

CALCULATION OF THE MAXIMUM DERIVATION NETWORK (STEPs 1-3) AND SATURATION VALUES

- for the individual basic words (STEP 4)
- for the individual basic words by Orders of derivation (STEP 5)
- for the whole word-class by Orders of derivation (STEP 6)

For illustration, we took the networks of Bulgarian Adjectives as prepared by Aleksandra.

TERMINOLOGY

paradigmatic capacity is the ability of a WF base to saturate the paradigmatic gaps in the paradigm of a simple, undervived word by first-order derivatives. Its numerical representation is the number of direct derivatives from the base, e.g. the paradigmatic capacity of *topal* is 7 because there are 7 actualized paradigmatic gaps (7 direct derivations from the base).

paradigmatic gap is the place in the paradigm which can potentially be filled out by an actual unit. A completed cell in a derivational network is an actualized paradigmatic gap.

derivational degree/order of derivation is given by the order in which affixes are attached to the WF base. WF base+1 attached affix is 1st derivational degree (order). Any subsequent affixation increases the order of derivation. Thus, *top+lo* is the 1st order, both *top-li-cko* and *na-top-lja* are second order derivations because there are two derivational affixes.

derivational network is the intersection of the paradigmatic capacity and the derivational degree. It means that the network is created by actualized paradigmatic gaps in individual derivational orders.

saturation value in general represents the structural richness of an examined phenomenon. In the case of derivational network, the saturation value represents the structural richness of the derivational network. For the computation of the maximum derivation network and the individual saturation values see below.

I. CALCULATION OF THE MAXIMUM DERIVATION NETWORK

STEP 1: Take the highest number of derivatives for a given semantic category from among all ten words. Marked RED in YELLOW BOX on the handout.

Procedure: Take ten words of a word-class (cf. handout Maximum Network, excel file). For the **calculation of the maximum derivational network** compare the number of derivatives in all ten words under each semantic category. Identify the highest number of derivatives per each semantic category. For example, in our Bulgarian example, the 3rd order derivation of 'THIN' has 8 derivatives within the semantic category of ATTENUATIVE. It is the highest number of derivatives from among all ten basic words within this semantic category in terms of 3rd Order derivation. Do it by orders of derivation separately.

STEP 2: Do it for all semantic categories that occur in the ten derivational network (representing 10 adjectives, for example) Add up all highest numbers, identified in the preceding step for all semantic categories in individual orders of derivation.

In our example, it is:

Order of derivation	Sum total of maximum derivatives in individual semantic categories
1st order	33
2nd order	47
3rd order	21
4th order	7
5th order	1
Σ	109

Table 1

The numbers above represent sum total of all yellowed figures in the attached chart.

STEP 3: Determine the maximum derivation network by adding up the values for the individual orders of derivation from Table 1:

$$\Sigma = 109$$

II. CALCULATION OF THE SATURATION VALUE

STEP 4: Calculate the saturation value for individual adjectives:

Procedure: Count all the derivatives for each adjective. In the case of the adjective *topal* it is 27 derivatives. Divide 27 by 109 (and multiply it by 100 (to get the percentage value) which gives 24.77%. In this way, you have identified the saturation value of the adjective *topal* relative to our sample of 10 core adjectives.

Do it for each adjective:

Adjective	Saturation value (%)
<i>narrow</i>	20.18
<i>old</i>	30.28
<i>straight</i>	28.44
<i>new</i>	15.60
<i>long</i>	28.44
<i>warm</i>	24.77
<i>thick</i>	29.36
<i>bad</i>	15.60
<i>thin</i>	30.28
<i>black</i>	18.35

Table 2

STEP5: Calculate the saturation value for the individual adjectives by orders of derivation:

Procedure: Take the word *topal*'warm'. There are 7 first-order derivatives from this basic adjective. Divide it by 33 (as specified in STEP 2 above). The first order saturation of the word *topal* is 21.21 %. Do it for all the other orders. The second order saturation of this word is 10: 47 = 21.27%; the third-order saturation is 8: 21 = 38.10%, etc.

	1 st order%	2 nd order%	3 rd order%
<i>narrow</i>	30.30	14.89	19.05
<i>old</i>	36.36	17.02	42.86
<i>straight</i>	24.24	29.79	23.81
<i>new</i>	15.15	8.51	23.81
<i>long</i>	45.45	17.02	19.05
<i>warm</i>	21.21	21.27	38.10
<i>thick</i>	42.42	19.15	33.33
<i>bad</i>	33.33	12.77	0
<i>thin</i>	27.27	27.66	42.86
<i>black</i>	18.18	17.02	28.57

Table 3

STEP 6: Calculate the saturation value of adjectives as a whole by orders of derivation:

Procedure: calculate the first-order saturation for all ten adjectives as an **average** of first-order saturations specified in Table 3. Do the same for the other orders of saturation:

Adjectives	
1 st -order saturation	29.39 %
2 nd -order saturation:	18.51 %

3 rd -order saturation:	27.14%
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Table 4

III. COMPARE THE RESULTS OBTAINED IN STEPS 4-6 FOR NOUNS, VERBS AND ADJECTIVES AND DRAW CONCLUSIONS.