

Calculus of Possibilities as a Technique in Linguistic Typology

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1. The Problem Stated: A Unified Conceptual System in Linguistics

A central problem in the relationship between typology and the writing of individual grammars is that of developing a cross-linguistically viable conceptual system and a corresponding terminological framework. I will deal with this problem in three consecutive steps: First, I state the problem and sketch a conceptual system that I have put forward for typological explorations in morphology (Sections **1** and **2**). Second, I propose a detailed illustration of this system: a calculus of grammatical voices in natural languages (Section **3**). And third, I apply this calculus (that is, the corresponding concepts) in two particular case studies: an inflectional category known as antipassive and the grammatical voice in French (Sections **4** and **5**). In the latter case, the investigation shows that even for a language as well described as French a rigorously standardized typological framework can force us to answer questions that previous descriptions have failed to resolve.

I start with the following three assumptions:

1) One of the most pressing tasks of today's linguistics is DESCRIPTION OF PARTICULAR LANGUAGES, the essential core of this work being the writing of grammars and lexicons. A linguist sets out to describe a language as precisely and exhaustively as possible; this includes its semantics, syntax, morphology and phonology plus (within the limits of time and funds available) its lexicon.

2) Such a description is necessarily carried out in terms of some PREDEFINED CONCEPTS—such as lexical unit, semantic actant, syntactic role, voice, case, phoneme, etc.

3) For the grammars/lexicons of different languages to be coherent and comparable, they must be developed within a GENERAL CONCEPTUAL FRAMEWORK. The concepts used in linguistic description have to be: first, universal, i.e., naturally applicable to any language; second, sufficiently specific, i.e., naturally covering any linguistic phenomenon, no matter how idiomatic; and third, organized in a flexible system that naturally allows for the creation of new, ‘finer-grained’ concepts, if need be, by a regular procedure.

Such a framework can come only from linguistic typology joining forces with general linguistics. Taken together, these two disciplines must offer linguistic practitioners a general descriptive scheme involving universal concepts, in terms of which a particular grammar/lexicon could be written. This must be a unified conceptual apparatus and a metalanguage for linguistics, sufficiently rich and formalized to serve as a tool in language description. In terms of the broader questions of scientific inquiry and methodology, this task can be characterized with respect to two names and two achievements:

- The Russian chemist D. Mendeleev, who created (in 1869) the Periodic Table of elements, demonstrating in this way the strength of the DEDUCTIVE APPROACH—namely, the famous ‘empty cells’ of the system that predict the existence of new elements. Mendeleev’s technique was the construction of a calculus of logical possibilities anchored in the knowledge of some basic facts.

- The French mathematician N. Bourbaki,¹ who never existed, but who nevertheless created (between 1930 and 1950) a COMMON UNIFIED METALANGUAGE for all divisions of modern mathematics and thus ensured considerable progress in the field.

Mendeleev’s deductive calculus and Bourbaki’s unified metalanguage are intimately related: each unavoidably implies the other. I believe that these two approaches, properly combined, constitute the main framework for linguistic thinking today. Promoting them leads to two productive feedback loops. On the one hand, typology feeds on descriptive grammars, while descriptive grammars put to work the conceptual apparatus developed in typology: they verify, complete and correct it. On the other hand, general linguistics develops theories that embody concepts coming from typology and organizes them into systems, while typology tests these concepts and systems ‘experimentally’ —against the set of languages around the world. To sum up:

Our aim is to develop a conceptual system for linguistics such that its concepts are constructed deductively based on a few previously selected linguistic facts and then can be proven typologically valid.

2. Conceptual System Proposed: A Set of Definitions

I will start by formulating the requirements on which the linguistic conceptual system proposed is based. This system is nothing but a set of rigorous definitions, or a kit of systematically organized names for linguistic phenomena. I have to characterize these definitions—first substantively, and then formally. (A full-fledged system of linguistic concepts for morphology is presented in Mel'čuk 1993-2000, where 248 morphological concepts are defined, illustrated and discussed. The interested reader may refer to this book for more details on my approach.)

2.1. Substantive Aspect of the Definitions

The definitions considered here have the following three SUBSTANTIVE CHARACTERISTICS:

- strictly deductive character,
- maximal separation of defining features,
- orientation towards prototypical cases.

Deductive Character of the Definitions Proposed

Suppose I have to define rigorously a concept *C* that is intuitively more or less clear, especially in some obvious cases; however, in many border cases it is confusing and unsatisfactory. First of all, I have to find and define the MOST GENERAL CONCEPT of which *C* is but a particular case. I emphasize: the most general concept, not *genus proximum* \approx 'closest genus'. In other words, I begin by specifying the most general class to which the phenomena P_i covered by *C* belong, but which also includes many other phenomena Q_j not covered by *C*, but presumably related to P_i . Then I partition this class into the biggest subclasses available, ideally—into two subclasses, in such a way as to have all the P_i in one subclass; I repeat this operation again and again, until I get exactly the subclass containing ALL AND ONLY P_i —phenomena covered by *C*. (In this way, I establish the exact place of *C* among other similar concepts.) This approach is of course deductive: it proceeds from the most general to the most particular.

Let me illustrate with two brief examples: the concept of morph and that of ergative construction.

The concept of morph. Consider the following imaginary situation: the term *morph* is applied to 1) radicals² and suffixes (e.g., **cat-** and **-s**), to 2) meaningful alternations (e.g., *oo* \Rightarrow *ee*, as in *goose* \sim *geese*) and to 3) prosodic markers (e.g., the tones ` , ¯ , and ´ that express different verbal

tenses in Sudanic languages).³ Is such a use valid or should we introduce better concepts and better terminology? The most general **class_I** to which all three types of elements belong is ‘elementary linguistic sign.’ This **class_I** is naturally subdivided in two subclasses: signs whose signifiers are segmental and suprasegmental *entities*—**class_{I.1}**, and signs whose signifiers are *operations*, also segmental and suprasegmental (there exist tonal alternations)—**class_{I.2}**. Thus we obtain **class_{I.1}** that contains radicals, suffixes and prosodic markers, and **class_{I.2}** that includes all meaningful alternations. **class_{I.1}** is further subdivided into segmental (**class_{I.1a}**) and suprasegmental (**class_{I.1b}**) signs; as a result, we need a common name for radicals and suffixes together, but to the exclusion of suprasegmental markers. What is more convenient than to call them *morphs*? (Signs of the **class_{I.1b}** can be named *supramorphs/suprafixes*, etc.) It becomes clear then that to use *morph* for the three types of elements mentioned above—that is, for segmental entities, suprasegmental entities and operations—is a bad practice. It is better to **NARROW** the range of the term *morph* and apply it only to **SEGMENTAL** elementary linguistic signs.

An important remark is in order here. Since my proposal concerns only the use of a name rather than some linguistic facts, it cannot be proven or disproved—in the strict sense of this term. I can only indicate why the proposed terminological use is more convenient. Thus, it is logically possible to keep applying the term *morph* to segmental and suprasegmental signs, distinguishing them by modifiers: *segmental morphs* vs. *suprasegmental morphs*. But then the class of most widespread and typical linguistic signs (= segmental elementary signs) and the class of relatively rare and rather ‘exotic’ signs (= suprasegmental elementary signs) will have formally similar complex names; it seems preferable to use a short and versatile name *morph* for the first class and coin a new term for the second. Note that such is nature of my whole endeavor: I propose a set of names (‘glued’ to corresponding concepts) that—hopefully—form a unified system and contribute to a better logical analysis of real linguistic phenomena.

The concept of ergative construction. Traditionally, the ergative construction is defined as a ‘finite transitive verb construction in which the Direct Object [= DirO] is expressed in the same way as the Subject of an intransitive verb.’ However, I cannot accept such a formulation for a purely terminological reason: it covers no more than a particular case of a finite verb construction. The most general class of finite verb constructions (in case languages) that includes all instances of what is currently called *ergative construction* is the predicative construction in which the Subject is marked by a case other than the nominative. I propose that this construction be called *ergative construction*. Then I proceed to defining its particular cases, among which we find an ergative construction whose DirO is formally identical to the Intransitive Subject. This is the most widespread and best known variety of ergative construction; yet logically and

terminologically it is but a particular case. In this case, it is better to WIDEN the range of the term under analysis. Among other things, such a definition has the advantage of subsuming under ergative construction the construction with tripartite case marking (the Transitive Subject, the Intransitive Subject and the Direct Object are marked by three different cases).⁴

Observing the principle that concepts should be deduced from the most general class guarantees the strictly hierarchical character of the conceptual system developed.

Separation of Defining Features

Modern linguistics tends to describe a complex linguistic phenomenon P by a ‘multifaceted’ definition, which leads to a cluster concept, aimed at capturing the sum of properties that accrue to P. In contrast, I lay emphasis on separating as much as possible the defining features of P, thus creating fine-grained concepts each of which characterizes P only partially. That is, I include into a concept as little as I can. Not that I am against cluster concepts in general—on the contrary, on many occasions they cannot be avoided, and I am quite willing to use them. But first I will try to separate the properties of the phenomenon P as much as this separation will go and then define P by the minimal set of properties, that is, by a set of concepts rather than by one single complex concept. Thus, instead of trying to define grammatical voice by its function and by its form taken together, I separate them. As a result, I cannot say, for instance, that “[the Algonquian] inverse construction cannot be considered a voice at all, since it is not an option chosen to express one pragmatic nuance or another” (Payne & Laskowske 1997: 423; emphasis added.—IM.): I do not consider the function of expressing pragmatic information to be a defining property of voice, in this case—of the passive. Therefore, I can have both: passives that fulfill pragmatic functions and passives that do not. This is so because expressing communicative factors is typical of a number of inflectional categories, not only of voice; while permuting the syntactic actants with respect to the semantic ones characterizes the passive only. (See Section 3 for more details.)

Observing this principle enhances the flexibility of the conceptual system, as well as its ‘resolution power:’ it uses, so to speak, simpler and more general concepts.

Orientation Towards Prototypical Cases

I try, to the best of my ability, to preserve traditional linguistic notions as they arose 100 or more years ago, departing from the prescientific interpretation only where logic requires certain

extensions or reductions. Therefore, the proposed morphological concepts are not very different IN SUBSTANCE from those employed in mainstream traditional morphology. The novelty is basically IN FORM: the concepts are rigorously defined, and these definitions are rigorously applied to a variety of phenomena. The essence is, however, the same as it has been in most traditional definitions: to analyze and define PROTOTYPICAL INSTANCES of the phenomenon under study. (See Taylor 1989 and Wierzbicka 1989 on the role of prototypes in linguistic description.)

My approach is basically identical with what Hockett proposed some 50 years ago for the concept of grammatical case, namely—to define case strictly on the basis of a prototypical case system, for instance, that of Latin or Ancient Greek, and then to generalize reasonably, so that new phenomena subsumed under the definition thus obtained will be sufficiently similar to, say, the Latin case (Hockett MS).

Let me emphasize that no Eurocentrism is implied in this methodology. What I am saying is not that the Latin concept of case should be imposed on a phenomenon of a completely different language. I am insisting only on using the name *case* strictly for such phenomena that are close enough to the Latin case. If the phenomenon considered is not sufficiently similar to what we call *case* in Latin it simply should not be called *case*.

This stand allows me to solve problems of the kind formulated by Shibatani (1985: 836, ex. (39)). According to his description, the Mayan language Mam expresses the Patient in an active transitive clause as the Surface-Syntactic Subject (“[Mam is] a syntactically ergative language”), and in a passive clause, the same Patient is the Subject again:⁵

(1) a. *Ma* \emptyset +*xaw* *t* +*č'eeɁma+n* *Čeep* *cee?*
 REC(ent).PAST 3SG.ABS DIR 3SG.ERG cut DIR José tree

‘José cut the tree’ [CEE? ‘tree’ is claimed to be the Subject]

vs.

b. *Ma* \emptyset + *č'eem +at* *cee?* *t* +*uɁn* *Čeep*
 REC.PAST 3SG.ABS cut PASS tree 3SG by José

‘The tree was cut by José’ [CEE? again is claimed to be the Subject].

How then can one propose a general definition of the passive as a voice that promotes the Patient to be expressed by the Subject, as it happens, for instance, in Latin, and that would cover the Mam form in question?

I think I have an answer: One cannot. We have to choose:

—Either we accept, with Shibatani, that CEE? ‘tree’ is the Subject in both (1a) and (1b); then the verbal form in (1b) should by no means be called passive, since this form is not at all similar in its behavior to the prototypical Latin/English passive, where the Object becomes the Subject. As prototypical passives do, the Mam form in **-at** (in (1b)) also serves to ‘defocus’ the Agent, but does it in a way that is diametrically opposed to how the prototypical passive works. If Shibatani’s description of the SSyntS of the sentences in (1) were correct, the form in **-at** would be a *detransitivative*, see Section 4, p. 0, and not a passive.

—Or we accept that the form $\emptyset + \check{c}’eem+at$ is a passive; then we have to reject the analysis under which CEE? ‘tree’ is the SSynt-Subject in both sentences: in (1a), it must be a DirO.

(Personally, based on England’s description of the voices in Mam—England 1988,—I think that the second alternative is correct: in (2a), CEE? ‘tree’ is the DirO, because, as far as I can judge from the data available to me, the Mam Subject must linearly precede all other dependents of the verb.)

2.2. Formal Aspect of the Definitions

From the stand of their FORMAL ASPECT, I try to formulate the definitions in such a way as to satisfy the following four general conditions (cf. Apresjan 1982: 175):

A definition should be

- FORMAL: it should be applicable automatically, i.e. literally.
- RIGOROUS: it should contain only concepts which either have been defined prior to it or else are undefinable and listed as such; more precisely, it should be a definition of axiomatic type: *per genus proximum et differentia specifica*, i.e., literally, ‘by the nearest kind and specific differences’, as formulated by Boetius (480-524 AC, minister of the Ostrogoths’ king Theodoric the Great), who was following the ideas of Aristotle).
- SUFFICIENT and NECESSARY: it should cover all the phenomena that are perceived as being subsumable under the corresponding concept, and nothing but such phenomena.
- UNIVERSAL: it should be applicable to any relevant phenomena of any language.

More specifically, the construction of a linguistic concept C and of the corresponding definition consists of the following six steps.

Suppose we consider a class of observable linguistic phenomena P_i —our pretheoretical set of data; we think that all P_i s can be subsumed under C . How should we proceed?

1) First of all, establish a ‘kernel’ subclass P_j of the class P_i ($P_j \subset P_i$), i.e., isolate such phenomena among all the P_i s that we would like to have covered by our definition under any circumstances. These P_j s correspond to the most typical particular case of C , that is, to a PROTOTYPICAL C , symbolized as c . They constitute the empirical basis of our future definition and are chosen quite intuitively; this choice must be taken as a postulate.

2) Analyze c to find its CONSTITUTIVE COMPONENTS.

3) Develop a CALCULUS of all logically possible cases of c , presumably covered by C . To do so, combine the constitutive components of c in all possible ways; try to explain the impossibility of the combinations that are banned by the language.

4) Formulate the definition of C by GENERALIZATION of the concept c ; extract all underlying concepts vital for this definition and make sure that these can be defined in their turn.

5) REVIEW THE WHOLE FIELD by applying the definition of C to the phenomena in the difference ‘ $P_i - P_j$,’ i.e., to less clear-cut, fuzzy or dubious items, in order to see whether all relevant phenomena have been covered.

6) DISCARD similar but essentially different phenomena C' , delimiting them with respect to C ; sketch a definition for C' , to make sure that this can be done in a reasonable way.

Now the definition of C is ready. We have to make sure that it:

(i) covers ALL items which are intuitively sufficiently similar to P_j s (cf. Kuipers 1975 on the importance of intuitively felt similarity for linguistics);

(ii) rejects all items which are intuitively sufficiently dissimilar to P_j s;

(iii) produces results for all intermediate domains where our intuition balks—results that can be supported by further arguments.

When we are finished with the concept, the problem of the choice of an appropriate term should be dealt with: could we use one of the existing terms associating it with the concept we have just defined or had we better coin a new term? As mentioned above, this is a difficult question that must be answered with delicacy and caution. What we do depends on the particularities of the term under analysis. Sometimes it is better to keep the term t as it is, i.e., apply it to the old concept and invent a new term for the new concept; sometimes, on the contrary, it pays off to use t for the new concept and to name the old one by t plus a modifier. Unfortunately, I do not know of any formal criteria to guide our choice.

3. An Illustration: The Concept of Grammatical Voice

I will illustrate my point with one example: a definition of grammatical voice as an inflectional category and a deductive calculus of possible grammatical voices—grammemes of this category. The whole discussion is carried out within the framework of the Meaning-Text linguistic theory, from which I have to borrow the general approach and some crucial concepts (Mel'čuk 1974, 1981, 1988, 1997a, 2001: 4-10, Mel'čuk and Pertsov 1987). However, I try my best to make this presentation as theory-independent as possible.

3.1. Introductory Remarks

The concept of voice is developed following the six steps sketched above.

1) As the prototypical cases on which the definition of voice is to be based I take the opposition 'active ~ passive' in Latin and English—well-studied and relatively clear representatives of what I would like to call *voices*.

2) The main defining feature of the Latin or English passive is that it modifies the correspondence between the semantic roles foreseen by the meaning of the verb and the syntactic roles of

the phrases that fill in these roles. Thus, the verb [*to*] EAT introduces two semantic roles: the living being who absorbs the food (= Eater), and the substance being swallowed (= Food). In the active, the Eater phrase is the Subject and the Food phrase a DirO (*Nick ate the steak*), in the passive, the Food is expressed by the Subject, while the Eater phrase becomes an Agentive Complement [= AgCo] (*The steak was eaten by Nick*). It is this *chassée croisée* of semantic/syntactic roles that is taken to be the very foundation of the concept of voice.

To proceed, I have to formalize first the pretheoretical notion ‘correspondence between semantic and syntactic roles;’ to do this, I introduce the concepts of **Semantic/Deep-Syntactic Actants** and then that of **diathesis**, see **3.2**. These are the constitutive components of the concept of voice.

3) A complete calculus of all possible modifications of the basic diathesis of a verb is developed; a formally marked modification of the diathesis is called a voice.

4) The definition of voice as an inflectional category of the verb is then formulated.

5) The relevant data known to me are checked in order to draw subtler distinctions between genuine voices and voice-like phenomena.

6) Some phenomena close to voice but nevertheless different from it are analyzed and separated from voice (I give an example of such a phenomenon: detransitivative, **4**). In this way, the borders of the concept of voice become sharper.

3.2. Auxiliary Concepts

The concepts of Semantic Actant [= SemA], Deep-Syntactic Actant [= DSyntA] and diathesis are crucial for the definition of voice, so that I need to introduce them. On the other hand, they are fundamental for linguistic theory in general and very complex, so that I cannot introduce them in an appropriate way—this would require too much space. Therefore, I have to compromise and limit myself to a very sketchy characterization, hoping that the goodwill of the readers and the examples will prove sufficient.

Semantic Actants

A SemA L' of a lexical unit L is an argument of the predicate which represents L 's meaning, so that if L' semantically depends on L , this means that L denotes a predicate and L' is one of its arguments: if $L' \leftarrow_{\text{sem}} L$, then ' $L(\dots; L'; \dots)$ ', and vice versa. A SemA is represented by a variable in the lexicographic definition of L ; for instance:

(2) *X rents Y from Z for W for T* \equiv

'X obtains from Z, who owns Y, the right to use Y during time T for money W that X pays to Z'.

Simplifying the real picture, I can say that SemAs possess two important properties:

- If a SemA of L is 'subtracted' from the meaning ' L ', what remains cannot be called L anymore. Thus, if we 'subtract' 'money W ' from the meaning in (2), we obtain '[to] borrow' rather than '[to] rent'; by 'subtracting' 'time T ' we get '[to] buy'.
- A SemA of L can, generally speaking, be expressed in the sentence alongside L —as a clause element syntactically linked to L , not necessarily directly.

Deep-Syntactic Actants

DSyntAs are introduced as a convenient 'interface' between SemAs and Surface-Syntactic Actants [= SSyntAs].⁶ A DSyntA is a generalization for a set of such SSyntAs that can correspond to the same SemA (I mention here only verbal DSyntAs). Roughly speaking:

- DSyntA **I** corresponds to what is on the surface a SSynt-Subject (and to all its 'transforms'⁷):

John \leftarrow **I***-sleeps*, *John's* \leftarrow **I***-sleep*, *John's* \leftarrow **I***-arrival*, *her* \leftarrow **I***-love*

- DSyntA **II** corresponds to what is on the surface:

—a DirO (and all its 'transforms'): [*She*] *loves* \rightarrow **II***John*, [*her*] *love* \rightarrow **II***for John*

—the most important Indirect Object [= IndirO] of L —if there is no DirO (and all its 'transforms'): *belong* \rightarrow **II***to John*, *John's* \leftarrow **II***-belongings*

- DSyntA **III** corresponds to what is on the surface an IndirO/Oblique Object (in case there is a DirO as well):

sends \rightarrow **III***John a letter*, [*a letter*] *sent* \rightarrow **III***to John*, [*He*] *punched* [*John*] \rightarrow **III***on the nose*

- DSyntAs IV - VI correspond to what are on the surface even more Oblique Objects:

rented-IV→for \$300, rented-V→for two weeks)

Important conventions

In the Government Pattern [= GP] of a lexical unit L in a given morphological form, L's DSyntAs must be numbered as follows:

1. Consecutively (= without gaps): **I, II, III**, etc.; the GPs with such numberings as ***I, III** or ***I, II, IV** are disallowed.⁸
2. Beginning with **I** or **II**—or having no DSyntAs at all; the GPs with such numberings as ***III, IV** are disallowed.⁹
3. Without repetitions: the GPs with such numberings as ***I, I** or ***I, II, II** are disallowed.

Let it be emphasized that the above requirements concern the numbering itself, not the linear order in which L's DSyntAs appear in its GP or in the sentence.

Respecting these conventions may have interesting consequences. Thus, consider the sentence *Nick←I-ate-II→the steak*; its passive counterpart is *The steak←I-was.eaten-II→by Nick*. As we see, the Agentive Complement [= AgCo] is represented as the DSyntA **II**, since gaps in numbering of DSyntAs are disallowed. This formal result seems substantially quite natural: even if a DirO and an AgCo differ largely by their SSynt-properties, they are related: each one of them is the closest DSyntA of the verb after its DSyntA **I**.

Diathesis

The diathesis of a lexical unit is the correspondence between its SemAs and its DSyntAs.

For instance, the English verb [*to*] LIKE and the French verb PLAIRE '[*to*] like' have the same meaning and therefore the same SemAs, but different diatheses:

Their meaning: ≈ 'X has pleasant feelings whenever X is experiencing Y'

Their diatheses:

[<i>to</i>] LIKE
X Y
I II

PLAIRE
X Y
II I

(3) Engl. *I [= I] like him [= II].* ≡ Fr. *Il* ['he' = I] *me* ['I' = II] *plaît*.

3.3. Voice and Voice Grammmemes

The definition of voice is based on the concept of **inflectional category** and its **grammmemes**. These two important concepts cannot be introduced here, so that the reader has to be satisfied with examples. Thus, an important inflectional category of the English noun is number, with grammemes SINGULAR ~ PLURAL; the Russian noun has two inflectional categories: number (also with the grammemes SINGULAR ~ PLURAL) and case (with the grammemes NOMINATIVE ~ GENITIVE ~ DATIVE, etc.). An inflectional category is a set of mutually opposed grammemes, each of which has its set of markers.

Now **voice** can be readily defined:¹⁰

|| **Voice** is an inflectional category whose grammemes specify such modifications of the diathesis of a verb that do not affect its propositional meaning.

This definition draws a line between voice and such phenomena as the following three:

the **causative** (adds to the propositional meaning 'L(X)' of the verb the component 'Z causes [that L(X)]');

the **applicative** (adds to the meaning 'L(X)' the component '[L(X)] involving Z');

and the **decausative** (subtracts from the meaning 'L(X)', which is of the form 'X causes that P(Y)', the component 'X causes').

A modification of a given diathesis is obtainable by the following three operations: 1) permutation of DSyntAs (with respect to SemAs); 2) suppression of DSyntAs; and 3) referential identification of SemAs. Note that suppression means the impossibility of expressing the suppressed DSyntA (optional omissibility of a DSyntA in the text is not suppression); and referential identification of SemAs presupposes suppression of at least one DSyntA.

When used separately, permutation produces, roughly speaking, **passives**, suppression **suppressives**, and identification **reflexives**.¹¹ These operations can also be combined.

Let there be a bi-actantial verb, such as, for instance, [*to*] DRESS or [*to*] SHAVE, with a basic, or lexicographic, diathesis as follows:

X	Y
I	II

For such a binary diathesis, there are 11 possible modifications (= derived variants) plus a zero one. Here are all logically possible binary diatheses obtained by mechanical application of the three above operations to the basic diathesis of a bi-actantial verb plus this basic diathesis itself (patterns 1-4 are formed by possible permutations of two DSyntAs; patterns 5-16, by suppressing first the expression of Y, then the expression of X, and then the expressions of both Y and X; patterns 17-20 represent referential identification of X and Y with the suppression of one or both of their expressions):

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13.	<table border="1"><tr><td>X</td><td>Y</td></tr><tr><td>—</td><td>—</td></tr></table>	X	Y	—	—	14.	<table border="1"><tr><td>X</td><td>Y</td></tr><tr><td>—</td><td>—</td></tr></table>	X	Y	—	—	15.	<table border="1"><tr><td>X</td><td>Y</td></tr><tr><td>—</td><td>—</td></tr></table>	X	Y	—	—	16.	<table border="1"><tr><td>X</td><td>Y</td></tr><tr><td>—</td><td>—</td></tr></table>	X	Y	—	—
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17.	<table border="1"><tr><td>X = Y</td></tr><tr><td>I</td></tr></table>	X = Y	I	18.	<table border="1"><tr><td>X = Y</td></tr><tr><td>II</td></tr></table>	X = Y	II	*19.	<table border="1"><tr><td>X = Y</td></tr><tr><td>III</td></tr></table>	X = Y	III	20.	<table border="1"><tr><td>X = Y</td></tr><tr><td>—</td></tr></table>	X = Y	—								
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The shadowed variants are ‘illegitimate:’ they either violate numbering conventions for DSyntAs (the asterisked ones) or else they coincide with some other variant, already on the list. (It is of course irrelevant which of the two repeats is retained; I simply take the first one.) The subtraction of illegitimate variants gives us 12 logically possible binary diatheses: the starting one (which is associated with the basic, or lexicographic, form of the verb) and 11 ‘derived’ ones; this means 12 diathesis modifications, including a zero modification. As a result, ideally, 12 grammemes of voice for a binary diathesis are possible and will be considered in what follows.

To refer to particular voice grammemes, I propose the following terminology:

• **For the passive**

–*Full* [= bilateral], if the passive affects both DSyntAs (**I** ⇒ **II** and simultaneously **II** ⇒ **I**).

–*Partial* [= unilateral], if the passive affects only one DSyntA (e.g., **I** ⇒ **III**, while **II** remains in place and no DSyntA becomes **I**).

–*Promotional*, if the passive promotes the DSyntA **II** to **I**, automatically demoting the former DSyntA **I**. (‘Promoting’ means giving a DSyntA a smaller number, ‘demoting’ being the opposite.)

–*Demotional*, if the passive simply demotes the DSyntA involved, without promoting anything.

–*Agentless*, if the passive does not allow for the expression of the Agent, i.e., it does not admit the AgCo. (The other name, current in the literature, is *truncated*, or *short*, *passive*.)

–*Patientless*, if the passive does not allow for the expression of the Patient.

• **For the suppressive and the reflexive**

–*Subjectless*, if the suppressive/the reflexive cannot have the Subject (= DSyntA **I**).

–*Objectless*, if the suppressive/the reflexive cannot have the Object (= DSyntA **II**).

–*Absolute*, if the suppressive blocks the expression of both DSyntAs.

For instance, the *objectless reflexive* denotes a reflexive form which admits the expression of the Agent as the Subject only (Fr. *Il se rase* ‘He shaves himself’), while with the *subjectless reflexive*, the Agent is expressed as a DirO or an AgCo (see below, Item 11, (13), p. 00); etc.

In the examples, the name of the voice and the corresponding marker are boldfaced.

1. **ACTIVE** : zero modification of the basic diathesis
(‘John is-shaving Alan’)

X	Y	⇒	X	Y
I	II		I	II

- (4) Lat. *Xenophōn+∅* *agricultur+am* *lauda+ba +t +∅*
 SG.NOM agriculture SG.ACC praise IMPF 3SG ACT
 lit. ‘Xenophon [I, Subj, NOM] [the] agriculture [II, DirO, ACC] praised [ACT]’.

2. FULL PROMOTIONAL PASSIVE : bilateral permutation of DSyntAs
 (‘Alan is-being-shaved by-John’)

X	Y	⇒	X	Y
I	II		II	I

- (5) Lat. *A Xenophōnt+e* *agricultur+a* *lauda+ba +t +ur*,
 By SG.ABL agriculture SG.NOM praise IMPF 3SG PASS
 lit. ‘By Xenophon [II, AgCo] [the] agriculture [I, Subject, NOM] was-praised[FULL.PR.PASS]’.

3. PARTIAL DEMOTIONAL PASSIVE : pure demotion of the DSyntA I (to III),
 with the DSyntA II retained in place
 (‘[It] is-shaving Alan by-John’)

X	Y	⇒	X	Y
I	II		III	II

- (6) Ukr. *Mn+oju* *bu+l +o* *splačē+no* *c +ju* *sum+u*,
 I INSTR be PAST SG.NEU pay P.DEM.PASS this FEM.SG.NOM sum SG.ACC
 lit. ‘By-me [III, AgCo, INSTR] [it] was paid [PART.DEM.PASS] this sum [II, DirO, ACC]’.

4. FULL DEMOTIONAL PASSIVE : pure demotion of both the DSyntAs I and II
 (‘[There] is-shaving by-John at-Alan’)

X	Y	⇒	X	Y
I	II		II	III

I have not found actual examples of this voice. It might be due simply to the insufficiency of my data—or to the unwarranted psychological complexity of double demotion. This is a good example of the situation where an uninstantiated cell in the calculus raises challenging questions.

5. SUBJECTLESS SUPPRESSIVE : suppression of the DSyntA I, i.e., of what
 should become the Subject
 (‘There-is-shaving Alan’)

X	Y	⇒	X	Y
I	II		—	II

- (7) Est. *Ehita+ta* +*kse* *sild* +*a*
 build SBJL.SUPPR PRES bridge SG.PART(itive)
 lit. ‘Be-building [SUBJLESS.SUPPR] bridge [II, DirO, PART(itive)]’. ≈
 ‘A bridge is being built’. [No Subject or AgCo is possible.]

6. OBJECTLESS SUPPRESSIVE : suppression of the DSyntA II, i.e., of what should become the DirO
 (‘John is-shaving [somebody]’)

X	Y	⇒	X	Y
I	II		I	—

- (8) Apapantilla Totonac
Tamāwá pancín ‘[He] buys bread’. ~ *Tamāwa+nán* ‘[He] buys [OBJLESS.SUPPR]’.
 [No Object is possible.]

7. ABSOLUTE SUPPRESSIVE : suppression of both DSyntAs I and II
 (‘There-is-combing’)

X	Y	⇒	X	Y
I	II		—	—

- (9) Ger. *Hier wird viel ge* +*les+en*
 here becomes much PAST.PART read PAST.PART(icipale)
 lit. ‘Here becomes much read’. = ‘People read [ABS.SUPPR]] a lot here’.

8. AGENTLESS PROMOTIONAL PASSIVE : permutation of DSyntAs, with suppression of the ‘new’ DSyntA II—the one which should correspond to X
 (‘Alan is-being-shaved’)

X	Y	⇒	X	Y
I	II		—	I

- (10) Ar. *Al +zizr+u j +u +bn +a +f +u*
 DEF bridge NOM 3SG PASS build PASS build 3SG.MASC
 lit. ‘The-bridge [I, Subject, NOM] is-being-built [AGTLESS.P.PASS]’.
 [No AgCo is possible.]

9. PATIENTLESS DEMOTIONAL PASSIVE : permutation of DSyntAs, with suppression of the ‘new’ DSyntA I—the one which should correspond to Y
 (‘[It] is-being-shaved by-John’)

X	Y
I	II

 \Rightarrow

X	Y
II	—

- (11) Ger. *Von Politiker+n* **wird** *hier geg* **+ess+en**
 by politician PL.DAT becomes here PAST.PART eat PAST.PART(iciple)
 lit. ‘By politicians [II, AgCo] becomes here eaten’. =
 ‘Politicians eat [PATIENTLESS.D.PASS] here’.

10. OBJECTLESS REFLEXIVE : referential identification of the SemAs,
 with suppression of the DSyntA II
 (‘John is-self-shaving’)

X	Y
I	II

 \Rightarrow

X = Y
I

- (12) Rus. *Otec+Ø* **pričěsyva+Ø** **+et +sja**
 father SG.NOM comb PRES 3SG REFL
 lit. ‘Father [I, Subject, NOM] is-combing-self [OBJLESS.REFL]’. =
 ‘Father is combing his hair’.

11. SUBJECTLESS REFLEXIVE : referential identification of the SemAs,
 with suppression of the DSyntA I
 (‘By-John [it] is-self-shaving’)

X	Y
I	II

 \Rightarrow

X = Y
II

- (13) Lit. *Jon +o* **su +si** **+čukuo+t** **+a**
 Jonas SG.GEN comb REFL comb PASS.PART NEU.SG
 lit. ‘By-Jonas [II, AgCo, GEN] been-self-combed [SUBJLESS.REFL]’. =
 ‘Jonas has combed his hair’.

12. ABSOLUTE REFLEXIVE : identification of the SemAs, with suppression
 of both the DSyntAs I and II
 (‘There-is-self-shaving’)

X	Y
I	II

 \Rightarrow

X = Y
—

- (14) Pol. *Uczesa+no* **się** lit. ‘Has-self-combed [ABS.REFL]’. =
 comb SBJL.SUPPR REFL
 ‘Some people have combed their hair’.

This inventory of possible voice grammemes constitutes a convenient background for a study of particular voice systems. It is a general schema against which particular voices of particular languages can be checked and in terms of which they can be characterized. Of course this inventory does not eliminate all the difficulties; on the contrary: due to the fine-grained analysis it introduces, more unresolved problems become visible. I'll mention three of the most serious ones.

- In point of fact, in some languages some voice grammemes can combine within one word-form—which argues for SEVERAL DISTINCT voice categories. Thus, in (13), the passive participle marker **-t-** combines with the reflexive marker **-si-**; together they express the subjectless reflexive. If one is to follow a strictly logical approach, then passives, suppressives and reflexives have to be distinguished as different inflectional categories, such that the term *voice* should apply to the opposition “active ~ passive” only. But since combinations such as those in Lithuanian are not widespread, maybe it is worth trying to keep all the grammemes described in one ideal inflectional category, using it as a ‘measuring stick’ for specific descriptions? Thus, in French or Russian, it does not make sense to distinguish ACTIVE ~ PASSIVE and NON-REFLEXIVE ~ REFLEXIVE oppositions as two different inflectional categories, since the passive and the reflexive cannot be combined in one wordform. However, in German the passive and the reflexive do combine: *Es wird sich um eine Lösung bemüht*, lit. ‘It is self trouble-taken for a solution’ = ‘Much trouble was taken in order to find a solution’ or *Hier wird sich jeden Tag rasiert*, lit. ‘Here is self shaved every day’ = ‘Here, one shaves every day’. Therefore, for this language, one has to postulate the category of voice and a separate category of reflexivity.

- Our requirement that voice should not affect the propositional meaning of the verb is of course too rigid. Thus, clear-cut cases of passives that imply ‘human activity’, ‘absence of control’, or else ‘adverse effects’ are well-known. We need a more flexible formulation that bans MAJOR changes of propositional meaning, supplied with a definition of what constitutes a major change—as opposed to a minor change (admissible for voice).

- The above calculus has been developed for binary diatheses only, while voice in principle can apply, on the one hand, to monovalent verbs (i.e., to intransitives: the demotion **I** ⇒ **II** and the suppression **I** ⇒ —) and on the other, to plurivalent verbs with ternary and even more complex diatheses (thus, in 5.2 we find a French voice—the indirect reflexive—that is possible for a ternary diathesis only). Therefore, a richer version of the calculus is needed.

In order to show how the proposed concepts help the researcher solve some practical problems in morphological description, I will present two case studies. First, I consider a phenomenon that is similar to voice and is often treated as such, while according to my definition of voice it is not (I mean the so-called ‘antipassive’). Second, I sketch the system of voices in French.

4. A Voice-like Inflectional Category: Detransitivation (a.k.a. ‘Antipassive’)

Let me start with an example, borrowed from the Chukotka-Kamtchatkan language Chukchee (Kozinsky *et al.* 1988; parentheses indicate optional clause elements):

- (15) a. $\Gamma\text{əm}+\text{nan}$ $t\text{ə}$ $+\text{ret}$ $+\text{ərkən}+\emptyset$ $kimit\text{ʃ}+\text{ən}$ $(\text{tom}\gamma+\text{et}\text{ə})$
 I INSTR 1SG.SUB transport PRES 3SG.OBJ load SG.NOM friend SG/PL.DAT
 ‘I [= I] transport a-load [= II] (to-friend(s) [= III])’: I actually do this.
- b. $\Gamma\text{əm}+\emptyset$ t $+\text{ine}+\text{ret}$ $+\text{ərkən}$ $(kimit\text{ʃ}+e)$ $(\text{tom}\gamma+\text{et}\text{ə})$
 I NOM 1SG.SUB ? transport PRES load SG.INSTR friend SG/PL.DAT
 ‘I [= I] transport (a-load [= II]) (to-friend(s) [= III])’: I am a transporter (this is my occupation).

(15a) shows an ergative construction, obligatory in Chukchee for an active transitive verb: the Subject ‘I’ is in the instrumental, and the DirO ‘load’, in the nominative. (NB: In current descriptions of Chukchee, my nominative is often called absolutive, and my instrumental, ergative.) (15b) manifests a nominative construction, which is possible only for intransitive verbs: the Subject, which remains ‘I’, is in the nominative; the DirO ‘[a] load’ of (15a) has become an Obl(ique)O in the instrumental, thus losing its salience; the two objects here are optional. The change in the valence of the verb is marked by the prefix **ina-/ine-**, which is currently called ‘antipassive’ (the notion and the term go back to Silverstein 1972). This name is due to the belief that the modification marked by **ina-/ine-** is the inverse of the passive: while the passive demotes the Subject, the ‘antipassive’ demotes the DirO; at the same time, both the passive and the ‘antipassive’ turn a transitive verb into intransitive. As a result, the ‘antipassive’ is taken to be a voice. However, if the data in (15b) are checked against our definition of voice, one sees that the ‘antipassive’ is not a voice at all: it does not change the diathesis of the verb. In (15b), the DSyntA I still corresponds to X—the semantic Actor, and the DSyntA II to Y—the Object Moved, as in (15a). What the ‘antipassive’ does is change 1) the surface-syntactic realization of the DSyntA II (instead of a very prominent DirO, it is

implemented by a non-prominent ObIO) and 2) the morphological form of the Subject (instead of the instrumental, it is marked by the nominative).

As a result, we have to accept that the ‘antipassive’ is a grammeme of an inflectional category other than voice. It could be called, e.g., DETRANSITIVATION, with two grammemes: {‘TRANSITIVATIVE’, ‘DETRANSITIVATIVE’}; the ‘antipassive’ is then a detransitivative. The term *antipassive* is better abandoned, since it entails unnecessary confusion:

- The ‘antipassive’ is not the functional inverse of the passive: even for those who defend the term, the passive necessarily demotes the Subject, and the ‘antipassive’ also demotes—the DirO; both the passive and the ‘antipassive’ being demoters, the term *ANTIPassive* seems unwarranted.

- The terms *passive* and *antipassive* do not have the same extension: the passive can also apply to intransitive verbs, while for the ‘antipassive’ this is impossible by definition (the ‘antipassive’ demotes the DirO, and an intransitive verb does not have a DirO).

- The passive applies at the DSynt-level, while the ‘antipassive’ at the Surface-Syntactic one.

(Cf. a presumed case of detransitivative in Mam, 2.1, (1b), p. 00.)

For more clarity, let me quote another example of detransitivative, this time from the Daghestanian language Dargwa.

(16) a. *Neš +li gazet +∅ b +učč© +uli sa+ri*
 mother SG.ERG newspaper SG.NOM OBJ.SG.NON-HUM read GER be SUB.SG.FEM
 ‘Mother [= I, Subject, ERG] is reading [a] newspaper [= II, DirO, NOM]’.

Here the verb is transitive, the Subject ‘mother’ is in the ergative and the DirO ‘newspaper’, in the nominative; the verb agrees—in nominal class—with both the Subject (via its auxiliary part, i.e. the suffix **-r(i)** on the copula) and the DirO (via its lexical part, i.e. the prefix **b-** on the gerund); the DirO cannot be omitted. This is a typical ergative construction, the only one available in Dargwa for a transitive verb with a DirO.

b. *Neš +∅ (gazet +li) r +učč© +uli sa+ri*
 mother SG.NOM newspaper SG.ERG SUB.SG.FEM read GER be SUB.SG.FEM
 ‘Mother [= I, Subject, NOM] is reading ([≈ lit. ‘at’] a newspaper [= II, ObIO, ERG])’.

Here the verb is intransitive, the Subject (again, ‘mother’) is in the nominative, while ‘newspaper’, which became an ObIO (but still is a DSyntA II), is in the ergative; the verb agrees

only with the Subject (now via both its parts: the suffix **-r(i)** on the copula and the prefix **r-** on the gerund); the OblO is optional. This is a nominative construction; verbs that appear in it are intransitive. (The sentence **Neš+li r+uč©+uli sa+ri* ‘Mother is reading’ is ungrammatical. The sentence *Neš+li b+uč©+uli sa+ri* means ‘Mother is reading **it**’: its syntactic structure contains an object pronoun, which, although it is (quasi-)obligatorily elided on the surface—in any context where the referent is obvious, is reflected by the objectal prefix **b-** on the lexical part of the verb.)

(16b) presents another case of detransitivative: the Government Pattern of the verb changes, but not its diathesis, so that the grammeme in question cannot be a voice. This detransitivative, very typical of Daghestanian languages, is expressed by a morphological **conversion** (= a change in the verb’s syntactics: the feature "trans" is replaced by "intrans").

5. Voice in French

5.1. Pronominal Verbs in French

To establish the set of voices in French you have first to examine French ‘pronominal’ verbs, that is, verbs accompanied by what is known as a form of the reflexive pronoun **SE** ≈ ‘oneself’. It is necessary in order to show that a ‘pronominal’ verb is, in point of fact, a voice form rather than a verb with a pronominal Object. Compare two French sentences in (17):

(17) **a.** *Je me rase* ‘I shave (myself)’ lit. ‘I shave me’.

vs.

b. *Jean me rase* ‘John shaves me’.

In (17a) and (17b) we see two different wordforms **me**, which are both pronominal clitics of the 1st person singular, but belong to two different lexemes:

—in (17a), **me** is a lex of the lexeme **SE**, which (although it is commonly called reflexive pronoun) is not a pronoun in the strict sense of the term, see immediately below;

—in (17b), **me** is a lex of the lexeme **MOI** ‘I’—a real personal pronoun.

In (17b), **me** is a DirO of the verb; in (17a) this is not the case. Here, **me** is but a marker of an inflectional form of **RASER** ‘[to] shave’—namely, the reflexive voice; it is not a real pronoun, but an ‘auxiliary’ word. (This fact was established in Grimshaw 1982: 107.)

Distinguishing the two wordforms **me** boils down to distinguishing ‘real’ pronouns MOI, TOI, LUI, ..., on the one hand, and the lexeme SE, on the other. This view can be buttressed by the following seven differences in the behavior of the pronoun wordforms and the SE wordforms:

1. The auxiliary ÊTRE. One **me**, but not the other (i.e., SE, but not the real pronouns), requires that the analytical verb form should use the auxiliary ÊTRE ‘[to] be’ rather than AVOIR ‘[to] have’. In French, a transitive verb is inflected in the compound tenses with the auxiliary AVOIR, but in (17a), the auxiliary must be ÊTRE:

(18) a. *Je me suis* ⟨*ai⟩ *rasé* ‘I have [lit. am] shaved myself’.

vs.

b. *Jean m’a* ⟨*est⟩ *rasé* ‘John has shaved me’.

2. Coordination. In (17b), **me**—under the tonic form **moi**—can be conjoined with a noun, but not in (17a):

(19) a. **Je nous rase, moi et mon frère* ‘I shave myself and my brother’
[the correct expression: *Je me rase, et je rase mon frère*].

vs.

b. *Jean nous rase, moi et mon frère* ‘John shaves me and my brother’.

(The perfect grammaticality of the English gloss in (19a) shows that in English MYSELF is a normal element of the clause—a DirO coreferential with the subject; there is no question of a particular inflectional form of the verb.)

3. Focalization. In (17a), **me** cannot be focalized, either by a cleft or by **ne ... que** ‘only’, while **me** in (17b) can, cf. (20):

(20) a. **C’est moi que je rase*/**Ce n’est que moi que je rase*
‘It is me who I shave/I shave only me’.

b. *C’est moi que Jean rase* / *Jean ne rase que moi*
‘It is me who John shaves/John shaves only me’.

The incapacity of **me** in (17a) to undergo focalization naturally follows from the fact that it is not an element of the clause and does not have an independent referent: there is, so to speak, nothing to focalize.

4. Causative Construction. In French, if a transitive verb V appears in a causative construction with FAIRE ‘[to] make’, its DirO remains the DirO of the causative construction, while the Subject of V becomes an IndirO or an OblO of the causative construction. That is what we see for sentences of (17b) type, but not for those of (17a) type:

(21) a. *Marie **le** fait se raser* [*le* = the Subject of *Il se rase* ‘He shaves’]
 ‘Mary makes him shave himself’.

or

*Marie fait se raser **Jean*** ‘Mary makes John shave himself’
 ⟨**Marie se fait raser Jean*⟩.

vs.

b. *Marie **le** fait raser à/par Jean* [*le* = the DirO of *Jean le rase* ‘John shaves him’]
 ‘Mary makes John shave him’.

or

*Marie fait raser **Alain** à/par Jean* ‘Mary makes Jean shave Alan’
 ⟨**Marie fait le raser par Jean*⟩.

SE RASER behaves as an intransitive verb, its Subject becoming the DirO of the FAIRE-construction. At the same time, the lexes of SE must be positioned between FAIRE and the infinitive of the lexical verb—as in (21a), while genuine pronominal clitics can only precede FAIRE, as in (21b). This is yet another indication that in (17a), **me** ∈ SE is not a DirO of the transitive verb, but a voice marker. (Cf. Grimshaw 1982: 120.)

5. ‘X does so too’ Construction. In French, **me** in (17b) can be targeted separately by the French equivalent of the ‘X does so too’ expression, but not **me** in (17a):

(22) a. *Je **me** rase tous les matins, et Alain aussi* ⟨*tout comme Alain*⟩
 ‘I shave myself every morning, and Alan does so too ⟨like Alan⟩’:
 this means that Alan shaves HIMSELF, not me.

b. *Marie **me** rase tous les matins, et Alain aussi* ⟨*tout comme Alain*⟩
 ‘Mary shaves me every morning, and Alan does so too ⟨like Alan⟩’:
 this means that together with Mary, Alan shaves ME.

6. Impersonalization. In French, a verb with a DirO cannot appear in the impersonal construction, available to a large class of intransitive verbs, including the passives; but a verb with a lex of SE impersonalizes easily, which shows again that SE is not a DirO (see Grimshaw 1982: 113):

(23) **a.** *Des milliers de pèlerins se baignent dans le Gange*
 ‘Thousands of pilgrims bath in the Ganges’.

~ *Il se baigne dans le Gange des milliers de pèlerins,*
 lit. ‘It bathes itself in the Ganges thousands of pilgrims’.

b. *Les mères baignent leurs enfants* ‘Mothers bath their children’,

~ **Il baigne les mères leurs enfants,* lit. ‘It bathes mothers their children’.

7. Subject Inversion in a Completive Clause. In French, an intransitive verb without Objects or Complements admits linear inversion of the Subject in a subordinate clause, while a verb with an Object, even a clitic one, does not (Wehrli 1986: 273):

(24) **a.** *Je me demande comment s’est rasé Paul,*
 lit. ‘I ask myself how himself has shaved Paul’.

~ ?? *Je me demande comment les a rasés Paul,*
 lit. ‘I ask myself how them has shaved Paul’.

b. *J’ignore où se rencontrerons nos amis,*
 lit. ‘I do not know where themselves will meet our friends’,

~ ?? *J’ignore où les rencontrerons nos amis,*
 lit. ‘II do not know where them will meet our friends’.

The seven above properties of personal pronoun lexes and of SE lexes show that the SE lexes are by no means separate elements of the clause, i.e., pronominal objects; rather, they are analytical markers functionally similar to affixes. Since the semantic and syntactic relations between RASER et SE RASER are 100% regular (they are the same as in HABILLER ~ S’HABILLER, LAVER ~ SE LAVER, PEIGNER ~ SE PEIGNER, PROTÉGER ~ SE PROTÉGER, etc.), these two verbs cannot be considered as two different lexical units: they are different inflectional forms of the same lexical unit RASER. We can say that all French ‘pronominal’ verbal forms are voice forms, although it remains to be seen of what voice(s).¹²

Crucially, SE is impossible with adjectives (cf. Gaatone 1975: 205-206):

(25) **Jean s’est fidèle* ⟨*antipathique, reconnaissant*⟩
 ‘Jean is faithful ⟨disagreeable, grateful⟩ to himself’

[the correct expression: *Jean est fidèle* ⟨*antipathique, reconnaissant*⟩ *à lui-même*].

This follows immediately from SE being a voice marker: the adjective does not have the category of voice and thus cannot accept a voice marker.

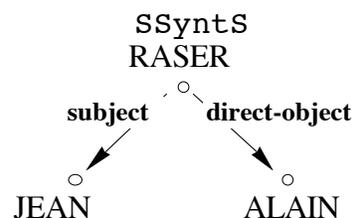
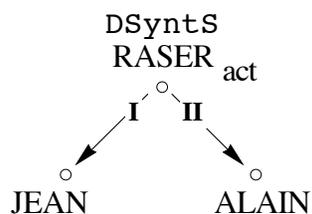
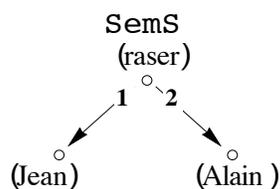
5.2. French Voices

Based on the calculus of voices presented in 3.3, I can state that all in all, the French verb has SIX grammatical voices (for rich data and references on French voices, see Gaatone 1998). More precisely, the inflectional category of voice in French includes the following six grammemes:

- active
[item 1 in the list of voice grammemes, 3.3] : *Jean a rasé Alain* ‘J. has shaved A.’;
- full promotional passive
[item 2 in the list of voice grammemes] : *Alain a été rasé par Jean* ‘A. has been shaved by J.’;
- partial (= agentless) promotional passive
[item 8 in the list of voice grammemes] : *Une barbe de deux jours se rase sans difficulté*,
lit. ‘A two-day beard shaves itself without difficulty’;
- partial demotional passive
[item 3 in the list of voice grammemes] : *Il a été procédé par le gouvernement au licenciement des fonctionnaires*,
lit. ‘It has been proceeded by the government to firing officials’;
- direct reflexive
[item 10 in the list of voice grammemes] : *Je me rase* ‘I shave (myself)’ (see (17a)),
Alain s’est rasé ‘A. has shaved himself’;
- indirect reflexive
[not in the list of voice grammemes, since it exists only for three-actantial transitive verbs]: *Alain s’est rasé la barbe* ‘A. shaved his beard’,
lit. ‘A. has shaved the beard to-himself’.

Given the limitation of space, I will not supply details about constraints on the use of these voice forms and their behavior; I will simply present their Semantic, Deep-Syntactic, Surface-Syntactic and Deep-Morphological Structures.

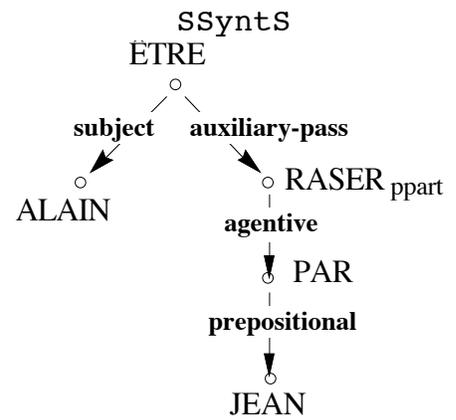
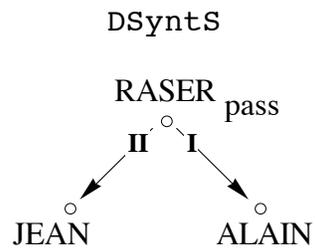
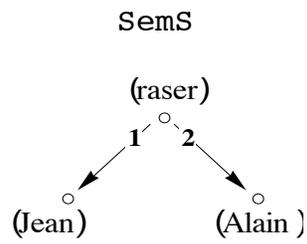
Active



DMorphS

JEAN RASER_{ind, pres, 3, sg} ALAIN [= *Jean rase Alain* ‘John shaves Alan’]

Full Promotional Passive

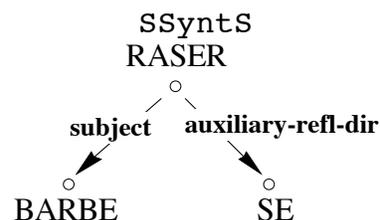
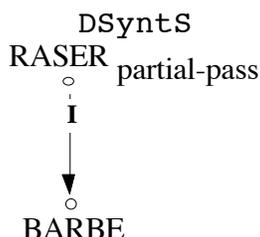
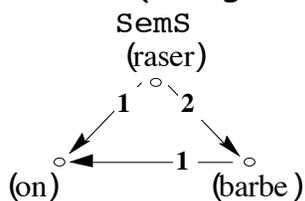


DMorphS

ALAIN ÊTRE_{ind, pres, 3, sg} RASER_{ppart, masc, sg} PAR JEAN

[= *Alain est rasé par Jean* 'Alan is shaved by John']

Partial (= Agentless) Promotional Passive

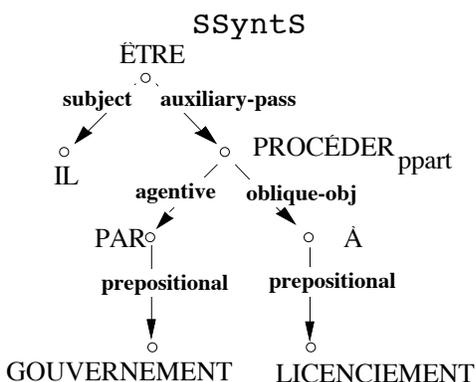
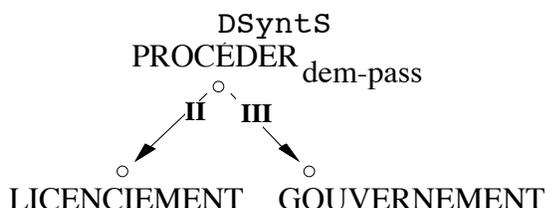
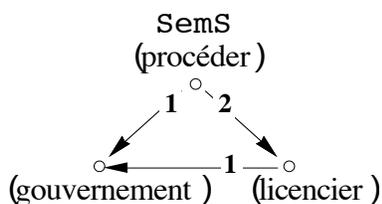


DMorphS

LE_{fem, sg} BARBE_{sg} SE_{acc} RASER_{ind, pres, 3, sg} ...

[= *La barbe se rase chaque jour*, lit. ‘The beard shaves itself every day’]

Partial Demotional Passive



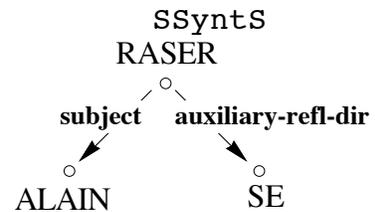
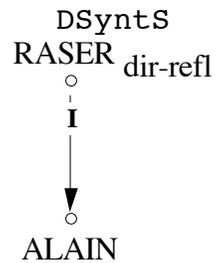
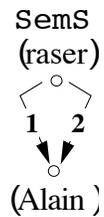
This passive is possible only for some (lexically specified) bi-actantial intransitive verbs (cf. Gaatone 1998: 119-134); therefore, it is impossible to illustrate this voice with the verb RASER, as this is done with the other voices. Moreover, the partial demotional passive appears in French only in what is known as the impersonal construction (with the dummy pronoun IL ‘it’). In the active form (*Le gouvernement* [= I] *à procédé au licenciement* [= II] *des fonctionnaires*), the phrase À + NP is the DSyntA II; it remains ‘unmoved’ in the demotional passive. But the Subject (= I) is demoted—to become DSyntA III.

DMorphS

IL ÊTRE_{ind, pres, 3, sg} PROCÉDER_{ppart, masc, sg} PAR LE_{masc, sg} GOUVERNEMENT_{sg}
 À LE_{masc, sg} LICENCIEMENT_{sg}

[= *Il est procédé par le gouvernement au licenciement ...*, lit. ‘It is proceeded by the government to firing ...’]

Direct Reflexive

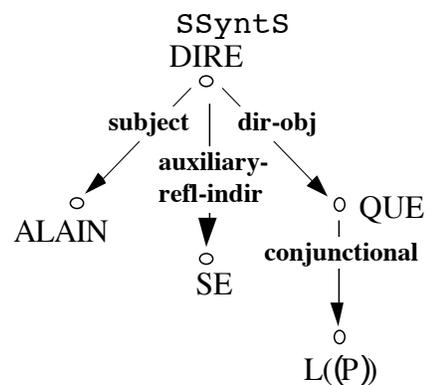
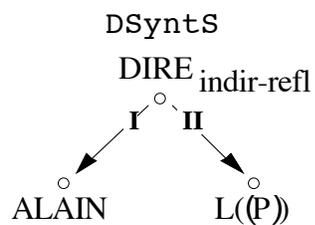
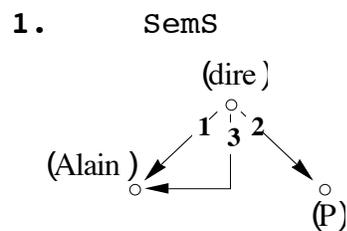


DMorphS

ALAIN SE_{acc} RASER_{ind, pres, 3, sg} [= *Alain se rase* ‘Alan shaves (himself)’]

See Wierzbicka 1996: 415 for a universal semantic characterization of Direct Reflexive.

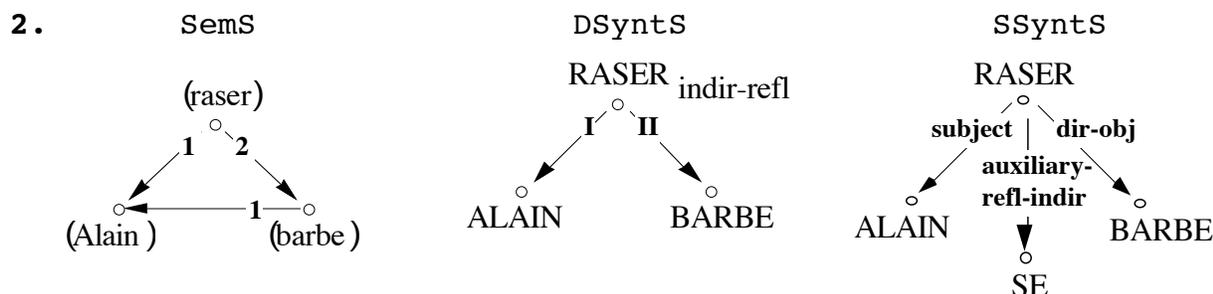
Indirect Reflexive



DMorphS

ALAIN SE_{dat} DIRE_{ind, pres, 3, sg} QUE ...

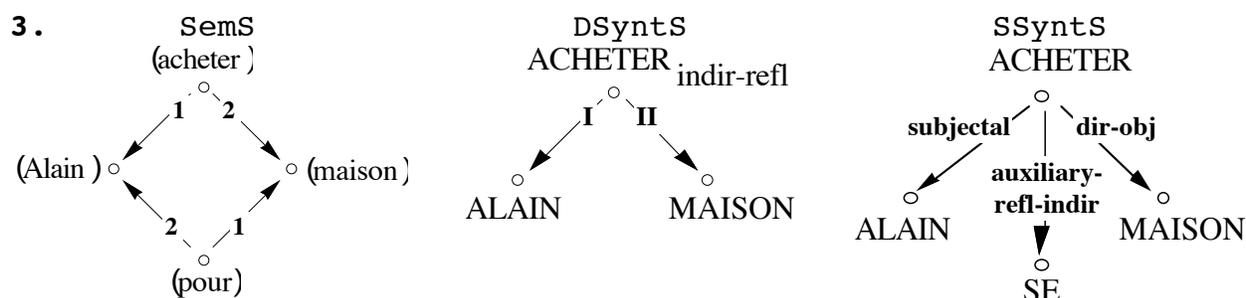
[= *Alain se dit que ...*, lit. ‘Alan says to-himself that ...’]



DMorphS

ALAIN_{dat} SE_{dat} RASER_{ind, pres, 3, sg} LE_{fem, sg} BARBE_{sg}

[= *Alain se rase la barbe*, lit. ‘Alan shaves himself the beard’]



DMorphS

ALAIN_{dat} SE_{dat} ACHETER_{ind, pres, 3, sg} UN_{fem, sg} MAISON_{sg}

[= *Alain s’achète une maison*, lit. ‘Alan buys himself a house’]

No French verb distinguishes all the six voices: thus, a transitive verb cannot have the partial demotional passive, while an intransitive verb cannot have the full promotional passive. This is allowed by the definition of inflectional category (Mel’čuk 1993-2000, vol. 1: 263): it foresees the existence, on the one hand, of defective paradigms and, on the other, of partial grammemes (*idem*, p. 269), which are applicable only to some lexemes of a given lexemic class. Cf. partial cases—the partitive and the locative—in Russian: only some nouns have one of them, and only a handful of nouns have both of them (ČAJ ‘tea’, MEL ‘chalk’).

This description of the French voice system is a practical application of the general calculus of voice grammemes, presented in 3.3. No matter how strange it may sound, no descriptive grammar or manual of Modern French gives an answer to the simple question: ‘How many voices does French have and what are these?’; you don’t find an answer even in the fundamental study Gaatone 1998. Now this answer is supplied, each French voice is logically fully characterized, and the soil is cleared for the detailed description of their usage. In turn, the exhaustive theoretical calculus of voices becomes possible with our definition of voice, which is

constructed on the basis of principles formulated in 2. Thus, our study comes full circle: I start by introducing some postulates that the definitions of important morphological concepts should respect; in accordance with these postulates, the definition of voice is introduced; a calculus of possible voices is developed; and then it is applied to French—in order to demonstrate its viability and, at the same time, to solve a descriptive problem faced by the specialists of French.

Acknowledgments

The present paper has been thoroughly discussed with and edited by N. Evans; I owe him a lot of heartfelt gratitude. The final text was read and corrected, as always, by L. Iordanskaja.

Abbreviations and Notations Used in the Paper

AgCo	Agentive Complement	L	Lexical Unit
DirO	Direct Object	ObIO	Oblique Object
DMorphS	Deep-Morphological Structure	SemA	Semantic Actant
DSyntA	Deep-Syntactic Actant	SemS	Semantic Structure
GP	Government Pattern	SSyntS	Surface-Syntactic Structure

Notes

¹ (1, p. 00) *Bourbaki, Nicolas*: pseudonym under which a team of French mathematicians wrote a series of treatises on different branches of mathematics. Bourbaki members had all been associated with the École Normale Supérieure in Paris at some point in their careers; among them most prominent were Henri Cartan, Claude Chevalley, Jean Dieudonné, and André Weil. The principal aim of the Bourbaki treatises is to provide a UNIFIED foundation for the whole body of modern mathematics. The method of exposition is axiomatic: abstract, logically coherent and rigorous; normally it proceeds from the general to the particular, i.e., it is essentially deductive. Bourbaki's series of treatises began with *Éléments de Mathématiques* in 1939; other books on algebra, set theory, topology, etc. have followed. Many books in the series have become standard references.

² (2.1, p. 00) I prefer *radical* to *root* for the following two reasons: 1) *Root* is often understood in the etymological (= diachronic) sense (thus, the root of the English noun **restaurant** is *stā, while its radical is *restaurant*-). 2) It is counterintuitive to apply the term *root* to a quasi-elementary sign, such as **institution**, while the term *radical* applies here quite naturally.

³ (2.1, p. 00) This imaginary situation is very close to what was normal in American structural linguistics of the 1940's and 1950's, with the only difference being that the term used in this way (for instance, in Nida 1961: 62, 71, 75) was *morpheme* rather than *morph*.

⁴ (2.1, p. 00) Note that in many Australian languages the Intransitive Subject and the Direct Object have different case-marking (at least for some types of nominals); without the proposed definition, the corresponding predicative construction will not be accepted as ergative—which contradicts the intuition of Australian language specialists. (Thanks to N. Evans for this remark.)

⁵ (2.1, p. 00) The examples from 'exotic' languages, which do not have a commonly known spelling system (as Mam or Chukchee), are given in phonological transcription.

⁶ (3.2, p. 00) SSyntAs are taken here for granted. They are defined by sets of observable syntactic properties: omissibility, multiple presence, pronominalizability, relativizability, word order, agreement, control (of reflexives, gerunds and some particles), gapping, etc.; cf. Keenan 1976, Iordanskaja and Mel'čuk 2000.—Let it be emphasized that in the examples I accept the most traditional and commonly suggested description of the SSyntAs; it is of course impossible to justify each decision here.

⁷ (3.2, p. 00) I mean here SSynt-phrases that semantically correspond to a Subject-predicate phrase: 'John's arrival' = 'John arrives'.

⁸ (4.2, p. 00) Dummy syntactic elements do not interfere with this principle: like all grammatical words, they do not appear on the DSynt-level and therefore are not counted. Thus, consider the Spanish idiom *diñársela a N*, lit. '[to] give-itself-**it** to N' = '[to] swindle N', while *DIÑAR* = '[to] give' [coll.]. In the SSyntS, *LA* (= 3sg feminine pronoun in the accusative) is the DirO of *DIÑAR*, but this is only a dummy DirO: it does not appear at all in the DSyntS, where the DSyntA **II** of *DIÑARSELA* is the phrase '*a N*': *DIÑARSELA-**II**→*a N**.—In the actual DSynt-structure of a sentence, actantial 'gaps' are of course possible, because of the optional non-expression of some DSyntAs: *John [= I] rented his apartment [= II] for a year [=V]*.

⁹ (4.2, p. 00) **Main Verbs without the DSyntA-slot I**

This requirement is due to the fact that in several cases a verb has no DSyntA **I** (but has DSyntA **II**). I will quote four such cases.

1. Some semantically monoactantial verbs such that their only DSyntA is realized on the surface as a DirO and thus must be treated as the DSyntA **II** (in most cases, it denotes the Experiencer): Rus. *TOŠNIT'* lit. '[to] nauseate N'; Lat. *PUDERE* lit. '[to] shame N'; Germ. *FRIEREN* lit. '[to] freeze N'; or Fr. *FALLOIR*, lit. '[to] need V_{inf}/N '. Cf.:

TOŠNIT'(V)_{ind, pres} **o-**II**→o** L(Y) [*Menja*_{ACC} *tošnit* 'I have nausea']

PUDERE(V)_{ind, pres} o-II→o L(Y) [*Pudet me*_{ACC} ‘I am ashamed’], [*taedet me*_{ACC} ‘I am disgusted’, *piget me*_{ACC} ‘I am bored’, *poenitet me*_{ACC} N_{gen} ‘I repent N’]

FRIEREN(V)_{ind, pres} o-II→o L(Y) [*Es friert mich*_{ACC} lit. ‘It freezes me’ = ‘I am cold’]

FALLOIR(V)_{ind, pres} o-II→o L(Y) [*Il faut des livres* lit. ‘It needs some books’]

This situation, which is rather exotic in Indo-European, is very typical of numerous languages that regularly have transitive static verbs that denote physiological or psychological states and govern the name of the Experiencer as a DirO.

2. Idioms that contain their own Surface-Syntactic subject, for instance:

The cat’s got Y’s tongue ⇔ κTHE CAT HAS GOT TONGUE_L o-II→o L(Y)

Fr. *La moutarde monte au nez à Y* ⇔ κLA MOUTARDE MONTE AU NEZ_L o-II→o L(Y)
lit. ‘The mustard goes-up to-Y to the nose’ = ‘Y flares up’.

Fr. *Le torchon brûle entre Y et Z* ⇔ κLE TORCHON BRULE_L
o-II→o L(Y)–COORD→o ET-II→o L(Z)

lit. ‘The rag is burning between Y and Z’ = ‘There is a running battle going on between Y and Z’.
At the DSynt-level, such an idiom is represented by one node, and no branch numbered I leaves it.

3. Interjections of the type *Down with Y!*: κDOWN [with]_L o-II→o L(Y).

4. Any verb in the form of subjectless suppressive (in a language where this voice exists, see below):

Fr. *Il se vend des Y*, with the DSyntS VENDRE_{subj-suppr}, ind, pres o-II→o L(Y).

These examples show that one can have diatheses in which the numbering of DSyntAs does not begin with I, but with II.

On the other hand, no diathesis can begin with DSyntA III: this follows from the fact that DSyntA II stands for the most important (= main, central) or only Object (not necessarily for the DirO).

¹⁰ (3, p. 00) The literature on voice is huge; I will limit myself to a few of the most recent references (about the last 15 years): Siewerska 1984, Geniušienė 1987, Shibatani (ed.) 1988, Brus 1992, Gross (ed.) 1993, Kemmer 1993, Mel’čuk 1993, 1997b, Fox & Hopper (eds) 1994, Givón (ed.) 1994, Dixon & Aikhenvald 1997.—The present definition develops the ideas put forth in Mel’čuk & Xolodovič 1970.

¹¹ (3.3, p. 00) A reflexive in a particular language can express different meanings: ‘genuine’ reflexive (acting upon oneself), reciprocal, etc. In the present context, this fact is ignored.

¹² (4, p. 00) This opinion is by no means shared by all researchers. Cf., e.g.: “the essential characteristic of this [= pronominal verbal—IM.] construction lies in the co-referentiality manifested between the subject NP and the CLITIC VERBAL COMPLEMENT” (Burston 1979: 147; emphasis added—IM.), “the pronominal construction embodies essentially one type of clitic verbal complement—AN OBJECT PRONOUN” (*idem*: 150); “in quite a few so-called intransitives the OBJECT FUNCTION OF SE is reasonably transparent [*Elle a besoin de se reposer*]” (*idem*: 160). In the same way, Le Goffic 1993: 309ff treats all forms of SE under the heading of “Clitic Complements.” However, in most cases, it is believed that, for instance, in SE RASER, the clitic SE is a DirO and, at the same time, that SE RASER is a form of the reflexive voice. This is a contradictory viewpoint, which is logically impossible. On the other hand, cf. Wehrli (1986 : 283), who says that “the process of reflexivization in Romance ... appears to be closer to an affixation process,” meaning affixation that signals ‘a modification of the argument structure associated with a predicate (p. 274);’ or Wierzbicka 1996: 402ff, who demonstrates that the Polish reflexive pronoun SIĘ, syntactically similar to the French SE, is not an element of the clause, i.e. not a Noun Phrase in the role of an object.

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