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A TENTATIVE EXTRAPOLATION OF A CERTAIN LINGUISTIC RULE

The current article presents a proposal for extending certain regularities observed in the history of language to cover other areas of semiotics as well. Most importantly, the formula in question is crucial to psychological associations in general, and very significant in the cases when signs are influenced by material and functional context. The qualities characteristic of language, i.e. articulation and communicative function, as well as its conventional character create favorable starting-point conditions for this investigation, but, on the other hand, they are obscured in the general rule, which disregards both the material side of the sign and its special function.

Let us therefore begin with some examples from the history of language; they will help us to isolate general concepts which we shall require.

1. In Semitic languages, similarly to Indo-European ones, the adjective, which primarily serves as an attribute, could also serve independently as an *abstractum*; cf. the Greek $\alpha\gamma\alpha\acute{o}\nu$, $\kappa\alpha\kappa\acute{o}\nu$; the Latin *bonum*, *malum*; the Polish and Russian *dobro* (the old form of neuter adjective); the Spanish *lo rojo* — redness, *rojo* — red, etc. It can thus be said that the form of the Semitic adjective , in some cases the feminine and in others the masculine one, was ambivalent, e.g. *ar ḥasanatun*, i.e. fem. adj. "beautiful" and "beauty" (as an abstract). Such a form had the primary (basic) meaning of the adjective and the secondary (conditioned by context) meaning of the *abstractum*. The meaningful function of the adjective was the basic one because the *abstractum* represented a reduced, one-gender paradigm of an adjective whose inflection encompassed both the feminine and masculine

genders. What occurred here was a hierarchical relation relying on inclusion: the range of applications of the *abstractum* (= only a part of the adjective's inflection) was included in the adjectival range of application.

Let us identify the de-verbal adjective from *qatala* (verbum) with the symbol *qatal*. In (classical) Arabic, the paradigm of the verb *qatala* (3rd person sing.) has either vowel endings (*-a, -at, -ā, -atā, -ū*) or consonant endings (*-nă, -nā, -ta, -ti, -tu, -tum, -tunna*). This inflection is generally parallel to proto-Semitic conditions.

At a certain point, a change in proto-Semitics caused a shortening of all the long vowels in closed syllables, e.g. *i̯aqūlu* "he is speaking", *taqūlūna* "you are speaking" (masc.), *taqŭlna* "you are speaking" (fem.), *qūlī* "speak!" (fem.), *qŭl* "speak!" (masc.) etc. In a closed syllable, a short vowel could thus be interpreted either as a short one or as a long shortened one. The hierarchy of those two forms depended on their range. In the above paradigm *qatala*, *qatalta* etc., the vowel of the second syllable was either short (*qatala*) or ambivalent (*qatalta*), i.e. the range (scope) of shortness was larger than the range of longness, with an inclusive relation occurring (see Fig.).
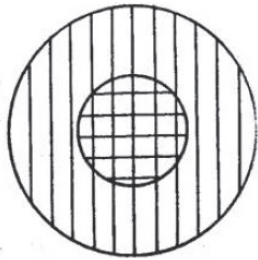
The inner circle corresponds to closed syllables with vowel length ambivalence in their vocalism. Vertical shading = the range of shortness; horizontal shading = the range of longness.

There exists an inclusive relation between *qatăl*, a de-verbal adjective with short vocalism, and *qatāl*, a different de-verbal derivate, which can be created owing to an ambivalence of vowel length in verb forms having a closed syllable (*qatalta*, *qataltum* etc.). In the face of the hierarchical relation existing between the short and long vocalism, *qatăl* (with the short one) represents the primary sound form, and *qatāl* (with the long one) represents the secondary one.

Thus, a hierarchy (based on an inclusive relation) evolves between the primary and the secondary function, and between the primary and the secondary sound form; it is therefore evident on the level of sounds as much as on the level of meanings:

The functional (semantic) ambivalence is here crossed with sound am-

	primary function	**secondary function**
primary sound form	adjective with a short vowel	abstractum with a short vowel
secondary sound form	adjective with a long vowel	abstractum with a long vowel

bivalence. At some point, neutralisation of vocalism was used in order to assign a separate sound form to each of the functions (diversification).

Thus, the primary (i.e. adjectival) function acquired the primary sound form, i.e. the form with short vocalism, *qatăl*. The secondary function (i.e. *abstractum*) was expressed through the secondary sound form, i.e. the form with long vocalism, *qatāl*. The secondary function, i.e. the *abstractum* meaning, which until then had been conditioned by context, from that point on was autonomous, as it acquired a separate grammatical exponent: the lengthening of vocalism of the second syllable.

The resulting conclusion is as follows: there occurs an association of the primary function with the primary sound form, and of the secondary function with the secondary sound form.

2. In the Greek language, compound words whose second segment is a stem beginning with a *-r-* or *-n-* often replace the *e*-vocalism in the inflectional suffix with the *o*-vocalism, e.g. πατήρ : ὁμο-π´ατωρ "having the same father;" μήτηρ : alpha-μήτωρ "not having a mother = motherless;" φρήν "mind" : ὁμό-φρων "thinking the same way," alpha-φρων "not having a mind = unthinking."

The semantic function of compounds with a nominal second segment was twofold. The fundamental (primary) meaning corresponded to the meaning of the second segment; hence *ὁμο-π´ατηρ would essentially mean "the same (= identical) father." However, such compounds could also be used as adjectives which "exocentrically" define some other noun. In a similar way, in Polish, *biało-głowa* "white-headed = grey-haired" can be used as an adjective to *kobieta*, *baba* ("woman") etc., but the compound *białogłowa* does not mean *głowa* "head," but "woman" (in contrast to the compound *żywopłot* "hedge," which does mean *płot* "fence"). Compounds with a nominal second segment were thus ambivalent; their primary (fundamental, main) function was "endocentric" (i.e. nominal, as resultant from the second segment in isolation), and their secondary (subsidiary) function was "exocentric" (adjectival). An inclusive relation existed between those two functions, because the meaning of the second segment in isolation was only nominal.

Some changes in the sound system which occurred in the prehistoric (Indo-European) era caused a sound ambivalence in some inflectional forms of nouns such as πατήρ. In *gen. sing.* πατρός, *dat. sing.* πατρί, the disappear-

ance of the vowel separating τ and ρ (the vowel which does occur in $\pi\alpha\tau\acute{\epsilon}\rho\alpha$, $\pi\alpha\tau\acute{\epsilon}\rho\epsilon\varsigma$ etc.) may have been interpreted as the disappearance of either *e* or *o*, because originally nouns ending with -$\tau\omega\rho$ (such as $\delta\acute{\omega}\tau\omega\rho$, $'E\kappa\tau\omega\rho$) also got rid of the vowel separating τ and ρ in *gen.* and *dat. sing.* Hence, in the face of $\pi\alpha\tau\acute{\epsilon}\rho\alpha$, $\pi\alpha\tau\acute{\epsilon}\rho\epsilon\varsigma$ etc., such forms as $\pi\alpha\tau\rho\acute{o}\varsigma$, $\pi\alpha\tau\rho\acute{\iota}$ were seen primarily as syncopated with $\pi\alpha\tau\epsilon\rho$—$'$, and secondarily as syncopated with $\pi\alpha\tau o\rho$—$'$ (inclusive relation) (cf. Fig).
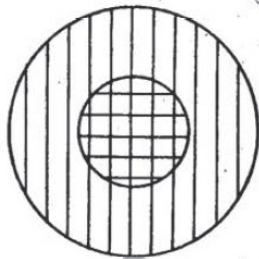
The inner circle corresponds to *gen. dat. sing.* with an ambivalence of the syncopated vowel. Vertical shading = the range of *e*-vocalism.

Here, too, the secondary form is associated with the secondary function; hence from *$\acute{o}\mu o$-$\pi\acute{\alpha}\tau\eta\rho$* we get, in the exocentric function, $\acute{o}\mu o$-$\pi\acute{\alpha}\tau\omega\rho$ (with the meaning $\acute{o}\mu o$-$\pi\acute{\alpha}\tau\rho\iota o\varsigma$), "having the same father".

3. In the Lithuanian language, as in many others, some verbs demonstrate a grammatical ambivalence of the following kind. They may have both intransitive and causative meaning, similarly to the French *sortir* "go out" and "lead out", *descendre* "go down" and "carry down", or the English *to stop* (to stop moving oneself or to cause something to stop), *to shake* (oneself or someone/something) etc. Conversely, they may denote either an intransitive action or a state, similarly to the Latin *tacēre* "to fall silent" and "to be silent", Greek $\nu\iota\kappa\acute{\alpha}\nu$ "to win" and "to be the winner", $\varphi\epsilon\acute{\upsilon}\gamma\epsilon\iota\nu$ "to run away" and "to live in exile". In many similar cases differences in meaning are expressed in literature by means of an inherited nasal infix, e.g.

skriedžiú, skriẽstí "to turn something round" : *skrindú, skrísti* "to turn round"

splečiú, splẽsti "to decompose something" : *splintú, splísti* "to decompose"

And on the other hand

miegú, miegóti "to sleep" : *inchoativum -mingú, -mígti* "to fall asleep"

siaučiú, siaũsti "to be furious" : *inchoativum siuntú, siustí* "to get furious".

Yet there existed some verbs to which the nasal infix could not be applied: the ones whose stem ended with *r, l n, m* + a consonant, e.g. *vert, tvenk,*

temp etc. When verbs with this kind of stem were ambivalent, the hierarchy of the causative and intransitive function (according to the function of the state and action) was set in accordance with the pattern of those verbs in which both these functions had different exponents. As indicated by the direction of the derivation of verbs with a nasal infix, an intransitive verb with a nasal infix was based on either a causative-transitive verb, e.g. *skrindú* "I am turning round" from *skriedžiú* "I am turning something round", or a (intransitive) stative verb, e.g. *siuntú* "I am getting furious" from *siaučiú* "I am furious".

Thus:

φ_1 (primary function) causative-transitive   : φ_2 (secondary function) intransitive

φ_1 (primary function) stative   : φ_2 (secondary function) action

This hierarchy of functions was a necessary, although not sufficient condition of differentiation in those verbs which, owing to the structure of their stems, could not have derivative forms with a nasal infix. Differentiation was made possible only by the fact that certain consonant groups became ambivalent.

From a certain moment in prehistory, the consonant group *st* could result from a connection of a stem beginning with *t(d)* with a suffix or ending beginning with *t* or *st*.[1] Thus, such forms as *viřstas* (*part. praet. pass.* of *verčiú* "I overturn"), in contrast to such forms as *líktas*, *gírtas* (part. praet. pass. of *liekú* "I leave", *giriú* "I worship"), was ambivalent with regard to the sound form' concurrently the interpretation *virt-tas* was primary owing to *líktas*, *gírtas*, and the interpretation *virt-stas* was secondary. Similarly, in the infinitive, *líkti*, *gírti* in addition to *viřsti* which suggests a possible ambivalence of the latter form (*virt-ti* or *virst-sti*).

The relation: *virt-t-as* : **virt-st-as*[2] resulted, in the *praesens*, in *virstú* in addition to the old form *verčiú*, while the secondary (intransitive) function was associated with the secondary form *-st-*. Similarly, *verkiú* "I am crying" (a state) : *virkstú* "to start crying" (*inchoativum*). This is the origin of present-tense formations with the *-st-* suffix which mean an intransitive action, in contrast to either the *causativum* or stative verbs.

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[1]And, respectively, the identification of (*s, š, ž, sk, zg, šk*) + *i* with (*s, š, ž, sk, zg, šk*) + *st*, which merged to produce *st, št, žt, kst, gzt, kšt*.

[2]We shall not enter into the details of morphology here, as they have already been discussed in *Inflectional Categories of I. E.*, 1964, p. 51. The *praesens* derivation *virstú* results from the proportion *virt-t-as* : *virt-st-as* = *virt-t* : *virt-st*. But *virt-t* : *virt-st* equals *vert'- : virt-st* (hence *verčiú* : *virstú*), since the subtraction of the suffix *and* participle restitutes the verbal stem in its basic form (the one evident in the praesens).

4. In the Polish language, such a difference exists as in Russian, e.g. *uznajú* "I am recognising" and *uznáju* "I will recognise" (*praesens* : *futurum*), had to disappear because, among others, the word stress in Polish came to be fixed. In addition, contractions occurred: the sound group *-aje-* was reduced to *a* (originally a long one). Hence e.g. *poznasz, pozna, poznamy, poznacie.* In the 3rd person pl. the contraction did not occur and hence it was, and still is, *poznają.*

In such forms as *poznasz, pozna* etc., the vowel *a* was ambivalent; it could represent either, simply, the vowel *a*, or a contraction of the sound group *aje*. A functional ambivalence was in evidence as well. After the blurring of differences caused by stress (and after the contraction) forms *poznasz, pozna, poznamy, poznacie* had the meaning of both the *praesens* and the *futurum*. In this case, the inclusion consisted in the fact that the *praesens* is essentially timeless, whereas the *futurum* denotes a future action. Hence, the *praesens* was the primary function, and the *futurum* was the secondary function of our paradigm.

Thus, at a certain point, there evolved a hierarchical relation, the hierarchy being based on inclusion with regard to both the sound form and the semantic function. Owing to the 3rd person pl. *-ają*, the ambivalence of *a* in *poznasz, pozna* etc. was interpreted in the following way: the primary sound form was *aje*, the secondary was *a*. When it comes to the semantic function, the hierarchy resulted from the relation *praesens* (neutral, non-marked) : *futurum* (marked). In effect, *aje* got associated with the present tense, and *a* with the future tense. Hence:

	praesens	*futurum*
3rd person sing.	poznaje	pozna
1st person pl.	poznajemy	poznamy
3rd person pl.	poznają (ambivalent)[3]	

Examples similar to the above are very many, and it is easily noticeable that traditional explanations found in historical grammars are often faulty from the methodological point of view. On the basis of the above examples let us attempt to reach a formalization, and then a generalization.

Let *f* denote a sound form (which may be a single phoneme, a group of phonemes, a phonological feature or a prosedeme), and φ denote a semantic function. Both *f* and φ are subject to influence of the textural environment, i.e. the context. For *f*, the context relates to sounds; for φ it is functional (semantic). Functional context includes contextual situation as well, which normally does not happen in the case of the sound context.

Neutralization, from which arises the relations of inclusion and hierarchy

of the segments of a language system, is a very pertinent concept here. In special conditions of the sound context, two elements f_1 and f_2 may undergo neutralization, which means that in those conditions the opposition $f_1 : f_2$ is cancelled in favour of f_1 (i.e. f_1 occurs instead of f_2); cf. e.g. the appearance of a voiceless consonant instead of a voiced one in the Polish coda *mag* (*mak*), *Bug* (*buk*) etc. Similar functional elements may be neutralized in special conditions of a functional (semantic) context, cf. the neutralization of the difference between the perfective (φ_1) and imperfective (φ_2) aspect in the present tense. The difference between *wybierał* 'he was choosing" (φ_1) and *wybrał* "he chose" (φ_2), between *będzie wybierał* 'he will be choosing" (φ_1) and *wybierze* "he will choose" (φ_2) is cancelled in the context of the present tense in favour of φ_1 (*wybiera*).

Conditions for the neutralization of sound forms and conditions for the neutralization of semantic functions are, of course, mutually independent.

Neutralization provides the foundation for the relation of inclusion: f_1 and φ_1 appear outside the range in which they differ from, respectively, f_2 and φ_2 (= the range in which f_2 and φ_2 are opposed to them). Inclusion causes the emergence of the hierarchy: the f_1 and φ_1 segments are neutral, i.e. non-marked, whereas f_2 and φ_2 are the marked segments of the respective oppositions $f_1 : f_2$ and $\varphi_1 : \varphi_2$.

Let the functions φ_1 and φ_2 correspond to the form f_1, i.e. in special contexts let the form f_1 have the secondary function φ_2 instead of the primary function φ_1. If at that point, in a definite sound context, neutralization of f_1 with some other sound element f_2 occurs (in favour of f_1), the result shall be the differentiation of $f_1\varphi_1 : f_2\varphi_2$, i.e. the emancipation of the function φ_2, which shall receive a separate formal (sound) exponent f_2, while until that point it was the contextually conditioned secondary function of the f_1 form.

Combinations $f_1\varphi_2$ and $f_2\varphi_1$ may be considered combinatory variants (functional or sound ones) with respect to $f_1\varphi_1$, but a meeting of f_2 with φ_2 produces a new sign. The occurrence of both conditioning contexts, the functional and the sound one, excludes the possibility of $f_2\varphi_2$ being identified with $f_1\varphi_1$.

Validity of the above formula is not limited to language signs. It retains its worth with respect to (relatively) constant associations and hence with respect to signs in general (which suppose constant associations).[4] To demonstrate the general character of the formula, some elementary experiments were proposed, which are currently being conducted by Professor W.

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[4]The only restriction is the postulate that a material sign and its function are exposed to contexts, the material and the functional one, which result in neutralizations.

Szewczuk as the Chair of Psychology at the Jagiellonian University.

A viewer is shown a number of colourful geometrical figures (e.g. a yellow square, a white ellipse, a pink triangle, a grey circle etc.), repeated for as long as a relatively constant association of a given geometrical figure with a given colour is achieved. Differences between the figures may in some cases be neutralized, e.g. a circle seen at an angle may be perceived as an ellipse ("the angle context"). Also, the differences between colours may be neutralized, e.g. grey seen against a black background can be perceived as white ("the background context").

Let us therefore mark as $f_1 f_2$ those geometrical figures, which in a certain context are neutralized in favour of f_1. Let us mark as $\varphi_1 \varphi_2$ those colours, which in a certain context are neutralized in favour of φ_1. The aim of these experiments is to demonstrate that $f_1 \varphi_2$ (in the context of a background that neutralizes the $\varphi_1 : \varphi_2$ difference) and $f_2 \varphi_1$ (in the context of an angle that neutralizes the $f_1 : f_2$ difference) are identified by the viewer as $f_1 \varphi_1$, while $f_2 \varphi_2$ (in a double neutralizing context) are perceived as distinct from $f_1 \varphi_1$. In the first two cases ($f_1 \varphi_2$ and $f_2 \varphi_1$), neutralization is interpreted by the viewer, who decides (on the basis of f_1 or φ_1) in favour of the non-marked segment, i.e. in favour of the primary function or the primary "form" (φ_1 or f_1). In the last case ($f_2 \varphi_2$), the accumulation of both contexts excludes the possibility of the $f_2 \varphi_2$ combination being identified with $f_1 \varphi_1$.