; { -sín }, occur after { -yé }; { \emptyset }.

N_1 : { -yim }, { -yiz }, { -sin }, { -siniz } occur after { -ír }, { -íyor }, { yecék }, { -mell' }, { -míš }. { -sín } and { -siniz } occur after { -yé } also.)

N_2 : { -yin }, { -yiniz } occur immediately after verb stems.

3.222 Interrogative suffix

(L) { -mi } 'interrogative':
gel-dí-mi Did he come?

3.23 Stative verb prefinal suffixes

(M_1) { -ymiş } 'presumptive', non-witnessed action in either past or present:
gel-iyor-muş It is said that he is (was) coming.

(M_2) { -ydi } 'past', witnessed past action:
gel-iyor-du He was coming - I witnessed his coming.

(M_3) { -yse } 'conditional', real conditioning:
gel-iyor-sa If he is coming...

(M_4) { -dir } 'predicate emphatic', emphasis of the predication, supposition:
gel-miş-tir He has come. He has probably come.

4. Morphotactics

4.1 De-verb verb derivational suffixes. The relative order of the eight de-verb verb derivational suffixes can be summarized in the following chart:

A	B	C	D	E	F	G	H	I	J
VERB BASE	B_1 iş recip.	dir	t	dir	il	yebil	me	yebil	mek
	B_2 in refl.	caus. trans.	caus. agen.	caus. inten.	pass.	abil.	neg.	poss.	inf.

Chart 1: order of de-verb verb derivational suffixes

The order or position class J contains closing suffixes for the category of verb stem suffixes. Some other members of this order are {-yış}, {-mé}, {-yén}, {-dık}, {-yıp}, {-yelí}, {-yınca}, and {-yèrek}. They function as derivational suffixes by changing verbal forms into either nominals or adverbials:

Nominalized forms :	ver-mé	giving
	ver-iş	giving (manner of action emphasized)
	ver-én	one who gives
	ver-dık	act of having given (non-future)
	ver-mék	to give
Adverbialized forms :	ver-íp	after giving, ... and giving
	ver-érek	by giving
	ver-ince	when (upon) giving
	ver-elí	since giving

Adverbialized forms have many restrictions in their further suffixation and sometimes may not be suffixed at all. Nominalized forms, on the other hand, may be followed by nominal inflectional suffixes such as the plural, relational, and possessive suffixes with only very few restrictions.

When verb stems are linked to the verb final suffix category, this time Order J is occupied by verb prefinal (participle and tense) suffixes:

$$\text{VERB STEM} + \left\{ \begin{array}{l} \left\{ \text{verb prefinal suffixes :} \right. \\ \left. \left\{ \text{-ır}, \text{-dı} \right\}, \text{ etc.} \right\} + \left\{ \text{verb final (verbal} \right. \\ \left. \text{inflectional) suffixes} \right\} \\ \left\{ \begin{array}{l} \text{(1) nominal derivational} \\ \text{suffixes : } \{-mék\}, \{-yış\}, \text{etc.} \end{array} \right\} + \left\{ \text{nominal inflectional} \right. \\ \left. \text{suffixes} \right\} \\ \left\{ \begin{array}{l} \text{(2) adverbial derivational} \\ \text{suffixes : } \{-yınca\}, \{-yèrek\}, \text{etc.} \end{array} \right\} \end{array} \right.$$

The categories of verb prefinal suffixes and nominal and adverbial derivational suffixes are mutually exclusive.

Let us now investigate the possible combinations of de-verb verb derivational suffixes in order to arrive at a subsequent formulaic statement. A and J set the boundaries for the eight suffix orders which yield mathematically 255 combinations. However, this number is reduced considerably through various restrictions indicated in the illustrative samples below.

Sample 1

A	B	C	D	E	F	G	H	I	J	ABCDEFGHIJ
gör-	üş-	tür-	t-	tür-	ül-	e-	me-	yebil-	mek	
'see'	recip	caus	caus	caus	pass	abil	neg	poss	inf	
		tran	agen	Int						

to have the possibility of not being able to make s.o. to be caused to see s.o. else (to have the possibility of not being able to... get the two people involved to see each other)

A	B	C	D	E	F	G	H	J	ABCDEFGHIJ
gör-	üş-	tür-	t-	tür-	ül-	e-	me-	mek	
not to be able to make s.o. to be caused to see s.o. else, etc.									

A	B	C	D	E	F	G	J	ABCDEFGJ
gör-	üş-	tür-	t-	tür-	ül-	ebil-	mek	
to be able (or have the possibility) to make s.o. to be caused to see s.o. else, etc.								

A	B	C	D	E	F	J	ABCDEFJ
gör-	üş-	tür-	t-	tür-	ül-	mek	
to make s.o. to be caused to see s.o. else, etc.							

A	B	C	D	E	J	ABCDEJ
gör-	üş-	tür-	t-	tür-	mek	
to make (have) s.o. get to see s.o. else, etc.						

A	B	C	D	J	ABCDJ
gör-	üş-	tür-	t-	mek	
to make (have) s.o. get to see s.o. else, etc.					

A	B	C	J	ABCJ
gör-	üş-	tür-	mek	
to make s.o. see s.o. else, etc.				

A	B	J	ABJ
gör-	üş-	mek	
to converse, meet (lit. to see each other)			

A	J	AJ
gör-	mek	
to see		

Sample 1 consists of the maximum string ABCDEFGHIJ and its substrings which are formed by dropping one suffix preceding J each time.

Sample 2

In obtaining this sample suffixes are dropped in reverse order. The maximum and minimum strings given in Sample 1 will not be repeated here.

A	C	D	E	F	G	H	I	J	ACDEFGHIJ
gör-	dür-	t-	tür-	ül-	e-	me-	yebil-	mek	
to have the possibility of not being able to make s.o. to be caused to see s.o. else									

A D E F G H I J *ADEFGHIJ
 *gör- t- tür- ül- e- me- yebil- mek¹⁴

A E F G H I J *AEFGHIJ
 *gör- tür- ül- e- me- yebil- mek

A F G H I J AFGHIJ
 gör- ül- e- me- yebil- mek
 to have the possibility of not being able to be seen

A G H I J AGHIJ
 gör- e- me- yebil- mek
 to have the possibility of not being able to see

A H I J AHIJ
 gör- me- yebil- mek
 to have the possibility of not seeing '... may (might) not see'

A I J *AIJ
 *gör- ebil- mek

(As G alone expresses both ability and possibility in the absence of H, AGJ is considered a replacement for AIJ in order to avoid redundancy.)

Sample 3

This sample illustrates the restrictions involving GHI combinations :

A G H I J AGHIJ
 gör- e- me- yebil- mek
 to have the possibility of not being able to see (Also listed in Sample 2.)

A G H J AGHJ
 gör- e- me- mek
 not to be able to see

A G J AGJ
 gör- ebil- mek
 to be able to see (or to have the possibility of seeing, may (might) see)

¹⁴ AB combinations, all being intransitive verb stems, may be followed by CDE. The same is true for A if it is intransitive. If A is transitive, it may be followed by DE. However, as DE is sometimes heard with a second intensive following E, sequences of CDE after transitive verb bases will not be altogether unacceptable. For this reason, but mainly for simplicity, the transitive-intransitive distinction in verb bases with regard to their causative suffixation has not been maintained here.

A
gör-
to have the possibility of not seeing, '... may (might) not see' (Also listed in Sample 2.)

H	I	J	AHIJ
me-	yebil-	mek	

A
*gör-
This combination does not occur as G alone expresses both ability and possibility when H is not present in the sequence.

G	I	J	*AGIJ
ebil-	ebil-	mek	

A
gör-
not to see

H	J	AHJ
me-	mek	

A
*gör-
This combination is considered redundant. (See the note for the same combination in Sample 2.)

I	J	*AIJ
ebil-	mek	

The restrictions mentioned in Sample 2 and Sample 3 involving C, D, E and their various combinations on the one hand and G, I and their combination on the other can be summarized as follows:

1. For C, D, and E:

$$C + CD + CDE = C(1 + D + DE) = C(1 + D(1 + E))$$

*CE which cannot occur and DE, D, and E with dependent occurrences are thus eliminated.

2. For G and I:

$$G + GH + GHI + H + HI = G + (G + 1)H(1 + I)$$

This eliminates *GI and the occurrence of I by itself.

The sum of all possible combinations between A and J provided with the above restrictions will give the verb stem construction:

$$ABC(1 + D(1 + E))F(G + (G + 1)H(1 + I))J > V_s$$

'>' = 'includes'

Now let us go one step further eliminating J which was originally included here as a boundary marker between verb stem suffixes and other suffixation that may follow. An examination of the formula above will show that orders to which restriction rules apply - at least in one of their occurrences in combination with other orders - are included in parentheses. These are D, E, G, H, and I. The remaining orders, that is A, B, C, and F, are not subject to any restrictions and therefore have the option of occurrence in any combination. Orders with optional occurrence are indicated by small letters in the final version of the formula:

$$\text{Abc}(1 + \text{D}(1 + \text{E}))\text{f}(\text{G} + (\text{G} + 1)\text{H}(1 + \text{I})) = \text{V}_s$$

4.2 **Verb post-stem suffixes.** Unlike the relatively simple patterns of verb stem derivation, verb post-stem suffixes exhibit complex relationships mainly because of numerous classes and subclasses with several members. The chart below contains all verb post-stem suffixes in Turkish with the proposed orders to which they belong :

verb stem S	verb prefinal suffixes J	verb final suffixes			
		person-number suffixes I K	inter. suffix L	stat. verb prefinal suffixes M	person-number suffixes II N
	J ₁ ír ıyor yecék meî mîş	K ₁ lér	mi	M ₁ ymiş	N ₁ yim yiz sîn sınız
				M ₂ ydi	
				M ₃ yse	
				M ₄ dir	N ₂ yin, yiniz
	J ₃ yé	K ₃ yîm lîm sîn			
	J ₂ dî sé	K ₂ m k n nîz			

Chart II : verb pöst-stem suffixes (complete)

S = verb stem (to replace V_s for brevity in the following discussion)

There are a few points to bear in mind in using this chart :

1. Suffixes, subclasses of suffixes, or suffix alternants that fall in the same column are mutually exclusive. That is, for instance J_1 and J_2 , belonging to J position class, or $\{-dî\}$ and $\{-sé\}$ belonging to J_2 subclass, or $\{-yin\}$ and $\{-yiniz\}$, alternants of the same morpheme, cannot both occur in the same sequence.

2. Orders are established in terms of frequency of occurrence. Although such sequences as $\text{S}J_1M_1K_1$ do occur in violation of the order given in the chart, most sequences follow normally the alphabetical order.

3. Person-number suffixes that appear in two different positions belong to the same morpheme category. However, these alternants have sufficient distributional contrasts to justify us in setting up two separate orders.

4. Subclasses of orders are formed of members with identical distributional characteristics.

4.21 **Verb prefinal suffixes.** All verb stems may be combined with any one of the verb prefinal suffixes listed in Chart II. The resulting construction can enter further combinations with the suffixes in the remaining orders. Conversely, the latter, only with the exception of N_2 , may not occur without a preceding verb prefinal suffix. Therefore, J is required as a link between S and the remaining orders that follow. Any combination of S and J is a viable sentence since the third person singular is not marked in Turkish:

S J_1	S J_3	S J_2
gel-ír	gel-é	gel-dí
gel-ıyor		gel-sé
gel-ecék		
gel-melí		
gel-miş		
$SJ_1 < SEN$	$SJ_3 < SEN$	$SJ_2 < SEN$

SEN = 'sentence' (See Sec. 3.21 for the meanings of the combinations above.)

$$S(J_1 + J_2 + J_3) < SEN$$

SJ combinations may be called participles because they share some distributional features with nominals.

4.22 **Verb final suffixes.** Considering the great number of restrictions involved, Chart II will be simplified by leaving out some classes, subclasses or some of their members. The items left out are to be treated separately later on. This will leave us the core of Turkish verb inflectional system yielding a tactical rule that not only describes the relationships among the suffixes in Chart II but also constitutes a basis for other rules to cover the excluded suffixes.

The discontinuous appearance of verb final suffixes is now eliminated by the omission of the stative verb prefinal suffixes of Order M for the purpose of the following preliminary discussion.

verb stem	verb prefinal suffixes	verb final suffixes		
		person-number suffixes I	inter. suffix	person-number suffixes, II
S	J	K	L	N
	J ₁ <i>iyor</i> <i>yecék</i> <i>meti</i> <i>miş</i>	K ₁ <i>lér</i>	mi	N ₁ <i>yim</i> <i>sin</i> <i>yiz</i> <i>siniz</i>
	J ₂ <i>dí</i> <i>sé</i>	K ₂ <i>m</i> <i>n</i> <i>k</i> <i>niz</i>		

Chart III : verb post-stem suffixes (simplified)

4.221 **Basic verb final suffixation.** Two methods are proposed here in dealing with the combinations of SJ and the basic verb final suffixes which have been presented in Chart III. At this stage of the discussion, each of these methods leads to a different formulaic solution which are alternative means of expressing the same information.

Solution I :

The combinations of maximum length, as included in Chart III, are :

SJ ₁ K ₁ L < SEN	gel-iyor-lar mı	Are they coming? ¹⁵
SJ ₁ LN ₁ < SEN	gel-iyor-mu-yum	Am I coming?
SJ ₂ K ₁ L < SEN	gel-di-lér-mi	Did they come?
SJ ₂ K ₂ L < SEN	gel-dí-m-mi	Did I come?

Let us add them up :

$$S(J_1K_1L + J_1LN_1 + J_2K_1L + J_2K_2L) < SEN$$

$$S(J_1(K_1L + LN_1) + J_2(K_1L + K_2L)) < SEN$$

In order to be able to reduce the formula further we will use the symbol or displaced class '°' before N₁ (Lamb 1966). That means LN₁ = °N₁L.

$$S(J_1(K_1L + °N_1L) + J_2(K_1L + K_2L)) < SEN$$

$$S(J_1(K_1 + °N_1)L + J_2(K_1 + K_2)L) < SEN$$

$$S(J_1(K_1 + °N_1) + J_2(K_1 + K_2))L < SEN$$

¹⁵ Only one meaning is given for each combination throughout the rest of this analysis. Sometimes, it is very difficult to assign a meaning to a combination listed without its context.

This formula may represent the whole range of combinations extending between those of minimum and maximum lengths when the optional occurrence of certain suffixes is indicated. Again, small letters are used for this purpose. Notice that the only obligatory orders are S and J as pointed out previously.

$$S(J_1(k_1 + \circ n_1) + J_2(k_1 + k_2)) < SEN$$

In addition to retrieving the four maximum length combinations, this formula yields the remaining eight possible combinations when options are used as a second step:

**Maximum combinations
retrieved**

SJ₁k₁l
 SJ₁°n₁l = SJ₁ln₁
 SJ₂k₁l
 SJ₂k₂l

**Combinations obtained after
use of options**

SJ₁K₁ , SJ₁L , SJ₁
 SJ₁N₁
 SJ₂K₁ , SJ₂L , SJ₂
 SJ₂K₂

Solution II :

This time we will start with all possible combinations that may occur in Chart III and try to reduce the total information into a single formula.

Possible combinations

SJ₁K₁L
 SJ₁LN₁
 SJ₁K₁
 SJ₁N₁
 SJ₁L
 SJ₁
 SJ₂K₁L
 SJ₂K₂L
 SJ₂K₁
 SJ₂K₂
 SJ₂L
 SJ₂

examples

gel-iyor-lar-mı
 gel-iyor-mu-yum
 gel-iyor-lar
 gel-iyor-um
 gel-iyor-mu
 gel-iyor
 gel-di-lér-mi
 gel-dí-m-mi
 gel-di-lér
 gel-dí-m
 gel-dí-mi
 gel-dí

Are they coming?
 Am I coming?
 They are coming.
 I am coming.
 Is he coming?
 He is coming.
 Did they come?
 Did I come?
 They came.
 I came.
 Did he come?
 He came.

$$S(J_1K_1L + J_1LN_1 + J_1K_1 + J_1N_1 + J_1L + J_1 + J_2K_1L + J_2K_2L + J_2K_1 + J_2K_2 + J_2L + J_2) < SEN$$

$$S(J_1(K_1L + LN_1 + K_1 + N_1 + L + 1) + J_2(K_1L + K_2L + K_1 + K_2 + L + 1)) < SEN$$

$$S(J_1(K_1L + \circ N_1L + (K_1 + N_1) + (L + 1)) + J_2(K_1L + K_2L + (K_1 + K_2) + (L + 1))) < SEN$$

$$S(J_1((K_1 + \circ N_1)L + (K_1 + N_1) + (L + 1)) + J_2((K_1 + K_2)L + (K_1 + K_2) + (L + 1))) < SEN$$

$$S(J_1((K_1 + \circ N_1) + 1)(L + 1) + J_2((K_1 + K_2) + 1)(L + 1)) < SEN$$

The advantage of this solution is that it accounts for all possible combinations in a single step without reference to the device of option.

4.222 Suffix { -îr } of subclass J_1 . The reason why { -îr } is being treated under separate heading is chiefly its having several morpheme alternants including a { \emptyset } (See 3.21). Despite certain difficulties it would still be possible to accommodate { -îr } and its combinations in the formula given above. However, this suffix enters an additional combination which occurs in free variation with the already existing one.

SH J_1 LN $_1$ ~ SHN $_1$ L

(Here, N $_1$ does not include { -sin } and { -siniz } .)

gel-mé-z-mi-yim ~ gel-mé-m-mi Don't I come?
(morphemically { gel-mé- \emptyset -m-mi })

gel-mé-z-mi-yiz ~ gel-mé-yiz-mi Don't we come?
(morphemically { gel-mé- \emptyset -yiz-mi })

The reverse order of LN $_1$ and an unrepresented J_1 are the characteristic features of this alternative combination that applies in the two cases above. One may incorporate SHN $_1$ L into the general formula at the expense of creating some complications. We prefer to state it as a corollary.

Possible combinations of { -îr } after Order H are :

Possible combination	alternant of { -îr }	example	
SH J_1 K $_1$ L	{ -z }	gel-me-z-lér-mi	Don't they come?
SH J_1 LN $_1$	{ -z }	gel-mé-z-mi-yim	Don't I come?
		gel-mé-z-mi-yiz	Don't we come?
~ SHN $_1$	{ \emptyset }	gel-mé-m-mi	Don't I come?
		gel-mé-yiz-mi	Don't we come?
SH J_1 K $_1$	{ -z }	gel-me-z-lér	They don't come.
SH J_1 N $_1$	{ \emptyset }	gel-mé-m	I don't come.
		gel-mé-yiz	We don't come.
SH J_1 L	{ -z }	gel-mé-z-mi	Doesn't he come?
SH J_1	{ -z }	gel-mé-z	He doesn't come.

4.223 Subclass J_2 . This subclass is limited in its distribution which exhibits unique features. { -yé } may occur in combinations with K $_1$, K $_2$, L, and N $_1$. All possible combinations are shown in Chart IV below and the list that follows it. A formulaic statement has been avoided intentionally as it would be disproportionately complicated for such a small class.

S	J ₃	K ₃	K ₁	L	N ₁ { sin . siniz } ¹⁶
gel	yé				
gel	yé		lér		
gel	yé	[yím lím]			
gel	yé				[sin siniz]
gel	yé			mi	
gel	yé		lér	mi	
gel	yé	[yím lím]		mi	
gel	yé			mi	[sin siniz]
gel	∅	sín			
gel	∅	sín	lér		
gel	∅	sín		mi	
gel	∅	sín	lér	mi	

Chart IV : combinations with { -yé }

Possible combinations	examples	
SJ ₃	gel-é*	May he come.
SJ ₃ K ₁	gel-e-lér*	May they come.
SJ ₃ K ₃ (yím, lím)	gel-e-yím gel-e-lím	Let me come. Let us come.
SJ ₃ N ₁ (sin, siniz)	gel-é-sin gel-é-siniz	... that you (sing.) may come. ... that you (pl.) may come.
SJ ₃ L	gel-é-mi*	Shall he come?
SJ ₃ K ₁ L	gel-e-lér-mi*	Shall they come?
SJ ₃ K ₃ (yím, lím)L	gel-e-yím-mi gel-e-lím-mi	Shall I come? Shall we come?
SJ ₃ LN ₁ (sin, siniz)	gel-é-mi-sin* gel-é-mi-siniz*	Is it ... that you (sing.) may come? Is it ... that you (pl.) may come?
SK ₃ (sín)	gel-sín	Let him come.
SK ₃ (sín) K ₁	gel-sin-lér**	Let them come.
SK ₃ (sín)L	gel-sín-mi	Shall he come?
SK ₃ (sín) K ₁ L	gel-sin-lér-mi**	Shall they come?

* Combinations so marked have extremely rare occurrence. The first four of them, i.e. **gel-é**, **gel-e-lér**, **gel-é-mi**, and **gel-e-lér-mi** have been replaced almost completely by **gel-sín**, **gel-sin-lér**, **gel-sín-mi**, and **gel-sin-lér-mi** in the present day Turkish.

¹⁶ The two other members of N₁, i.e. { -yím } and { -yiz }, do not occur in combinations with { -yé } which are listed here.

" This is a unique instance where the members of two different subclasses of person-number suffixes, i.e. K_3 and K_1 may occur together in the same combination. It should be remembered that $\{\text{-sın}\}$, very limited in its distribution, is the only overt marker for the third person singular which is otherwise unmarked in Turkish.

4.224 Subclass M_2 . The only possible combinations $\hat{S}\{\text{-yin}\}$ and $\hat{S}\{\text{-yiniz}\}$ have the same meaning but differ in style. Along with the unmarked verb stem they indicate the imperative in Turkish :

\hat{S}	gél	Come. (2nd person singular)
$\hat{S}\{\text{-yin}\}$	gél-in	Come. (2nd person pl. or 2nd person sing. formal)
$\hat{S}\{\text{-yiniz}\}$	gél-iniz	Come. (2nd person pl. or 2nd person sing. formal mostly in written language)

$\hat{S} + \hat{S}\{\text{-yin}\} + \hat{S}\{\text{-yiniz}\} < \text{SEN}$

$\hat{S}(1 + \{\text{-yin}\} + \{\text{-yiniz}\}) < \text{SEN}$

4.23 Stative verb prefinal suffixes. The restoration of Order M in the system increases the complexity of our formulation greatly. In addition to the restrictions determined in terms of ordering there are new ones which stem from semantic considerations. For instance, suffix $\{\text{-sé}\}$ of Subclass J_2 may not occur with suffix $\{\text{-yse}\}$ of Subclass M_3 in the same combination, although it may combine with suffix $\{\text{-ydi}\}$ of Subclass M_2 which has similar distribution with M_3 :

S $\{\text{-sé}\}$ M_3K_1	*gel-sé-yse-ler	
S $\{\text{-sé}\}$ M_2K_1	gel-sé-ydi-ler	If they came...

On the other hand, there are instances where suffixes of formal and semantic similarity may occur in the same combinations :

S $\{\text{-dí}\}$ M_2K_1	gel-dí-ydi-ler	They had come.
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Clearly, there is a semantic restriction that does not allow the occurrence of two subsequent 'conditions' in a single combination.

The most important reason for the complexities involved is the relatively unrestricted distribution of subclasses K_1 and L. This flexibility brings about alternative combinations whose constituents remain unchanged in spite of manipulations in their ordering. Changes in tactics cause very slight differences in meaning, if any at all.

$\hat{S}J_1K_1LM_2$	gel-íyor-lar-mı-ydı	Were they coming?
$\hat{S}J_1LM_2K_1$	gel-íyor-mu-ydu-lar	Were they coming?

The combinations most readily identified as regular by native speakers fall into a pattern which we will present as 'basic', in contrast with other alternative forms.

4.231 Combinations including SJ_1 and M_1, M_2, M_3 .

Possible combinations

Basic		Alternative	
$SJ_1K_1LM_1$	gel-iyor-lar-mi-ymiş Is it said they were coming?	$SJ_1LM_1K_1$	gel-iyor-mu-ymuş-lar
$SJ_1K_1LM_2$	gel-iyor-lar-mi-ydı Were they coming?	$SJ_1LM_2K_1$	gel-iyor-mu-ydu-lar
$SJ_1K_1LM_3$	gel-iyor-lar-mi-ysa Is it ... if they are coming?	$SJ_1LM_3K_1$ $SJ_1M_3K_1L$ $SJ_1K_1M_3L$	gel-iyor-mu-ysa-lar gel-iyor-sa-lar-mı gel-iyor-lar-sa-mı
$SJ_1LM_1N_1$	gel-iyor-mu-ymuş-um Is it said that I was coming?		
$SJ_1LM_2K_2$	gel-iyor-mu-ydu-m Was I coming?		
$SJ_1LM_3K_2$	gel-iyor-mu-ysa-m Is it ... if I am coming?	$SJ_1M_3K_2L$	gel-iyor-sa-m-mı
$SJ_1K_1M_1$	gel-iyor-lar-mış It is said they were coming.	$SJ_1M_1K_1$	gel-iyor-muş-lar
$SJ_1K_1M_2$	gel-iyor-lar-dı They were coming.	$SJ_1M_2K_1$	gel-iyor-du-lar
$SJ_1K_1M_3$	gel-iyor-lar-sa If they are coming...	$SJ_1M_3K_1$	gel-iyor-sa-lar
$SJ_1M_1N_1$	gel-iyor-muş-um It is said I was coming.		
$SJ_1M_2K_2$	gel-iyor-du-m I was coming.		
$SJ_1M_3K_2$	gel-iyor-sa-m If I am coming.		
SJ_1LM_1	gel-iyor-mu-ymuş Is it said he was coming?		
SJ_1LM_2	gel-iyor-mu-ydu Was he coming?		
SJ_1LM_3	gel-iyor-mu-ysa Is it ... if he is coming?	SJ_1M_3L	gel-iyor-sa-mı
SJ_1M_1	gel-iyor-muş It is said he was coming.		
SJ_1M_2	gel-iyor-du He was coming.		
SJ_1M_3	gel-iyor-sa If he is coming...		

Basic and alternative combinations are treated separately :

Basic combinations :

$$SJ_1(K_1LM_1 + K_1LM_2 + K_1LM_3 + LM_1N_1 + LM_2K_2 + LM_3K_2 + K_1M_1 + K_1M_2 + K_1M_3 + M_1N_1 + M_2K_2 + M_3K_2 + LM_1 + LM_2 + LM_3 + M_1 + M_2 + M_3) < SEN$$

$$SJ_1(K_1(LM_1 + LM_2 + LM_3 + M_1 + M_2 + M_3) + L(M_1N_1 + M_2K_2 + M_3K_2 + M_1 + M_2 + M_3) + M_1N_1 + M_2K_2 + M_3K_2 + M_1 + M_2 + M_3) < SEN$$

$$SJ_1(K_1(L(M_1 + M_2 + M_3) + M_1 + M_2 + M_3)) + L(M_1N_1 + (M_2 + M_3)K_2 + M_1 + M_2 + M_3) + M_1N_1 + (M_2 + M_3)K_2 + M_1 + M_2 + M_3) < SEN$$

$$SJ_1(K_1(L+1)(M_1 + M_2 + M_3) + (L+1)(M_1N_1 + (M_2 + M_3)K_2 + M_1 + M_2 + M_3)) < SEN$$

Alternate combinations :

$$SJ_1(LM_1K_1 + LM_2K_1 + LM_3K_1 + M_3K_1L + K_1M_3L + M_3K_2L + M_1K_1 + M_2K_1 + M_3K_1 + M_3L) < SEN$$

$$SJ_1((LM_1 + LM_2 + LM_3 + M_1 + M_2 + M_3) K_1 + (M_3K_1 + K_1M_3 + M_3K_2 + M_3)L) < SEN$$

$$SJ_1(((L(M_1 + M_2 + M_3) + (M_1 + M_2 + M_3))K_1 + (M_3(K_1 + K_2) + (K_1 + 1)M_3)L) < SEN$$

$$SJ_1(((L+1)(M_1 + M_2 + M_3)K_1 + (M_3(K_1 + K_2) + (K_1 + 1)M_3)L) < SEN$$

The first parts of both formulas for the basic and alternative combinations are alike except the transformed order of K_1 . The second parts do not share many resembling features.

4.232 Combinations including SJ_3 and M_1, M_2

For reasons explained in 4.223, no formulaic statement follows the list of possible combinations below.

Basic		Alternative	
SJ_1M_1	gel-é-ymiş It is said he should (have) come.		
SJ_3M_2	gel-é-ydi He should have come.		
$SJ_3M_1K_1$	gel-é-ymiş-ler It is said they should (have) come.		
$SJ_3M_2K_1$	gel-é-ydi-ler They should have come.		
$SJ_3M_1N_1$	gel-é-ymiş-im It is said I should (have) come.		
$SJ_3K_3(yim,lim)M_1$	gel-e-yin-miş It is said I am (wanted) to come.		
$SJ_3M_2K_2$	gel-é-ydi-m I should have come.		
SJ_3LM_1	gel-é-mi-ymiş Is it said he should (have) come?	SJ_3M_1L	gel-é-ymiş-mi

SJ ₃ LM ₂	gel-é-mi-ydi Should he have come?	SJ ₃ M ₂ L	gel-é-ydi-mi
SJ ₃ LM ₁ K ₁	gel-é-mi-ymiş-ler Is it said they should (have) come?	SJ ₃ M ₁ K ₁ L	gel-é-ymiş-ler-mi
SJ ₃ LM ₂ K ₁	gel-é-mi-ydi-ler Should they have come?	SJ ₃ M ₂ K ₁ L	gel-é-ydi-ler-mi
SJ ₃ LM ₁ N ₁	gel-é-mi-ymiş-im Is it said I should (have) come?	SJ ₃ M ₁ N ₁ L	gel-é-ymiş-im-mi
SJ ₃ K ₃ (yím, ím)LM ₁	gel-e-yím-mi-ymiş Is it said I am (wanted) to come?		
SJ ₃ LM ₂ K ₂	gel-é-mi-ydi-m Should I have come?	SJ ₃ M ₂ K ₂ L	gel-é-ydi-m-mi

In all the combinations above, except SJ₃K₃(yím, ím)M₁ and SJ₃K₃(yím, ím)LM₁, { -yé } can be replaced by { -sé } with no change in meaning. As was mentioned earlier, { -sé } also means 'wish' apart from its conditional meaning, i.e. 'if'.

SK ₃ (sín)M ₁	gel-sín-miş	It is said he was (wanted) to come.
SK ₃ (sín)M ₂	gel-sín-di (occurs rarely)	He was (wanted) to come.
SK ₃ (sín)K ₁ M ₁	gel-sin-lér-miş	It is said they were (wanted) to come.
SK ₃ (sín)K ₁ M ₂	gel-sin-lér-di	They were (wanted) to come.
SK ₃ (sín)LM ₁	gel-sín-mi-ymiş	Is it said he was (wanted) to come?
SK ₃ (sín)LM ₂	gel-sín-mi-ydi	Was he (wanted) to come?
SK ₃ (sín)K ₁ LM ₁	gel-sin-lér-mi-ymiş	Is it said they were (wanted) to come?
SK ₃ (sín)K ₁ LM ₂	gel-sin-lér-mi-ydi	Were they (wanted) to come?

4.233 Combinations including SJ₂ and M₁, M₂, M₃

Possible combinations with { -dí } :

Basic		Alternative	
SJ ₂ (dí)K ₁ LM ₂	gel-di-lér-mi-ydi Had they come?	SJ ₂ (dí)LM ₂ K ₁	gel-dí-mi-ydi-ler
SJ ₂ (dí)K ₂ LM ₂	gel-dí-m-mi-ydi Had I come?	SJ ₂ (dí)LM ₂ K ₂	gel-dí-mi-ydi-m
SJ ₂ (dí)K ₁ LM ₃	gel-di-lér-mi-yse Is it ... if they came?	SJ ₂ (dí)M ₃ K ₁ L SJ ₂ (dí)K ₁ M ₃ L SJ ₂ (dí)LM ₃ K ₁	gel-dí-yse-ler-mi gel-di-lér-se-mi gel-dí-mi-yse-ler
SJ ₂ (dí)K ₂ LM ₃	gel-dí-m-mi-yse Is it ... if I came?	SJ ₂ (dí)M ₃ K ₂ L SJ ₂ (dí)K ₂ M ₃ L SJ ₂ (dí)LM ₃ K ₂	gel-dí-yse-m-mi gel-dí-m-se-mi gel-dí-mi-yse-m

$SJ_2(d\acute{i})K_1M_2$	gel-di-lér-di They had come.	$SJ_2(d\acute{i})M_2K_1$	gel-dí-ydi-ler
$SJ_2(d\acute{i})K_1M_3$	gel-di-lér-se If they came...	$SJ_2(d\acute{i})M_3K_1$	gel-dí-yse-ler
$SJ_2(d\acute{i})K_2M_2$	gel-dí-m-di I had come.	$SJ_2(d\acute{i})M_2K_2$	gel-dí-ydi-m
$SJ_2(d\acute{i})K_2M_3$	gel-dí-m-se If I came...	$SJ_2(d\acute{i})M_3K_2$	gel-dí-yse-m
$SJ_2(d\acute{i})M_2$	gel-dí-ydi He had come.		
$SJ_2(d\acute{i})M_3$	gel-dí-yse If he came...		
$SJ_2(d\acute{i})LM_2$	gel-dí-mi-ydi Had he come?	$SJ_2(d\acute{i})M_2L$	gel-dí-ydi-mi
$SJ_2(d\acute{i})LM_3$	gel-dí-mi-yse is it ... if he came?	$SJ_2(d\acute{i})M_3L$	gel-dí-yse-mi

Basic combinations

$$SJ_2(d\acute{i})(K_1LM_2 + K_2LM_2 + K_1LM_3 + K_2LM_3 + K_1M_2 + K_1M_3 + K_2M_2 + K_2M_3 + M_2 + M_3 + LM_2 + LM_3) < SEN$$

$$SJ_2(d\acute{i})((K_1L + K_2L + K_1 + K_2 + L + 1)M_2 + (K_1L + K_2L + K_1 + K_2 + L + 1)M_3) < SEN$$

$$SJ_2(d\acute{i})(K_1L + K_2L + K_1 + K_2 + L + 1)(M_2 + M_3) < SEN$$

$$SJ_2(d\acute{i})((K_1 + K_2)L + K_1 + K_2 + L + 1)(M_2 + M_3) < SEN$$

$$SJ_2(d\acute{i})((K_1 + K_2) + 1)(L + 1)(M_2 + M_3) < SEN$$

Alternative combinations

$$SJ_2(d\acute{i})(LM_2K_1 + LM_2K_2 + M_3K_1L + K_1M_3L + LM_3K_1 + M_3K_2L + K_2M_3L + LM_3K_2 + M_2K_1 + M_3K_1 + M_2K_2 + M_3K_2 + M_2L + M_3L) < SEN$$

$$SJ_2(d\acute{i})(L(M_2K_1 + M_2K_2 + M_3K_1 + M_3K_2) + (M_3K_1 + K_1M_3 + M_3K_2 + K_2M_3 + M_2 + M_3)L + M_2K_1 + M_3K_1 + M_2K_2 + M_3K_2) < SEN$$

$$SJ_2(d\acute{i})((L + 1)(M_2K_1 + M_2K_2 + M_3K_1 + M_3K_2) + (M_3K_1 + K_1M_3 + M_3K_2 + K_2M_3 + M_2 + M_3)L) < SEN$$

$$SJ_2(d\acute{i})((L + 1)(M_2(K_1 + K_2) + M_3(K_1 + K_2)) + (M_3(K_1 + K_2)M_3 + M_2 + M_3)L) < SEN$$

$$SJ_2(d\acute{i})((L + 1)(M_2 + M_3)(K_1 + K_2) + ((M_3 + M_3)(K_1 + K_2) + M_2 + M_3)L) < SEN$$

Possible combinations with { -sé } :

Basic

$$SJ_2(s\acute{e})K_1LM_1$$

gel-se-lér-mi-ymiş

Alternative

$$SJ_2(s\acute{e})LM_1K_1$$

gel-sé-mi-ymiş-ler

$$SJ_2(s\acute{e})M_1K_1L$$

gel-sé-ymiş-ler-mi

Should they have come (it is said)?

$SJ_2(sé)K_1LM_2$	gel-se-lér-mi-ydi Should they have come?	$SJ_2(sé)LM_2K_1$ $SJ_2(sé)M_2K_1L$	gel-sé-mi-ydi-ler gel-sé-ydi-ler-mi
$SJ_2(sé)K_2LM_1$	gel-sé-m-mi-ymiş Should I have come (it is said)?	$SJ_2(sé)LM_1N_1$ $SJ_2(sé)M_1N_1L$	gel-sé-mi-ymiş-im gel-sé-ymiş-im-mi
$SJ_2(sé)K_2LM_2$	gel-sé-m-mi-ydi Should I have come?	$SJ_2(sé)M_2K_2L$ $SJ_2(sé)LM_2K_2$	gel-sé-ydi-m-mi gel-sé-mi-ydi-m
$SJ_2(sé)LM_1$	gel-sé-mi-ymiş Should he have come (it is said)?	$SJ_2(sé)M_1L$	gel-sé-ymiş-mi
$SJ_2(sé)LM_2$	gel-sé-mi-ydi Should he have come?	$SJ_2(sé)M_2L$	gel-sé-ydi-mi
$SJ_2(sé)K_1M_1$	gel-se-lér-miş If they had come (it is said) ...	$SJ_2(sé)M_1K_1$	gel-sé-ymiş-ler
$SJ_2(sé)K_1M_2$	gel-se-lér-di If they had come...	$SJ_2(sé)M_2K_1$	gel-sé-ydi-ler
$SJ_2(sé)K_2M_1$	gel-sé-m-miş If I had come (it is said)...	$SJ_2(sé)M_1N_1$	gel-sé-ymiş-im
$SJ_2(sé)M_1$	gel-sé-ymiş If he had come (it is said)...		
$SJ_2(sé)M_2K_2$	gel-sé-ydi-m If I had come...		
$SJ_2(sé)M_2$	gel-sé-ydi If he had come...		

Basic combinations

$$SJ_2(sé)(K_1LM_1 + K_1LM_2 + K_2LM_1 + K_2LM_2 + LM_1 + LM_2 + K_1M_1 + K_1M_2 + K_2M_1 + M_1 + M_2K_2 + M_2) < SEN$$

$$SJ_2(sé)((K_1L + K_2L + L + K_1 + 1)M_1 + (K_1L + K_2L + L + K_1 + 1)M_2 + K_2(M_1 + M_2)) < SEN$$

$$SJ_2(sé)((K_1L + K_2L + L + K_1 + 1)(M_1 + M_2) + K_2(M_1 + M_2)) < SEN$$

$$SJ_2(sé)((K_1 + 1)(L + 1) + K_2L)(M_1 + M_2) + K_2(M_1 + M_2) < SEN$$

Alternative combinations

$$SJ_2(sé)(LM_1K_1 + M_1K_1L + LM_2K_1 + M_2K_1L + LM_1N_1 + M_1N_1L + M_2K_2L + LM_2K_2 + M_1L + M_2L + M_1K_1 + M_2K_1 + M_1N_1) < SEN$$

$$SJ_2(sé)(L(M_1K_1 + M_2K_1 + M_1N_1 + M_2K_2) + (M_1K_1 + M_2K_1 + M_1N_1 + M_2K_2)L + (M_1 + M_2)K_1 + M_1N_1) < SEN$$

$$SJ_2(sé)((L + °L)(M_1K_1 + M_2K_1 + M_1N_1 + M_2K_2) + (M_1 + M_2)(L + K_1) + M_1N_1) < SEN$$

$$SJ_2(sé)((L + °L)(M_2(K_1 + N_1) + M_2(K_1 + K_2)) + (M_1 + M_2)(L + K_1) + M_1N_1) < SEN$$

Although the subclasses of Order M are mutually exclusive, it must be noted here that M_3 may combine with M_1 and M_2 forming sequences such as $SJ_1M_1M_3$ gel-iyor-muş.

-sa 'if he was (reportedly) coming...' and $SJ_1M_2M_3$ **gel-iyor-du-ysa** 'if he was coming...' Frequently M_1 , M_2 , and M_3 , being postclitics, appear in their free (non-suffix) form in this type of sequence: **gel-meli idi-ysa** or **gel-meli idi ise** 'if he ought to have come...' A full discussion of various M sequences is beyond the scope of this treatment.

4.234 **Combinations including SJ_1 and M_4 .** Suffix $\{-ir\}$ of Subclass J_1 may not combine with M_4 . Therefore, J_1^{-ir} will be used to mark this restriction in the following formulation.

Possible combinations		Alternative
Basic		
$SJ_1^{-ir}K_1LM_4$	gel-iyor-lar-mi-dir Are they coming?	$SJ_1^{-ir}LM_4K_1$ gel-iyor-mu-dur-lar
$SJ_1^{-ir}K_1M_4$	gel-iyor-lar-dir They are coming.	$SJ_1^{-ir}M_4K_1$ gel-iyor-dur-lar
$SJ_1^{-ir}LN_1M_4$	gel-iyor-mu-yum-dur Am I coming (supposedly)?	
$SJ_1^{-ir}LM_4$	gel-iyor-mu-dur Is he coming (do you think)?	
$SJ_1^{-ir}N_1M_4$	gel-iyor-um-dur I am coming (supposedly).	
$SJ_1^{-ir}M_4$	gel-iyor-dur. He is coming (supposedly).	

Basic combinations

$$SJ_1^{-ir}(K_1LM_4 + K_1M_4 + LN_1M_4 + LM_4 + N_1M_4 + M_4) < SEN$$

$$SJ_1^{-ir}(K_1L + K_1 + LN_1 + L + N_1 + 1)M_4 < SEN$$

$$SJ_1^{-ir}(K_1(L+1) + L(N_1+1) + N_1+1)M_4 < SEN$$

$$SJ_1^{-ir}(K_1(L+1) + (L+1)(N_1+1))M_4 < SEN$$

Alternative combinations

$$SJ_1^{-ir}(LM_4K_1 + M_4K_1) < SEN$$

$$SJ_1^{-ir}(L+1)M_4K_1 < SEN$$

5. **Conclusion.** Theoretically the total picture of Turkish verbal combinations is attainable when we add up all the basic and alternative formulas for verb stem and verb post-stem suffixation. The outcome of the addition, though such an operation seems quite formidable, will certainly be simpler. We can at least eliminate all 'S's and many of the 'J's as well as some of the recurrent elements such as (K_1+K_2) , $(L+1)$, or the like. Nevertheless, it is not our purpose here to continue with further simplification.

The preceding formulations can be considered a step towards greater economy in comparison with geometric charting techniques. Still more economy might be achieved by setting up new cover symbols for recurrent elements. The use of cover symbols would reduce much surface information to foot-notes, but an attempt in that direction might throw light on other aspects of Turkish morphotactics and, possibly, syntax.

APPENDIX

verb suff.	morphophonemic rules							resulting morphophonemic variants of verb suffixes
	1	2	3	4	5	6	7	
iş	x			x				iş,ış,üş,uş,ş
in	x			x				in,in,ün,un,n
dir	x			x				dir,dır,dür,dur,tir,tır,tür,tur
il	x			x			x	il,ı,ül,ul,İ,in,m,ün,un,n
yebîlî		x					x	ebil,abil,yebil,yabîlî
me		x						me,me
ir	x			x				ir,ır,ür,ur,r
iyor	x			x				iyor,ıyor,üyor,uyor
yecek		x	x				x	ecek,acak,yecek,yacak,ece,aca,yece,yaca
meli	x	x						meli,malı
miş	x							miş,mış,müş,muş
ye		x					x	e,a,ye,ya
sin	x							sin,sın,sün,sun
di	x				x			di,dı,dü,du,tı,tı,tü,tu
se		x						se,sa
ler		x						ler,lar
niz	x							niz,nız,nüz,nuz
mi	x							mi,mı,mü,mu
ymiş	x					x	x	miş,mış,müş,muş,yemiş,yemiş,ymüş,ymuş
ydi	x					x	x	di,dı,dü,du,tı,tı,tü,tu,ydi,ydı,ydü,ydu
yse		x					x	se,sa,yse,ya
dir	x				x			dir,dır,dür,dur,tir,tır,tür,tur
yim	x						x	im,ım,üm,um,yim,yım,yüm,yum
yiz	x						x	iz,ız,üz,uz,yiz,yız,yüz,yuz
lim	x							lim,lım,lüm,lum
sin	x							sin,sın,sün,sun
siniz	x							siniz,sınız,sünüz,sunuz
yin	x						x	in,ın,ün,un,yin,yım,yün,yun
yiniz	x						x	iniz,ınız,ünüz,unuz,yiniz,yünüz,yünüz,yur,uz

Distribution of the operation of morphophonemic rules

Notes on the use of this chart: 'x's mark the morphophonemic rules that operate for each suffix. For instance, the reciprocal suffix { -in } is subject to Rule 1 and 4, as marked by 'x's, and yields two sets of morphophonemic variants: 'in, in, ün, ün' and 'n'.

The vowel of the final syllable in disyllabic suffixes, that is { -yecék } , { -meli } { -siniz } { -yiniz } , is determined by the vowel of their initial syllable except in { -yebîlî } and { -iyor } where /i/ and /o/, respectively, remain unchanged.

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ÖZET

Bitişken bir dil olan Türkçede sözcüklerin çok sayıda sonek içerdikleri bilinmektedir. Özellikle, fiil köklerini izleyen soneklerin sayısı bazan yirmiyi aşmaktadır. Bu yazıda fiil kökleriyle değişik türlerdeki soneklerden oluşan dizgeler ele alınmış, diziliş ve bir arada bulunabilirlik yönlerinden eklerin hangi sınırlamalara uymaları gerektiği incelenmiştir. Fiilden fiil türeten eklerle fiil çekim ekleri dışındaki zarflaştırma ve adlaştırma soneklerine yazıda değinilmemiş olduğu için, morfem sınırlarında görülen çeşitli ses değişmelerinden de yalnız fiil-sonek dizgelerinde bulunanlara yer verilmiştir.

Genel olarak yapısal dilbilim yaklaşımının kullanıldığı bu incelemede, cebirsel formlerin alışılmış geometrik çizelgelere oranla tüm dizgeleri kapsamakta daha güçlü olduğu sonucuna varılmaktadır.