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LEXICOGRAPHIC APPLICATIONS OF LEXICAL FUNCTIONS:
TWO SAMPLE LEXICAL ENTRIES FROM AN EXPLANATORY-
COMBINATORIAL DICTIONARY

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This paper illustrates the lexicographic application of lexical functions (described in I. Mel'čuk's paper in this volume) in monolingual dictionaries of a new type, Explanatory-Combinatorial Dictionaries (ECD's). For the basic principles and a characterization of an ECD see Žolkovskij - Mel'čuk 1966, Apresyan *et al.* 1969, Apresjan *et al.* 1973. Work on an ECD of contemporary Russian started in Moscow in 1966. For preliminary results, lexicographic descriptions of some 250 Russian words, see Materialy 1970-1976; Apresjan *et al.* 1968; Žolkovskij - Mel'čuk 1972. Since 1978 a small team at the University of Montreal has been conducting similar research on French, aiming at an ECD of contemporary French. Below we present a Russian lexical entry from the Moscow project and a French one from the Montreal project.

We chose a Russian and a French lexeme which are equivalent under translation: Russ. *vosxiščenie* and Fr. *admiration*, both roughly 'admiration'. This choice of near-synonyms from two different languages allows us to show that a vast class of phraseological collocations in different languages, which at first glance appear unsystematic and idiomatic, can be described in a systematic and universal fashion independent of the language. This is achieved by using LEXICAL FUNCTIONS (LF's), a universal metalanguage for the description of this class of phraseologisms.

The universality of LF's enables them to provide for direct correspondences between phraseological units of different languages. For any given LF $\underline{f}$, if its two arguments -- X_1 and X_2 in two different languages L_1 and L_2 -- are (roughly) semantically equivalent, then its two values -- $\underline{f}(X_1)$ and $\underline{f}(X_2)$ -- are (roughly) semantically equivalent as well.

For example, suppose a French speaker needs to find out how the Russians say

(1) [*Les Anglais*] *avaient une grande admiration* [*pour son talent*] '[The British] had great admiration [for his talent]'. The problem is that the literal translation (2):

(2) **[Angličane] imeli bol'šoe vosxiščenie* [*pered ego talantom*] is completely ungrammatical. The best target equivalent should be (3):

- (3) [Angličane] ispytyvali *glubokoe vosxiščenie* (byli polny *glubokogo vosxiščeniya*) [*pered ego talantom*], lit. '... experienced (were full of) profound admiration...'

With the apparatus of LF's, our French speaker can easily find the required equivalent (3). He needs to do the following three things:

1) Find (in the bilingual index) the Russian equivalent of ADMIRATION, namely VOSXIŠČENIE.

2) Understand that *grande* is a value of a particular LF (namely, Magn(admiration)) and *avoir* is a value of another particular LF: Oper₁(admiration).

3) Look up Magn(vosxiščenie) and Oper₁(vosxiščenie) in a Russian ECD and, if there are alternative variants, make his choice according to the conditions stated in the corresponding lexical entry.

We invite the reader to carry out this modest exercise himself.

In many cases, however, a particular expression cannot be translated into another language this easily, since the LF f defined for X_1 in L_1 is not defined at all for X_2 in L_2 : L_2 lacks a value of f for X_2 . Thus consider the French sentence (4):

- (4) *Son admiration pour ce pays durait toujours* 'His admiration for this country lasted forever',

where *durer* 'last' is ContFunc₀(admiration). This sentence cannot be rendered in Russian in a structurally similar way: there is no value of ContFunc₀ for Russ. VOSXIŠČENIE. In this case we invoke the paraphrase system mentioned in Mel'čuk's paper, specifically, the universal equation (5):

- (5) ContFunc₀ = not FinFunc₀.

It happens that the LF FinFunc₀ does have a value for VOSXIŠČENIE: *proxodit'*, lit. 'pass'. So the French sentence (4) featuring the LF ContFunc₀ can be translated by Russian sentence (6) using LF FinFunc₀ plus negation:

- (6) *Ego vosxiščenie ètoj stranoj ne proxodilo*, lit. 'His admiration for this country did not pass.'

A similar difficulty for a translator arises in the French sentence (7):

- (7) *L'admiration éclatait dans chaque ligne de sa lettre*,

lit. 'Admiration was exploding in every line of his letter'.

Here, *éclater* is the value of LF MagnManif (MagnManif $\approx$ 'manifest itself in an intensive way'). But in Russian, this LF is not defined for VOSXIŠČENIE: we cannot say anything like (8):

- (8) **Vosxiščenie voryvalos' v každoj stroke ego pis'ma*.

However, we have for VOSXIŠČENIE the LF Conv₂₁MagnManif (= *dyšat* 'breathe') that provides for a translation equivalent, following the equation (9):

- (9) key word $\xleftarrow{1}$ Manif $\xrightarrow{2}$ U = U $\xleftarrow{1}$ Conv₂₁Manif $\xrightarrow{2}$ key word.

The Russian translation obtained is (10):

- (10) *Každaja stroka ego pis'ma dyšala vosxiščeniem*, lit.

'Every line of his letter was breathing with admiration'.

We now take an example of translation in the opposite direction,

from Russian into French. The equation (11):

allows us to translate the Russian sentence (12), which contains the LF Labor₁₂, not defined for Fr. ADMIRATION, with the French sentence (13), using Oper₁:

(12) *Družja odnosjatsja [= Labor₁₂] k Jure s vosxiščeniem*,
lit. 'Friends treat Jura with admiration'.

(13) *Les amis éprouvent de l'admiration pour Jura*, lit.
'Friends experience admiration for Jura'.

We will not dwell on other advantages of using LF's in a monolingual dictionary. Neither can we elaborate on lexicographic definitions and so-called government patterns in our sample entries. We will restrict ourselves to the following four additional clarifications concerning LF's.

1. Since we present here two isolated entries, the bulk of necessary information is given in full in every entry. But it should be emphasized that within a relatively complete ECD duplication of information will be avoided through extensive use of internal cross-references and general rules building up the "grammar" of the ECD. Thus, e.g., in a full-fledged ECD the entry VOSXIŠČENIE need not contain *ispytyvat* 'experience' as Oper₁ since one can *ispytyvat* 'also *radost* 'joy', *gnev* 'anger', etc. Because of that, it is sufficient to indicate *ispytyvat* 'as Oper₁ in the entry for ČUVSTVO 'emotion' and to cross-reference it in the entries for specific emotions.

2. To save space, the head word of an entry is not indicated as an argument with each individual LF. In the entry for X, instead of $\underline{f}_1(X) = Y_1$, $\underline{f}_2(X) = Y_2$, ..., we simply write $\underline{f}_1 : Y_1$, $\underline{f}_2 : Y_2$, ... When mention of the head word is necessary, it is abbreviated using only its first letter.

3. In several cases, it proves convenient to write compound LF's using arrows of deep-syntactic relations - actantial (1,2,...) and attributive (ATTR). For instance, the expression $(W \xleftarrow{1} A.) \xleftarrow{1} \text{CausFunc}_1$ in the entry ADMIRATION means 'the fact that W feels admiration causes admiration to affect X' (the value of this compound LF is *communiquer* 'communicate').

4. To describe expressions denoting a bodily reaction as a symptom of an emotional state (the LF Sympt) we use two partial LF's not explained earlier: Obstr 'impeded functioning of an organ' and Excess 'excessive functioning of an organ'. (The third type of malfunction - Degrad - is described in Mel'čuk's paper.)

Notice that the actant subscripts of the LF Sympt do not correspond to the actants of the key word (in our case, 'admiration'),

but to the actants of the new situation 'to be a symptom of' where the reacting organ is taken to be the first deep-syntactic actant, the person experiencing an emotion is the second deep-syntactic actant, and the emotion itself, the third deep-syntactic actant.

At this point, we will present our sample entries. Two remarks are in order. First, the Fr. ADMIRATION has two senses (the emotion and the object thereof), of which we will consider only the first one. This fact is indicated by the numerical index 1 (cf. *admiration* 2 appearing as a value of LF S_2). Second, since our aim here is illustrating LF's, we have allowed ourselves several simplifications in the presentation (e.g., we have omitted sense-distinguishing indices, which generally must accompany every polysemous word).

NOTATIONS AND SYMBOLS

~	: key word
A	: adjective
A _{poss}	: possessive (pronominal) adjective
ART ~	: { with article
Ø / ART ~	: { without article, with the exception
	: { of cases when the key word is modified by an adjective
~	: { without article
C _i	: surface-syntactic actant (of the key word) corresponding to the <i>i</i> -th deep-syntactic actant
C _{i,j}	: surface means <i>j</i> expressing the <i>i</i> -th surface-syntactic actant
CLAUSE	: clause
Conj	: conjunction
G(X)	: syntactic governor of X; if X is not indicated, G is the governor of the immediately preceding item
N	: noun
X	: X is a condition the scope of which includes any expression to the left of up to the first semicolon
Λ	: empty set (e.g., C ₁ = Λ means that C ₁ cannot be expressed at all)

ADMIRATION, noun, fem.

1. no plural. *Admiration de X devant Y pour son Z* = Emotional attitude of X, positive with respect to Y, which is caused by the following fact: X believes that actions, state, or properties Z of Y are completely extraordinary; this attitude is such that one normally has in such situations.

Government

1 = X	2 = Y	3 = Z
1. <i>de</i> N	1. <i>de</i> N	1. <i>pour</i> A _{poss} N
2. A _{poss}	2. <i>pour</i> N	
3. A	3. <i>devant</i> N	
	4. <i>envers</i> N	

- 1) C_{2.4} : N denotes a person
 2) C₃ without C₂ }
 3) C₁ + C_{2.1} } : impossible
 4) C_{2.2} + C_{3.1} }

*l'admiration du public, son admiration, l'admiration nationale;
 son admiration des < pour / devant les > tableaux anciens;
 l'admiration de Pierre devant < envers > Jacques pour son
 courage*

Impossible: **l'admiration envers ces tableaux* (1) [= *l'admiration pour ces tableaux*]; **l'admiration de Pierre pour le courage* (2) [= *l'admiration de Pierre envers Jacques pour son courage*]; **l'admiration de Pierre de son père* (3) [= *l'admiration de Pierre pour son père*]; **l'admiration pour son père pour son courage* (4) [= *l'admiration envers son père pour son courage*]

Lexical functions

- Syn₀ : enthousiasme 1, ravissement, émerveillement
 Anti₀ : aversion
 Gener : sentiment [d'~] | C₁ = Λ
 V₀ : admirer
 S_{1c} : admirateur; admiratrice
 S₂ : source, objet [de Ø / ART ~] // admiration 2
 [Il devint l'admiration de la superbe Ninive]
 A₁ : plein, rempli [de Ø / ART ~], dans [ART ~], en
 [~] // admiratif 1 [Elle est admirative pour
 tout ce qu'il dit]
 Able₁ : sujet, enclin, porté [à ART ~]
 Able₂ : digne [de Ø / ART ~] // admirable
 Adv₁Able₂ : // admirablement [Une rivière aux eaux admira-
 blement claires]
 PredAble₂ : mériter [ART / de ART ~]
 Magn : grande, vive, profonde < immense < sans bornes
 PredMagn : ne plus connaître de bornes
 AntiVerMagn : excessive, démesurée, exagérée
 Magn₁quant : commune < générale, universelle

IncepPredPlus ^{ref1}	: grandir, s'accroître, augmenter, se développer
CausPredPlus ^{ref1}	: augmenter, accroître [ART ~]
IncepPredMinus ^{ref1}	: diminuer, faiblir
CausPredMinus ^{ref1}	: diminuer, affaiblir [ART ~]
Ver	: justifiée, fondée
AntiVer	: injustifiée; de commande
AntiBon	: aveugle, irréfléchie, béate
Adv ₁	: dans un moment [d'~]; avec [∅ / ART ~] G = Y
Adv ₂	: à [1'~] either C ₁ ≠ Λ or A. → Magn ₁ quant [<i>Il remporta la victoire, à l'admiration de ses copains</i>]
Propt	: par [~] no modifier, except for <i>seul</i> and C _{2.2} [<i>par seule admiration</i>]; sous l'effet [de ART ~] C _i = Λ
Oper ₁	: éprouver, ressentir, avoir, nourrir [ART / de 1'~], être [en ~ / dans ART ~] C ₂ ≠ Λ
Magn + Oper ₁	: brûler [de ∅ / ART ~] C ₂ ≠ Λ
Oper ₁ + W ← ¹ A. → ² Y	: partager [1'~ de N = W] C ₂ ≠ Λ
IncepOper ₁	: tomber [en ~] C ₂ ≠ Λ
ContOper ₁	: rester [en ~ / dans ART ~]; garder [ART ~] C ₂ ≠ Λ
FinOper ₁	: perdre [ART ~] C ₂ ≠ Λ
Magn + Caus ₍₂₎ Oper ₁	: remplir [N de ∅ / ART ~]
IncepOper ₂	: s'attirer, attirer [ART ~] C ₁ ≠ Λ ; inspirer [ART / de 1'~ chez N]
CausFunc ₁ or IncepOper ₂	: causer, provoquer, allumer, susciter, éveiller, déclencher, exciter [ART / de 1'~ chez N] [<i>Le père a causé une grande admiration chez les enfants pour cet artiste</i> : CausFunc ₁ ; <i>Le père a causé une grande admiration chez les enfants</i> : IncepOper ₂]
ContFunc ₀	: durer
FinFunc ₀	: s'éteindre, s'évanouir, s'épuiser, cesser, disparaître
LiquFunc ₀	: mettre fin [à ART ~], liquider [ART ~]
Perm ₁ Manif or Perm ₁ Func ₀	: céder [à ART ~]
notPerm ₁ Manif or notPerm ₁ Func ₀	: retenir, refréner, réprimer [ART ~]
Magn + Func ₁	: remplir, transporter [N]
IncepFunc ₁	: saisir, gagner [N] preferably in the passive voice; s'emparer [de N], naître [en son âme <coeur>]
(W ← ¹ A.) ← ¹ CausFunc ₁	: [N = W] communiquer [1'~ à N = X]
Caus ₂ Func ₃	: gagner, forcer [1'~ par N] C ₁ ≠ Λ , Y = a person
Magn + Labor ₂₁	: soulever, frapper [N d'~]
facial expression ← ²	
← ² Manif	: se peindre <se refléter> sur le visage [de N = X]

Conv ₂₁ Manif	: [N] traduire [ART ~], montrer, exprimer [ART / de l'~]	N = regard, voix, ton, parole, visage, geste, ...
(in spite of X) $\xleftarrow{\text{ATTR}}$ Conv ₂₁ Manif	: [N] trahir [ART ~]	
A ₂ Manif	: [N] plein, rempli, empreint [de Ø / ART ~] // admiratif 2, admirateur 2 [<i>Il pose sur elle un regard admirateur</i>]	
MagnManif	: éclater [Loc N] [<i>L'admiration éclatait dans chaque ligne de sa lettre</i>]	
Caus ₁ Manif	: manifester, montrer [ART / de l'~], exprimer [ART ~]	
orally Caus ₁ Manif	: crier [A _{poss} ~]; professer [ART / de l'~] C ₂ ≠ Λ	
Caus ₁ Manif by talking much about Y	: // avoir la bouche pleine [de N = Y]	
Adv ₁ Caus ₁ Manif	: avec [Ø / ART ~] // admirativement [<i>Regarder quelqu'un admirativement</i>]	
notPerm ₁ Manif	: cacher, dissimuler [ART ~]	
A ₂ notPerm ₁ Manif	: secrète	
Degrad ^{motōr} (body)-Sympt ₂₃	: se pâmer [d'~]	
Excess ^{fulg} (eyes)-Sympt ₁₃	: ses yeux brillent, étincellent, brûlent [de Ø / ART ~]	
whistle - Sympt ₂₃	: siffler [d'~]	
S ₀ [whistle - Sympt ₂₃]	: sifflement [d'~]	
S ₀ [whisper - Sympt ₂₃]	: murmure [d'~]	

Exemples

En même temps, il ne pouvait se retenir d'éprouver une secrète admiration pour ce Biturige qui alliait la fierté et l'adresse [G. de Sède]. Il me parle avec admiration du docteur de Martel qui vient de sauver sa femme [A. Gide]. Je reste longtemps dans l'admiration de son tronc énorme, de sa ramification puissante et de cet équilibre où le maintient le poids de ses plus importantes branches [A. Gide]. Les Anglais en particulier ont une grande admiration pour son talent. Ce pauvre Sandy a gagné l'admiration des humains. Ce discours improvisé souleva d'admiration l'auditoire. En le voyant sauter l'obstacle, il poussa un long sifflement d'admiration. Elle professe à son égard une admiration qu'il ne mérite pas. Il force l'admiration par son courage. A ces mots, un murmure d'admiration s'éleva de la foule.

VOSXIŠČĖNI|E <VOSXIŠČĖN'|E>, *ja*, noun, neuter, no plural.

Vosxiščenje X-a pered Y-om = Emotional attitude of X, positive with respect to Y, which is caused by the following fact: X believes that Y is extraordinarily good; this attitude is such that one normally has in such situations.

Government

1 = X	2 = Y
1. N _{gen}	1. N _{instr}
2. A _{poss}	2. <i>pered</i> N _{instr}
	3. <i>tem</i> , Conj + Clause

*vosxiščenie publiki, moë <katino> vosxiščenie; ego vosxiščenie
starymi kartinami; vosxiščenie publiki pered artistom; eë vosxiš-
čenie tem, skol'ko u nix xorošix knig*

Lexical functions

Syn ₀	: vostorg, èntuziazm
Anti ₀	: otvraščenie
Gener	: čuvstvo [~ja]
V ₀	: vosxiščat'sja
S ₁	: poklonnik
S ₂	: <i>lit</i> predmet, ob'ekt [~ja]
A ₁	: polnyj, ispolnennyj [~ja] // vosxiščennyj 1
A ₁ + Magn	: preispolnennyj [~ja/~em]
Able ₂	: dostojnyj [~ja] // vosxitlel'nyj
Adv ₁ Able ₂	: // vosxitlel'no
PredAble ₂	: byt' dostoin, zasluživat' [~ja]
Magn	: glubokoe < bezmernoe; soveršennoe, polnoe G(V.) = IncepOper ₁ or IncepLabor ₂₁
AntiVerMagn	: preuveličennoe
Magn ₁ quant	: vseobščee
IncepPredPlus _{refl}	: rasti
IncepPredMinus _{refl}	: umen'shat'sja
CausPredMinus	: umen'shat'
Ver ₁	: iskrennee, nepoddel'noe
AntiVer ₁	: delanno, pritvornoe
Adv ₁	: v [~i] C ₂ = Λ ; s [~em] G = Y
Adv ₂	: k [~ju] either C ₁ = Λ or V. → Magn ₁ quant
Oper ₁	: ispytyvat' [~e], byt' polon [~ja]; byt' [v ~i (ot N _{gen})] V. has no dependent
Oper ₁ + W $\xleftarrow{1}$ V. $\xrightarrow{2}$ Y:	: razdeljat' [~e N _{gen} = W] ['have admiration for the same thing as W']
IncepOper ₁	: prixodit' [v ~e (ot N _{gen})]
(W $\xleftarrow{1}$ V.) $\xleftarrow{1}$ CausOper ₁ :	: [~e N _{gen} = W] peredač'sja [N _{dat}]
IncepOper ₂	: vzyvat' [u N _{gen} /v N _{prep} ~e], vnušat' [N _{dat} ~e]
FinFunc ₀	: proxodit'
CausFunc ₀	: zavožvyvat' [~e] either C ₁ ≠ Λ or V. → Magn ₁ quant
Labor ₁₂	: otnosit'sja [k N _{dat} s ~em]

IncepLabor₂₁ or CausOper₁ : privodit' [N_{acc} v ~e N_{instr} = P(X)]
 [On privel vsech v vosxiščenie svoej xra-
 brost'ju]

facial expression ←²
 ←² Manif : vyražat'sja na lice [N_{gen} = X]
 Conv₂₁MagnManif : [N] dyšit [~em] | C₂ = **Δ**, N is a message of
 X [Ego pis'mo dyšit vosxiščeniem]
 A₂Manif : [N] polnyj, ispolnennyj [~ja] // vosxiščē-
 nyj 2 | C₂ = **Δ**; N = vzgljad, golos, ton,
 slova, žest,...
 such a sound of voice in which notMagnManif : notka [~ja]
 Caus₁Manif : vyrazit' [svoe ~e]
 (in spite of X) ←^{ATTR} Caus₁Manif : ne moč' sderžat' [svoego ~ja]
 Adv₁Caus₁Manif : s [~em] | C₂(V.) = **Δ** // vosxiščēno
 Perm₁Manif : ne skryvat' [(svoego) ~ja]
 A₂Perm₁Manif : neskryvaemoe
 AntiA₂Perm₁Manif : tajnoe
 Degrad^{motor}(body)-Sympt₂₃ : zameret' [ot ~ja <v ~i>], zastyt',
 ostanovit'sja [v ~i] | C₂ = **Δ**
 Excess^{fulg}(eyes)-Sympt₂₃ : [u N_{gen}] glaza svetjatsja, sijajut
 [ot ~ja / ~em] | C₂ = **Δ**
 exclaim - Sympt₂₃ : axnut' [(ot ~ja)] | C₂ = **Δ**

Examples

Pis'mo ego dyšalo vosxiščeniem i lybov'ju. On smotrel na učitelja
 s neskryvaemym vosxiščeniem. Krome ruč'ja, ja dal emu nož, ot ko-
 torogo on prišel v polnoe vosxiščenie. "I ty skazal èto?" - v ego
 golose poslyšalas' notka vosxiščeniya.

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