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Situation types, valency frames and operations

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Situation types, valency frames and operations

Christian Lehmann

Universität Erfurt

1 Introduction

1.1 Semiotic constraints vs. cognitive and communicative functions

The language system is a semiotic system. As such, it is the result of the interplay of two essentially independent forces:

Structure: formal constraints: The constraints on a semiotic system and on the messages constructed from it are of a different nature. On the one hand, laws of logic, information theory and physics determine the ways in which signs may be selected, combined and transmitted. These are complemented by other laws of nature in the case of semiotic systems used by a particular species, e.g. homo sapiens.

Functions: communication and cognition: The world surrounding us which we conceptualize is in many respects the same for every speech community; and the same holds for the tasks of communication in such a community. These two domains provide the total of content and its conveyance in the widest sense.

Thus, entities of grammar, including valency classes, have a purely formal side determined by the constraints imposed on any semiotic system. At the same time, this formal side is not empty, but is laden with cognitive and communicative content. In more concrete terms: grammatical categories, relations, constructions and operations are necessary for a semiotic system of some complexity to operate, and they do have some purely formal properties. At the same time, these are categories like tense, relations like the indirect object relation, constructions like the causative construction and operations like causativization; and none of these is purely formal, all of them have their semantic side. Putting it yet another way: in a semiotic system, everything concerning the sign as a whole is significative (meaning-bearing).

Applied to valency classes, this conception implies:

- a. On the one hand, verbs form valency classes because these are the systematic aspect of the combinatory potential of verbs. More specifically, valency classes are the logical condition for the semantic compositionality of verbal clauses; and semantic compositionality is a precondition for an analytic approach to linguistic messages.
- b. On the other hand, verbs form valency classes because the situations that human beings conceptualize have an inherent structure that they react to in their categorization.

The association of form and function in language is not biunique. A classification of semiotic entities, including grammatical ones, by semantic criteria yields different results from a classification based on formal criteria. This is true for valency classes just as for any other

grammatical category.¹ The double-sidedness of valency classes has many methodological consequences. One is of immediate relevance here: Any analysis of valency classes aiming at understanding their nature has to take a double approach to them, a formal (alias semasiological) and a functional (alias onomasiological) approach. In this article, only the functional approach will be taken. This implies that the approach does not do justice to the functional profile and polysemy of the valency patterns and operations of the individual language. Instead, it provides a conceptual framework that an onomasiological description may be based on and that a semasiological description may refer to.

1.2 Levels of analyzing argument structure

A typology of valency confronts its object at three semantic levels, which are represented in Table 1 (cf. Lehmann 2006, §2):

Table 1 Levels of representation of valency frames

#	domain	range	semantic level	components	roles	examples
3	communication and cognition	extra-linguistic	sense construction	situation: situation core, participant ...	participant role	moved entity, instrument ...
2	linguistic typology	cross-linguistic	designatum	proposition: predicate, argument, satellite, relator ...	semantic (macro-)role	undergoer, instrumental ...
1	language system	language-specific	significatum	clause: verb, actant, adjunct, case ...	syntactic function + significatum of case relator	direct object, <i>with</i> -phrase ...

Level 2 is an abstraction from level 1, generalizing over the latter's variation. Level 3 comprises what is conveyed in a speech act. Although this happens by means of units of level 1, it is partly extralinguistic, since sense construction involves not only the significata and semantic rules of the language system, but crucially also inferencing on the basis of an appraisal of the speech situation and activation of experience and world knowledge. The typology of valency uses concepts of level 2. However, the other two levels are implicated, too. Generalizations at level 2 are operationalized and, thus, falsified at level 1. And on the other hand, linguistic types differ by the strategies they employ at level 2 in order to code the sense conveyed at level 3. In this way, level 3 serves as the *tertium comparationis* in typological comparison.²

There is much terminological variation in the domain here under study, part of which stems from the fact that the levels of Table 1 are not always distinguished. As the table suggests, distinguishing the levels entails the use of different terms for the entities of the last three columns depending on the level being referred to:

¹ Previous research has emphasized either the correlation between form and function in valency (Levin 1993) or its divergence (Faulhaber 2011).

² Entities belonging to level 3 are sometimes considered as “phenomena in the world” (Van Valin & LaPolla 1997:83). However, phenomena in the (physical, “real”) world are of no relevance to linguistic analysis.—Apart from that, the approach of Van Valin & LaPolla 1997, esp. ch. 3, is an important model for the approach taken here.

- The most generic hyperonym for events, actions, processes, states-of-affairs etc. at level 3 is *situation*. Situation cores are relational concepts. At the level of cross-linguistic semantics (#2 of Table 1), a situation core may be represented in the form of an open proposition, i.e. a combination of a predicate with unbound argument variables. At level 1, it is typically coded by a verb.
- The entities surrounding a situation core are participants. Languages distinguish central participants from peripheral ones. At level 2, the former are called arguments. An argument is what a predicate (representing a concept) opens a position for (as in Van Valin & LaPolla 1997:90). It is, thus, not a valency-dependent clause component, which latter is, instead, an actant³ (or complement).⁴ Peripheral participants may be called satellites at level 2; they are typically coded as adjuncts at level 1.⁵
- A semantic role (variously thematic role, as in Van Valin & LaPolla 1997, or theta role) is a cross-linguistic concept coded in the structure of some languages, but possibly not of others. It is to be distinguished from a participant role, which is situated at level 3 of Table 1, grounded in functions of communication and cognition and, therefore, partly independent of linguistic structure.

1.3 The status of semantic roles

The identity of a concept includes its argument structure, i.e. its argument places with their semantic roles. Therefore, P(x) and P(x,y) are not the same concept. The concept of ‘break’ is the same in #a and #b of E1, but different in #c.

- E1
- Linda broke the twig.
 - The twig was broken by Linda.
 - The twig broke.

Semantic role operations operate at the level of the predicate, changing its argument structure. This shapes the meaning of a sentence. For instance, a valency-changing derivation such as the deagentive (e.g. *break* (tr.) becomes *break* (itr.), as in E1.a vs. c) is described like this: The semantic macro-role of the actor is blocked. Consequently, there remains, at the level of semantic roles, a single argument, viz. the undergoer. The hearer uses this semantic information, as well as inferences on the basis of the speech situation and world knowledge, to construct the sense of the utterance. At this level, a semantic role operation may have different effects. In E1.c, the hearer is not asked to believe that the twig broke without the intervention of an acting force. Instead, there is just no particular acting force implied.

³ Apart from being the traditional term for the concept in question, *actant* has also been used in typology, e.g. in Lazard 1998.

⁴ What Rappaport et al. 1993 and their followers dub ‘predicate-argument structure’ is actually the (syntactic) valency frame of a verb. And this is not merely a terminological issue; as argued above, the concepts of argument structure and valency need to be distinguished.

⁵ Again, a peripheral argument is still an argument. Since the centrality of arguments is roughly determined by their sequential order following the predicate, a peripheral argument is essentially one at a position > 2, i.e. one that is neither actor nor undergoer.

- E2 a. k-u haan-t-ik
 YM IMPFV-SBJ.3 eat-TRR-INCMPL
 'he eats it'
- b. k-u haan-al
 IMPFV-SBJ.3 eat-INCMPL
 'he eats'

In E2.a, *haant* is transitive, reflecting an argument structure with an actor and an undergoer. E2.b is intransitive, reflecting an argument structure with an actor, but no undergoer. At the level of the designatum (#2 of Table 1), the actor is busy eating; no eaten object is being represented. At the level of sense construction, the difference between #a and #b is another one. In both cases, there is an eaten object, since eating is inconceivable (in a sense, impossible) without an eaten object. In other words, excising the eaten object from the concept of eating would result in a totally different concept, maybe exercising one's ingestive organs. Again, the hearer receiving E2.b does not conclude that the actor eats nothing. Instead, he concludes that the actor eats something which is not represented in what is conveyed to him, but which he might try to infer from other evidence, for instance on the basis of world knowledge or by just looking.

Similarly, the actor coded in E3.a is absent in #b.

- E3 a. t-in ch'am-ah u chuun le che'-o'
 YM PRFV-SBJ.1.SG bruise-CMPL POSS.3 base DEF tree-D2
 'I bruised the trunk of the tree' (EMB&RMC_0033)
- b. h ch'áam u chuun le che'-o'
 PRFV bruise\DEAG POSS.3 base DEF tree-D2
 'the trunk of the tree got bruised'

Nonetheless, this is so only at the level of semantic structure (#1 and 2 of Table 1). At the level of sense construction, the addressee of the utterance conveying E3.b is not asked to believe that trees can get bruised without the intervention of an actor. Quite on the contrary, a complex sentence such as E4 is fully consistent, although the first clause codes an actor, while the second clause does not.

- E4 t-in koh<ah> in coche ka h ch'áam-ih
 YM PRFV-SBJ.1.SG hit POSS.1.SG car CONN PRFV bruise\DEAG-CMPL.3.SG
 'I hit my car so that it got bruised' (EMB&RMC_0032)

Finally, the same point can be made in a semasiological perspective.

- E5 a. Linda peeled the orange with her pocket knife.
 b. Linda filled the bucket with beer.

Both #a and #b of E5 feature the semantic role of the instrumental, which in this language is coded by a prepositional phrase introduced by one of a small set of prepositions like *with*. However, only the situation coded by #a involves a participant with the participant role of instrument, while what is coded as an instrumental in #b is rather a moved object at the level of sense construction (s. §3.3.5). Thus, semantic roles are schematic; they do not provide direct access to the sense, but are rather a generic means of structuring a situation in terms of a limited number of concepts and relations.

A situation type is an abstraction over a set of particular situations. This concept is therefore situated at level #3 of Table 1. Level #2 provides strategies used by languages to convert situation types into each other and to code a situation type by a type of construction.

2 Situations and participants

Given the onomasiological approach of this article, we will start by characterizing participants and situations at the language-independent level and then gradually pass on to concepts that have some linguistic specificity. Situation types are conceived at level 3 of Table 1. They are converted into types of predicates with their argument frames at level 2. These represent linguistic conceptualizations of situations, and mostly there are variant conceptualizations of a given type of situation. Each of the variants may be useful under different conditions having to do with the particular speech situation. There are therefore, still at the typological level, paradigmatic relationships between predicate-argument constructions which may manifest themselves in individual languages in the form of coded or uncoded alternations among such constructions. We will first consider the problem of representing participants of a situation as arguments of a predicate.

2.1 Mapping participants onto arguments

Consider E6 as a simple example to show that a predication represents a selection among the participants involved in a situation:

- E6 a. Erna glaubte mir.
 GERMAN ‘Linda believed me.’
- b. Erna glaubte diese Geschichte.
 ‘Linda believed that story.’
- c. Erna glaubte mir diese Geschichte.
 ‘*Linda believed me that story.’

There is a situation type which may be represented as BELIEVE (x, y, z), where x is the believer, y the person believed and z the abstract object believed. In English, one selects either y or z for linguistic representation (E6.a, b), while in German one may represent all of them in one clause (E6.c).

More generally, there is no biunique mapping between the arguments of a predicate in a semantic representation and the actants of a verb.⁶ Instead, there are mismatches in both directions:

1. a subset of the actants corresponds to an argument (other actants are semantically empty)
2. a subset of the participants is mapped onto arguments and, thus, actants (the others are optionally coded by adjuncts or not coded at all).

⁶ Van Valin & LaPolla (1997:173) postulate the following “Syntactic template selection principle: The number of syntactic slots for arguments and argument-adjuncts within the core is equal to the number of distinct specified argument positions in the semantic representation of the core.” Translating into the terminology used here: the number of actants (at the structural level) is equal to the number of arguments (in the semantic representation). However, in their account, the semantic representation of the lexical meaning of a verb essentially reduces to writing it in bold-face and providing it with some operators and its syntactic argument variables.

2.1.1 Actants not mapped onto arguments

We will first briefly illustrate the first phenomenon with a few examples of obligatory verb actants that have no semantic counterpart:

E7	opiodípote domátio tha káni
GREEK	any:ever room FUT do:3.SG
	‘any room whatever will do’
E8	Jedes Zimmer tut’s.
GERMAN	‘Any room will do.’
E9	Dein Rücklicht tut’s nicht.
GERMAN	‘Your backlight is not working.’
E10	Diese Idee bringt’s auch nicht.
GERMAN	‘That idea is not going to work, either.’
E11	prendersela con qualcuno
ITAL	‘dump on / wade into / pick on somebody’

The predication intended in E7 – E9 requires a monovalent predicate. The speaker, however, chooses a transitive verb, thus being left with a superfluous valency slot. English and Greek (E7) just leave it unoccupied by introversive lability (s. §3.2.4), so that no mismatch arises. The German counterpart of the verb in question has an obligatory direct object (E8f). It is represented by a third person pronoun which would otherwise be anaphoric or deictic, but here refers to nothing. The same is true for the highlighted pronouns in E10f.

Such semantically empty actants occupy a regular valency position of the verb, i.e. in structural terms, the construction has nothing special to it. However, the clitic pronoun is neither omissible nor substitutable, so there is no way to tell its reference. In other words, in coding the predicate with its arguments, a verb has been chosen which has one valency position too many.

2.1.2 Participants not mapped onto arguments

Such cases as the above are, however, unsystematic, idiomatic and therefore of limited interest to grammar. The converse case of participants that are not reflected in the argument structure is much more important. They are present at the level of sense construction; but the predicate chosen has no argument position for them, and consequently they do not appear as actants in the expression. Consider, as a first example, intermediate relatives in the semantic representation of kin terms, as exemplified in E12.

E12	x is y’s uncle: y is child of z_1
	and z_1 is child of z_2
	and x is child of z_2
	and x is male

Any decomposition of the sense of *uncle* must mention the intermediate relatives z_1 (y’s parent) and z_2 (y’s grandparent) in order to account for the relationship of the uncle (x) to his nephew or niece (y). However, the former two have no chance of being coded in an expression of the kind ‘x is y’s uncle’.

As has been known since Jespersen (1924:88f), adverbs differ from adpositions in lacking a governing slot. At the level of sense construction, however, they have a position for a participant

that is occupied deictically. For instance, E13.b is understood as implying a reference object that Linda is in, just as E13.a does.

- E13 a. Linda is inside the capsule.
b. Linda is inside.

The same applies to certain German verbs which are compounded with an adverb. For instance, German *packen* ‘grasp’ (E14.a) is transitive, the undergoer being coded as direct object. The compound verb *zupacken*, as in E14.b, likewise implies that the actor grasps an object. It is, however, impossible to code this object, as the verb is intransitive.

- E14 a. Erna packte den Dieb
GERMAN ‘Erna seized the thief’
b. Erna packte kräftig zu
‘Erna seized vigorously [anaphoric object] / sailed in’

A given lexeme representing a situation core in a language thus provides an argument frame for a subset of participants to be accommodated as arguments in the construction. There may then be a residue of participants which, although implied in the lexical semantics, cannot surface because no argument position is provided. We may say that they are not exteriorized from the underlying concept (cf. Lehmann 1991, §3.2 and Van Valin & LaPolla 1997, ch. 3.2.3.1 on verbs of saying).

2.2 Participant properties

Participant roles are defined by heterogeneous criteria, viz. by their function in a situation type, but also by absolute properties of their bearers. The relevant properties reduce to the position of the referent in question on the hierarchy of Table 2 (also known as the animacy hierarchy):

Table 2 *Empathy hierarchy*

position	property
1	speech-act participant
2	other human being
3	animal
4	individual object
5	non-individual object
6	place
7	proposition

For many purposes, it suffices to lump certain levels of the empathy hierarchy together: #1 – 3 are animate, #1 – 4 are individuals, #1 – 6 are concrete as opposed to #7, which is abstract.

2.3 Articulation of situations

The situation core is conceptualized as the core of the predication coded by a clause. The lexemes chosen there may belong to any of the major word classes – nouns, verbs, adjectives and adverbs or

language-specific variants thereof. Focusing here on dynamic relational concepts (what typologists sometimes call a ‘verbal concept’), adjectives may be foregone. Even if the word that fulfills the syntactic function of predication is a verb, this does not necessarily convey the bulk of the lexical meaning. Some important types of constructions which go beyond a simple verbal predicate include the following: complex verb, verb series, light verb construction. A few comments on each of these must suffice:

(a) The situation core may be coded in a complex verb, a compound like Ket *at⁷daq^o* (by.pouring-put) or German *wegschütten* (away:pour:INF) or a derivative like German *verschütten* (VALENCY.DECREASER:pour:INF; cf. E37) ‘spill’. These participate in more or less regular alternations to be discussed extensively in §3.2.

(b) The situation core may be articulated as a combination of verbs, i.e. a verb series, as in E15:

E15 Ade ju òkúta kan bá mi.
YORUBA Ade throw rock IND meet 1.SG.ACC

‘Ade threw a rock at me. / Ade struck me with a rock.’ (ValPal Database, Yoruba, (88))

The ways that verb series alternate to change the argument structure of the underlying predicate remain to be investigated.

(c) The situation core may be categorized in some lexeme class distinct from the verb, which will generally be combined with a verb in order to form a predicate. There are some variants of this strategy: First, categorization of the situation core in terms of a noun may be the primary one. A salient example is provided by weather phenomena like ‘rain’ and ‘hail’, which are primarily nouns in quite a few languages. ‘Blink’, ‘scream’ and ‘cook’ are primarily nouns in Japanese, ‘sing’ is a noun in several languages, and so forth. However, in no language is this the primary categorization strategy used for dynamic relational concepts in general; cases like the ones mentioned obey at best some subregularity (like the weather phenomena) and otherwise remain essentially idiosyncratic. Consequently, the verbs supporting such a noun in a clause predicate are largely determined on a lexical semantic basis, i.e. they will form phraseologisms with it. Alternations of such constructions are largely idiosyncratic, too, and will not be treated in what follows. The regular and compositional variant of the nominal strategy occurs if a predicate is primarily categorized as a verb in the language, but this is nominalized and made dependent on a light verb, as in German *etwas zum Abschluss bringen* (something to:DAT.SG conclusion bring:INF) ‘bring sth. to conclusion’, which alternates with *etwas abschließen* ‘terminate something’. Finally, the inner dependent of a light verb construction need not be a noun, but may belong to some other appropriate category,⁷ as in Persian *xejālat kešid-an* (shame pull-INF) ‘to get ashamed’ (s. Lehmann 2012, §3.1). This is a basic strategy in languages like Jaminjung which have a closed class of verbs. Here again, a verb combines with an inner dependent of some adverbial class to code a dynamic relational concept. Examples are below in E24 and E28. The inner dependent carries the bulk of the lexical meaning, while the verb serves as little more than a valency and aktionsart operator.

⁷ As long as the combination follows the rules of syntax in a compositional manner, that category may have a freer distribution and thus be equatable with the noun, adjective or adverb of the language. To the extent that the combination coalesces, words which may serve as inner dependent form a class of their own, dubbed ‘verb completor’ in Lehmann 2012, §3.1.

2.4 Basic types of situations

The more strictly relational properties of participants are derivative of the configuration of the situation in which they participate. More precisely, they are largely determined by the situation core, which appears as a predicate at the typological level. In this respect, the conception of participant roles and semantic roles has changed since Fillmore (1968) first proposed case roles: Schank & Abelson 1977, Van Valin & LaPolla 1997, ch. 3 and Fillmore 2003, §6 suggest that an analytic approach that composes a proposition of a predicate and a couple of dependents each of which contributes its semantic role to the complex is insufficient; and instead a holistic approach must be taken which starts from types of situations ('types of states of affairs' in Van Valin & LaPolla 1997, 'frames' in Schank & Abelson 1977 and Fillmore 2003) and derives participant roles from these.⁸ We shall see at the end of this section that, as usual in language, neither of the two perspectives is sufficient in itself, and instead they must be combined. However, in the spirit of the top-down approach taken here, we will start by defining types of situations. As already said, these definitions relate to level #1 of Table 1, although their notation necessarily involves predicates and arguments.

Table 3 tabulates a set of basic situation types that underlie many situations and recur in the specialist literature (Van Valin & LaPolla 1997, ch. 3). Some more will be introduced in subsequent sections. Given the focus of the present volume on verbal valency, we limit ourselves to the more dynamic situations; i.e. we exclude class inclusion and properties and start with states. The examples given in the last column are for illustration. They do not represent English verbs, but predicates which in many languages are primarily lexicalized in the argument-frame illustrated.

⁸ "The role that an entity plays in a state of affairs is always a function of the nature of the state of affairs, and it is nonsensical to separate participant roles from the states of affairs in which they occur. Thus it is states of affairs which are fundamental (i.e. basic), not participant roles (which are derived)." (Van Valin & LaPolla 1997:89; cf. also pp. 86 and 113)

Table 3 Basic types of situation (s)

type	dynamicity	constellation	participant properties	control	roles	example predicates
phase	dynamic	PHASE (s)	s: abstract	-		start, end, happen
ambience	stative/ durative	AMBIENT_CONDITION (1)	1: place	-	1: L	rain, snow
state	stative	IN_STATE (1)	-		1: O	
existence	stative	EXIST (1, 2)	-	-	1: O 2: L	there is, be located
position (posture)	stative	POSITIONED (1, 2)	1: individual 2: place	+/-	1: O 2: L	stand, lie, sit
possession	stative	POSS (1, 2)	1: concrete 2: animate	+	1: O 2: Pr	belong, have
physical state	stative	IN_PHYSICAL_STATE (1)	1: concrete	-	1: O	dry
mental state	stative	MENTALLY_DISPOSED (1, 2)	1: human 2: abstract	+	1: Ac 2: U.cd	know, intend, refuse
emotional state	stative	EMOTIONALLY_DISPOSED (1, 2)	1: human 2: -	+/-	1: Exp 2: U.cd	will, want, like, please, fear
process / event	dynamic	UNDERGO (1, s)	1: concrete	-	1: O	die, explode
change of state	dynamic	CHANGE (1)	1: concrete		U.aff	(monovalent) burn, break, melt
uncontrolled motion	dynamic	MOVE (1, 2)	1: concrete 2: place	-	1: U.loc 2: L	fall, sink, roll
emotional event	punctual	EMOTIONALLY_STIMULATED (1, 2)	1: human 2: -		1: Exp 2: U.cd	frighten
action / act	durative / punctual	DO (1, s)	1: animate	+	1: Ac	work, bark
controlled motion	dynamic	MOVE (1, 2)	1: concrete	+	1: Ac	run, climb, jump

			2: place 2: animate		2: L	L=Source: come from, leave, go out L=Goal: go to, come to, arrive at, return, enter L=Path: pass meet
experience ~ sensation	dynamic	PERCEIVE (1, 2)	1: animate 2: concrete	+/-	1: Ac 2: U.cd 1: E 2: U.cd	+attentive: look, listen, sniff -attentive: see, hear, feel, smell, taste
interpropositional relation	-	NEXION (1, 2)	1: abstract 2: abstract	-		cause, condition, entail, imply, prevent

Legend:

- Ac actor
- Exp experiencer
- L place
- O object (non-specific central role)
- Pr possessor
- U.aff affected undergoer (= patient)
- U.cd: considered undergoer
- U.loc: locomoted undergoer (sometimes called 'theme')

The first column of Table 3 labels the situation types. The participant and control properties of columns 4 and 5 are to be taken as prototypical. The control of column 5 is a relation between participant #1 and *s*, which extends to the other participants of *s*. The definition of a type of situation is composed of the cells of columns 2 – 5. A participant role may be defined by the set of properties of columns 3 – 5 of a (small) selected set of rows. The set of these definitory features is then labelled in column 6. In other words, a concept like Agent (Ac) is defined as the first argument of a set of predicates which is animate and controls the situations in question.

At this level of generality, the argument frame of a predicate comprises all those participants which may be relevant to characterizing the situation in question. Usually only a subset of these will be used when the situation is conceptualized by a (type of) predicate. As a tendency, the order of participants of a given situation (type) roughly reflects their relevance for the predicate: the first participants are the central ones, the further towards the end of the sequence a participant is positioned, the more peripheral it is. We will come back to this distinction in a moment.

It is clear that the participant features of columns 4 and 5 do not suffice to distinguish semantic roles. For instance, recipient, experiencer and addressee are not distinct by their absolute and their control properties. They can only be distinguished by the situations in which they function, viz. transfer (Table 6), experience and communication (Table 9), or in other words, by the basic predicates TRANSFER, PERCEIVE and COMMUNICATE whose ingredients they are.

On the other hand, a difference in the kind of participant may make a difference in the kind of situation. This is importantly the case for human vs. non-human participants, which condition distinct predicates in many cases. For instance, many – though not all – languages distinguish between GIVE (1, 2, 3) and PUT (1, 2, 3) on the sole basis of the feature +/- human of argument 3 (transfer vs. collocation in Table 6). Similarly, a language may have two verbs for ‘wash’ depending on the animacy of the object. Moreover, there are situation types, as in particular process vs. action, which differ exclusively by the control of their first participant. It therefore appears that semantic role and situation type are interdependent and determine each other.

We finally come back to the distinction between central and peripheral participant roles. The central ones are constitutive of their situation, while the peripheral ones may freely be added or omitted without affecting the nature of the situation. None of the participants appearing in Table 3 is entirely peripheral. Examples of participants which are peripheral to most situations (although not to their definitory situation types; see below) include the causer, the beneficiary and the instrument.

E16 (mare) nunc qua a sole conlucet albescit
 LATIN sea:NOM.SG now wherefrom sun:ABL.SG shine:PRS:3.SG white:INCH(PRS):3.SG
 ‘the sea now becomes white where the sun makes it glisten’ (Cic. Luc. 105, 16)

E17 Linda sold books for her cousin.

E18 Linda solved the problem with a calculator.

While the beneficiary in E17 and the instrument in E18 require no explanation, the causer in E16, viz. *sol* ‘sun’, is coded by the causer adjunct strategy (Lehmann 2016, §3.4), which is less familiar. What is important at the moment is that there is nothing in the process of shining that would imply a causer, nothing in the notion of selling that would entail the presence of a

beneficiary in a selling situation and nothing in the notion of problem-solving that would require an instrument. The most peripheral semantic roles are independent of the nature of the situation in which they appear. Therefore, the holistic approach which derives semantic roles from situation types cannot mean that all semantic roles are an outgrowth of simple situations only to be grasped holistically. There are composite situations, properly including the agentive situation (s. Table 6 below), the benefactive situation and the situation involving an instrument, which an analytic approach reveals as formed in a compositional way from a basic situation and an additional participant.

More precisely, the participants of such a complex situation include a base situation *s*, as follows:

agentive situation: CAUSE (1, *s*), where 1 = causer

benefactive situation: GIVE (1, 2, *s*), where 1 = benefactor and 2 = beneficiary

instrumental situation: USE (1, 2, *s*), where 1 = Ac and 2 = I.

Thus, these peripheral semantic roles may, again, be conceived as deriving from the nature of the respective situation type. This, however, does not change the fact that they are not implicit in the base situation *s*. This consideration, thus, leads to the same conclusion as before: The holistic approach to situations cannot be set as absolute. In particular, central participant roles are substantiated by certain basic situation types; but peripheral participant roles have their own properties which they contribute in a like fashion to many different situations.

2.5 Merger of basic situation types: action-processes

Many situations with more than one participant can plausibly be analyzed as combinations of a base situation with an additional participant. These will be treated in §3.2. There remains one basic situation type which cannot plausibly be analyzed in such a way, and this is the action-process. Table 4 displays its formation and a few important subtypes.

Table 4 Action-processes

type	dynamicity	constellation	participant properties	control	roles	subtypes	example predicates
action-process / act-event	durative/ punctual	DO (1, S) & UNDERGO (2, S) → AFFECT (1, 2)	1: individual 2: concrete	+	1: Ac 2: U.aff	U: -animate U: +animate	sew, eat / beat, grasp
mental action/act	durative/ punctual	ACT_MENTALLY (1, 2)	1: human 2: inanimate	+	1: Ac 2: U.cd	U: concrete U: abstract	read, count / think
production	terminative	DO (1, S) EFFECT (1, 2)	1: animate 2: inanimate	+	1: Ac 2: U.eff		make, build, write, speak, utter

Legend:

U.eff: effected undergoer

As its name indicates (cf. Chafe 1970, ch. 11), the action-process is the fusion of an action with a process, as one of its arguments acts, while the other one undergoes the situation as a process. In the examples adduced in Table 4, the fusion is complete, i.e. the two situations

cannot be disentangled in such a way that, for instance, a situation of eating would be composed of an intransitive act of eating and an intransitive process of undergoing ingestion. Instead of an addition of a particular argument to a self-sufficient base situation, such action-processes are more plausibly conceived as the symmetric and irreducible merger of an action and a process.

The first argument of an action-process is an actor (Ac), the second is an undergoer (U). Mental actions and acts are not among the prototypical action-processes because the undergoer is not affected. This kind of unattained undergoer is categorized as ‘considered undergoer’ (U.cd). Equally non-prototypical are situations of production, since their undergoer is effected rather than affected (U.eff). The taxonomy is as follows: U is a kind of O. U.aff, U.cd and U.eff are specifications of U which prove relevant in some valency patterns. U.aff is the same as patient.

Being a basic situation type, the action-process may serve as a model for the productive formation of complex situations on the basis of simpler situations:

- On the basis of a process, a derived action-process may be formed by introducing an actor.
- On the basis of an action, a derived action-process may be formed by introducing an undergoer.

These are two of the operations on semantic roles to be surveyed in §3.2.

3 Argument-structure operations and alternations

3.1 Two types of argument-structure operations

From an onomasiological point of view, we start from a certain situation with its core and its participants and code it in a syntactic construction of a particular language. This may be described as a transition in two steps:

1. From among all the participants and features of the situation, a selection is made which is conceptualized as a predicate or combination of predicates with their central and peripheral arguments and the semantic roles of the latter. The predicates are mapped onto a set of lexemes of the language each of which is represented by a stem and which are combined syntagmatically as indicated in §2.3. The arguments are represented as a set of referential expressions, which will not occupy us further. Each of the stems involved has a certain **valency**, which is an abstraction of the set of constructions (viz. diatheses) that forms of this stem may be used in. For instance, a stem like *eat* has the valency of being monotransitive, which includes the possibility of forming a passive.⁹ Importantly, stems derived from the same root may differ in their valency.
2. Given a certain verbal lexeme with the stem representing it, the latter is inserted in a particular syntactic construction by conjugating it in a particular form and combining it with (a subset of) its dependents in particular syntactic functions. Such a construction is a **diathesis** of the verb stem.

⁹ Given the tradition of valency grammar, which includes, among other things, the production of valency dictionaries, it is inadvisable to speak of different valencies with respect to diathetic alternants of a verb. See Lehmann 1992.

In both steps, a set of alternative representations is available which bear paradigmatic relations among them. In a dynamic perspective, such paradigmatic relations may be described as alternations of constructions or as (directed or symmetric) operations that transform one construction into another.

In step 1, an abstract construction is selected from a set of alternatives each of which involves stems in certain word classes. These stems differ in their valency (and, possibly, their aktionsart). The paradigmatic relations among alternate conceptualizations of a situation involve valency changes. The latter concern, importantly, the semantic roles associated with the predicates, i.e. they change the conceptualization of a situation by representing some participants rather than others in the form of arguments of a predicate, by determining the centrality vs. peripherality of each of the arguments and by changing the first argument's control feature. The function of these operations is to create and change particular predicates with particular constellations of arguments. An operation fulfilling this function may be called a **valency operation** (or **semantic role operation**). Consequently, the variants at that level are not synonymous (just as *sit* and *set* are not synonymous); and the semantic differences among them may be peculiar to the particular verb or verb class.

In step 2, a particular verb stem is given, and the variants that are in paradigmatic relationship are its diatheses, i.e. the verb forms in the appropriate voice (if any) with their respective complements and adjuncts. These paradigmatic relations may be described by operations that transform one diathesis into another, e.g., an active into a passive construction. They operate on verb forms and syntactic functions, i.e. they change the relations of nominal components to the clause core by allowing the speaker to select between a clause that does or does not comprise a certain syntactic component, and by changing the latter's syntactic relation. This is generally done in order to adapt that syntactic component to the thematicity of its referent. An operation fulfilling this function may be called a **diathetic operation** (or **syntactic function operation**). Such changes leave the semantic roles intact. Consequently, the variants at this level (like *Linda eats the apple* and *the apple is eaten by Linda*) are either synonymous or, at least, their semantic differences are a compositional consequence of the application of general grammatical rules.

Diathesis concerns the coding of arguments of a predicate as complements and adjuncts of a verb, thus, the conversion of semantic roles into syntactic functions.¹⁰ It comprises both syntactic operations and inflectional processes. One of the latter is **voice**, a conjugation category coding diathesis (s. Kulikov 2011, §1).

The distinction between a valency operation and a diathetic operation is best illustrated by an example that is well established in the literature (cf. Kulikov 2011:392), viz. the contrast between deagentive (alias anticausative) and passive:

E19	a.	Hwaane'	t-u	kach-ah	le	che'-o'
YM		John-TOP	PRFV-SBJ.3	break-CMPL	DEF	wood-D2
		'John broke the stick'				
	b.	le	che'-o'	h	káach	(*tuméen Hwaan)
		DEF	wood-D2	PRFV	break\DEAG	by John
		'the stick broke (*by John)'				

¹⁰ "Diathesis is determined as a pattern of mapping of semantic arguments onto syntactic functions (grammatical relations)." (Kulikov 2011:370)

- c. le che'-o' h ka'ch (tuméen Hwaan)
 DEF wood-D2 PRFV break\PASS by John
 'the stick was broken (by John)'

The transitive construction in E19.a has two intransitive counterparts, viz. the deagentive construction of E19.b, whose verb root has a high tone, and the passive construction of #c, whose verb root bears an infix. The functional difference is that the passive (just like the active of #a) implies the participation of an actor, which in #c is less thematic than the undergoer, but may be coded in an agentive prepositional phrase, while the deagentive excludes the presence of an agent phrase in the clause, thus inviting the inference that the situation happens spontaneously, i.e. without the intervention of an actor. Deagentivization is a valency operation or semantic role operation, passivization is a diathetic or syntactic function operation. By definition, if the members of an argument-structure alternation provide for the syntactic representation of a different number of arguments, it is a valency alternation.

These two functional types of argument-structure operations are ultimately subordinate to the cognitive and the communicative functions of language, respectively. They are clearly distinct in principle. However, since coding strategies are typically polyfunctional, a particular argument-structure process may combine a semantic function with a discourse function. And on the basis of some parallelism between the two functions, some of these functional bundles are relatively common, having often made it difficult to disentangle the two types of operations. One case in point, viz. lability, is discussed in §3.2.2. Moreover, diathetic operations typically involve promotion and demotion; and these are not always easily distinguished from the valency operations of argument introduction and suppression, resp. Specifically, the applicative is not categorially distinct from extraversion (undergoer introduction); and passive and antipassive do not differ sharply from the valency operations of deagentivization and introversion, resp. This problem will be taken up in §3.3.7.

Just as the semantic roles and syntactic functions themselves, linguistic operations on them are conceived at the cross-linguistic semantic level (Table 1, #2). That is, they may be instantiated in several languages in like fashion, but they are typically not instantiated in all languages. It is important to appreciate the trade-off between basic lexicalization of a situation core and the set of operations generating alternants of it (cf. Lehmann 2012): The base verb coding a certain situation core in a language may be an intransitive verb, and this may require an operation of transitivization if more participants of the situation are to be accommodated in central syntactic positions. The basic categorization may appear as firmly given and the operation as a flexible way of getting beyond the default. However, the operations need an operand to operate on; some choice must be made to begin with. What is actually given at a certain stage in the diachrony of a language is a pair of basic lexical categorization and a set of operations to adapt it; and that pair is subject to change. For instance, Latin at some stage antedating the written documentation had an intransitive verb *specio* 'look'. It also had the process of preverbatation, which had extraversive side effects, thus producing (among other compounds based on this root) *aspicio* (tr.) 'look at, see'. Latin itself no longer has the simplex, being left with a set of transitive 'see' verbs like *aspicio*. At this stage, it uses undergoer lability (s. §3.2.4) in order to get rid of the argument provided in the valency but occasionally not needed. In other words, what is generated by an alternation in one language or at one stage of a language appears as a base form in another language. For the functions of cognition and communication, the choice does not make a big difference. It may, however, be relevant for the linguistic type.

3.2 Valency operations

3.2.1 Formal relations in alternation

Alternations between valency frames may be systematized by a variety of formal criteria. The first criterion concerns the paradigmatic relation between the alternants. The alternation may be

1. symmetric, or undirected
2. asymmetric, i.e. directed in the sense that one alternant is basic, the other is derived from it.

The second criterion concerns the coding of the alternation. It may be

1. coded by segmental means
 - a) on the verb
 - b) elsewhere in the clause (i.e., generally on the dependents)
2. not coded by segmental means (i.e. the alternation reduces to presence vs. absence or a different order of constituents).

These distinctions will be illustrated by examples in §3.2.3ff. First, however, a methodological problem requires some discussion: What is the criterion for directionality of an alternation; in other words, how do we know which of two alternants, if any, is basic and which derived? What we require here are criteria intrinsic to the language system, i.e. we forego both considerations of frequency and customariness and evidence of historical primacy. The general criterion relevant here is markedness of the derived variant. In the clear case, this involves an additional morpheme with an additional semantic (or grammatical) feature as opposed to the base variant. Thus, the German applicative using the *be-* prefix is a directed coded alternation, where *herrschen* ‘reign (intr.)’ is the basic, *beherrschen* ‘dominate (tr.)’ the derived variant, even if the text frequency of the latter is higher than that of the former. Similarly, if an agentive verb displays an alternation between a transitive stem with an undergoer argument and an intransitive stem without it, then this is a case of extraversion if the former is marked (as in E30 below), and one of introversion if the latter is marked (as in E29).

No morphological markedness is to be discerned if the alternation is either uncoded or if both alternants are formally equally complex. The following subdivision applies here (cf. Haspelmath 1993, §2):

1. In both of the alternants, the same verb stem appears; i.e. the alternation is not coded by segmental means on the verb. Depending on the theoretical approach, this is conceived as conversion or category indeterminacy. An important subcase, called *lability*, is the use of the same verb stem in transitive and intransitive function, as in English *break* (tr./intr.).¹¹
2. Each alternant shows a different verb stem, which are morphologically unrelated. This is a lexical alternation, as in Yucatec Maya *took* (tr.) ‘burn’ – *éel* (intr.) ‘burn’. This coding could be called *suppletive* to the extent that the paradigms in question are productive and

¹¹ *Lability* is sometimes called *ambitransitivity* (e.g. in Mithun 2000). Since *lability* is the traditional term for use of the same verb stem in both transitive and intransitive constructions, *ambitransitivity* may be used for a slightly wider concept, viz. use of the same lexeme in both constructions, allowing, thus, for stem alternations (typically appearing as conjugation classes).

regular. In the case at hand, the language has a productive and regular morphological causativization process that could easily apply to *éel*. Consequently, *tóok* would be a suppletive agentive (or causative) of *éel*. Likewise, French *montrer* ‘show’, a lexical agentive of *voir* ‘see’, could be called a suppletive agentive since there is a regular process of causativization, so that *montrer* could be seen as a lexicalization of *faire voir* ‘make see’.

3. The alternants contain the same verbal base, with each of them bearing some morphological mark. This is an equipollent alternation, as in Jap. *atum-arū* (intr.) – *atum-eru* (tr.) ‘gather’.

If none of the alternants bears a morphological mark lacking from the other, it may still be possible to diagnose a directed alternation. Namely, an alternation is directed if one of the alternants is subject to special constraints or carries a certain semantic feature absent from the other; i.e., it is functionally marked. German has some actor-labile verbs (s. §3.2.3). The criterion just mentioned determines that this alternation is undirected with some verbs, but directed with others. E20 illustrates actor lability for *rollen* ‘roll’.

- E20 a. Erna rollte den Reifen auf die Straße.
GERMAN ‘Linda rolled the hoop onto the street.’
b. Der Reifen rollte auf die Straße.
‘The hoop rolled onto the street.’

The difference in the distribution and meaning between the transitive version in #a and the intransitive version in #b reduces to the presence vs. absence of an actor; no constraints on the distribution or other nuances of meaning of either of the versions are involved.¹² There does not appear to be a way of determining the direction of the alternation, i.e. to speak of agentivization or deagentivization with respect to German *rollen*.

E21.a and b illustrate the same uncoded alternation. The versions #b and #c share the absence of an actor. Here, the version #b without the parenthesized reflexive pronoun carries the semantic nuance of characterizing the subject by a property. The deagentive reflexive construction illustrated by #c does not have this feature and thus relates semantically to #a in the same way as E20.b relates to #a.

- E21 a. Erna schloss die Tür.
GERMAN ‘Linda shut the door.’
b. Die Tür schließt (?sich) nicht dicht.
‘The door does not close tightly.’
c. Die Tür schloss ?(sich), und wir waren gefangen.
‘The door closed, and we were caught.’

To the extent that this distributional and semantic difference between the transitive and the intransitive versions of E21.a and b represents a subregularity, the conclusion is that the former is basic, the latter derived. The same criterion would apply in seemingly symmetric diathetic alternations like the English locative shift; s. §3.3.5.

¹² To be sure, each of the valency alternants of the stem may develop its own polysemy or idiomatic uses. For instance, the intransitive *der Verkehr rollt* ‘traffic is rolling’ has no transitive counterpart. This would not count as a systematic constraint.

We are not entering into the details of the formal techniques of coding an alternation, or signalling an operation. It suffices to recall that, given that we are talking about the formation of a predicate with its argument frame at the lexical level, relevant structural processes are, in principle, lexical (compounding or derivational) in nature. To the extent that such a process is grammatical (syntactic and/or inflectional) in nature, it comes under diathetic operations (including voice) rather than valency operations.

3.2.2 Types of valency alternations

The maximum quantitative valency for which there are dedicated general operations is trivalency. Most plurivalent constructions may be described in terms of three macro-roles, actor, undergoer and indirectus. While the former two have been presupposed throughout (s. Foley & Van Valin 1984), the indirectus needs to be defined (s. Lehmann et al. 2004): It is the macro-role which neutralizes the specific semantic roles of recipient/emitter, addressee, experiencer, beneficiary and sympatheticus and which is typically coded as an indirect object and/or by a case resembling the dative. Since the two most central arguments are mostly coded as actor and undergoer, the indirectus appears typically – although not exclusively – as the third argument of a predicate. The argument in question is prototypically human. If entities lower on the empathy hierarchy take this macrorole, the goal may join the set of semantic roles comprised by it. Typical examples appear below in E38 – E41. While actor and undergoer are universally applicable descriptive concepts, some languages have an indirectus, others do not.

Valency operations represent a paradigmatic relationship between two predicate-argument frames which differ in that one comprises a certain argument which the other lacks. The most important of these paradigmatic relations are based on the inclusion of the macro-roles: the frame does or does not involve an actor, an undergoer or an indirectus, resp. Table 5 presents the alternations ordered by the criteria discussed in §3.2.1. In the first two columns, an intransitive verb alternates with a transitive verb. In the last column, alternation is prototypically between a monotransitive and a ditransitive verb, although exceptions are possible and some will be noted in §3.2.6.

Table 5 Alternations between presence and absence of macro-roles

paradigmatic relation	macrorole	actor	undergoer	indirectus
	coding on verb			
symmetric	none	actor lability	undergoer lability	indirectus lability
	lexical	lexical agentive	lexical extraversive	lexical indirectus alternation
	equipollent	equipollent agentive	equipollent extraversive	equipollent indirectus alternation
asymmetric	suppression	deagentivization	introversion	indirectus suppression
	introduction	agentivization	extraversion	indirectus introduction

3.2.3 Actor alternations

Most of the situations in Table 3 may be expanded into an agentive situation by an operation that adds an actor, as follows: A complex situation is created whose highest predication is CAUSE (1, s), where 1 is the actor and s is the base situation. The difference between a basic action-process and an agentive action-process lies in the conceptual separability of the actor and the rest of the situation: While it is not naturally possible to extract the actor from the example predicates given in Table 4, addition of an actor which is separable from the core concept is a natural interpretation of such agentive action-processes as ‘burn’, ‘break’, ‘melt’ (all taken to represent bivalent predicates), shown in Table 6.

Nevertheless, the concept of the actor is given with the basic action-process, and it may therefore serve as a model for agentivization. The predicates most amenable to it are probably those that display widespread actor lability, like the ones just mentioned. From there, agentivization may apply to further basic situations to turn them into agentive situations. This generates a large number of additional situation types. Importantly, application of this operation to bivalent situations yields trivalent situations. Table 6 displays some agentive situation types, together with their base as it appears in Table 3. Participants 2 and 3 correspond to #1 and 2, resp., of the base situations. By virtue of the agentivization, the O of the base situation becomes an U, and Pr becomes R/Em. In Table 6, the column ‘control’ is omitted, as participant 1 always controls s. Likewise, the column ‘subtypes’ is unnecessary since these appear in the table lines.

Table 6 Types of agentive situation

type	base (Table 3)	constellation	participant properties	roles	example predicates
agentive situation	s	CAUSE (1, s)	1: individual	1: Ac	cause
agentive change of state	change of state	CAUSE (1, s) & CHANGE (2) → AFFECT (1, 2)	1: individual 2: concrete	1: Ac 2: U.aff	burn, break, melt (tr.)
transport	uncontrolled motion	CAUSE (1, MOVE (2, 3))	1: animate 2: concrete 3: place	1: Ac 2: U.loc 3: L	bring, carry, throw, push
collocation	position	CAUSE (1, POSITIONED (2, 3))	1: animate 2: individual 3: place	1: Ac 2: U.loc 3: L	put, seat, lay
transfer	possession	CAUSE (1, POSS (2, 3))	1: animate 2: concrete 3: animate	1: Ac 2: U.loc 3: R/Em	give, take
manipulation	motion & action- process	CAUSE (1, MOVE (3, 2)) & USE (1, 3, s) → AFFECT (1, 2)	1: human 2: concrete 3: concrete	1: Ac 2: U.aff / L.Goal 3: I / U.loc	fill, load, sprinkle, stuff; hit (I against U), throw
caused experience	experience	CAUSE (1, PERCEIVE (2, 3))	1: human 2: animate 3: concrete	1: Ac 2: Exp 3: U.cd	show, hide

Legend:

Em emitter
R recipient

Comparison among the situation types reveals the following paradigmatic relations:

An agentive change of state differs from a basic action-process (of Table 4) essentially by the separation of the agent from the process. Consequently, the agent may be suppressed from the former, but not from the latter situation type. (The agentive change of state is not called causative because it need not be produced by a causative derivation.)

Transport is like collocation in requiring U to move with respect to L. It differs minimally from collocation in that the latter involves a resulting position of U at L.

Transfer, too, is like collocation in that both require U to move (given that possession requires contact between possessor and possessed, change of possession by default implies locomotion for the possessed). The difference between the two stems from the difference between the respective base situations: the last argument is prototypically a place in position and collocation, but an animate being in possession and transfer.

In situations of manipulation, the agent affects (manipulates) one, stationary object by applying another, movable object to it. See §3.3.5 for alternate conceptions of this constellation.

The following alternations relate the situations of Table 6 to those of Table 3:

Actor lability (“patientive ambitransitivity” in Mithun 2000):

- E22 a. The pot broke.
b. Linda broke the pot.

Lexical agentive:

- E23 a. Linda died.
b. Irvin killed Linda.

Equipollent agentive:

- E24 a. ngabulgja=biya yirra-gba=ni wangguwarla-nyunga
JAMINJUNG bathe=SEQ 1PL.EXCL-be.PST.PFV=SFOC saltwater-ORIG
‘we were washing/bathing because of (i.e. to get rid of) the saltwater’
b. ngabulg=gun ba-rra jalig majani hot gan-unggu-m
bathe=CONTR IMP-put child maybe hot 3SG.A:3SG.P-say/do-PRS
‘bathe her (the child), maybe she is hot (child, in river)’ (ValPal Database, Jaminjung, (162) and (23))

E24 shows the adverb carrying the bulk of the meaning of the predicate combined with an intransitive verb in #a, but with a transitive verb in #b, rendering intransitive and transitive ‘bathe’, resp. Given that these verbs are semantically empty like light verbs, they function like valency operators.

Deagentivization:

This generally involves the anticausative as a morphological operation on a transitive verb, coded by high tone on the root in E3.b.

- E3. a. t-in ch'am-ah u chuun le che'-o'
 YM PRFV-SBJ.1.SG bruise-CMPL POSS.3 base DEF tree-D2
 'I bruised the trunk of the tree' (EMB&RMC_0033)
- b. h ch'áam u chuun le che'-o'
 PRFV bruise\DEAG POSS.3 base DEF tree-D2
 'the trunk of the tree got bruised'

Agentivization:

By far the most important subtype of agentivization is causativization, which involves a morphological operation on the base verb, like the suffix in E25.b.¹³

- E25 a. h he'l-ech
 YM PRFVrest(CMPL)-ABS.2.SG
 'you rested'
- b. t-in he' -s-ech
 PRFV-SBJ.1.SG rest-CAUS(CMPL)-ABS.2.SG
 'I put you to rest'

However, a hyperonym like *agentivization* is needed, as there are also nominal strategies thereof, already exemplified by E16 in §2.4.

3.2.4 Undergoer alternations

Some actions and acts are compatible with an undergoer that they extend to. There are, consequently, alternate views of such situations, always with an actor, but with or without an undergoer. For instance, a situation of thinking may primarily be conceived as being based on a solipsistic actor and only secondarily be taken as the basis for an operation of undergoer addition, which in this case may supply the theme that the thinking is devoted to or the proposition effected by it. The semantic operation of adding an undergoer role to an action is called *extraversion*.¹⁴ Like the agentive action-process, it takes the basic action-process as a model and creates derived action-processes. Table 7 shows the internal structure of such situations.

Table 7 Type of extraversive situation

type	base (Table 3)	constellation	participant properties	roles	example predicates
extraversive action-process	action/act	DO (1, S) & CONCERN (s, 2)	-	1: Ac 2: U	serve (sb.), sweep (a place)

The following are examples of the kinds of alternation summarized in the undergoer column of Table 5:

¹³ For the sake of simplicity, E25 is presented in a verb status that conditions morphologically ergative alignment.

¹⁴ In Lehmann & Verhoeven 2006, the term is used as the lexical counterpart to the (supposedly) syntactic operation of the applicative.

Undergoer lability (“agentive ambitransitivity” in Mithun 2000):

- E26 a. Linda hunts.
b. Linda hunts the bear.

Lexical extraversive:

- E27 a. Linda spoke to Irvin.
b. Linda said ‘Hello’ to Irvin.

Equipollent extraversive:

- E28 a. mayi gambaja ga-yu
JAMINJUNG man laugh 3SG.S-be.PRS
‘the man is laughing’
b. mayi-ni gambaja gani-mangu janyungbari
man-ERG laugh 3SG.A:3SG.P-hit.PST.PFV other
‘the man laughed at the other one’ (ValPal Database, Jaminjung, (59) and (158))

E28 illustrates the same kind of construction as E24, except that the transitive verb of E28.b does not have a causative, but an extraversive effect.

Introversion:

In introversion, effectuated in Yucatec Maya by low tone on the root vowel (E29.b), the undergoer slot is blocked so that there remains no way of mentioning the participant in question in that clause. This distinguishes this alternation from the antipassive, which only demotes the undergoer; s. §3.3.2.

- E29 a. k-in xok-ik (le analte’-a’)
YM IMPF-SBJ.1.SG read-INCMP(L)(ABS.3.SG) DEM book-D1
‘I read it / this book’
b. k-in xook
IMPF-SBJ.1.SG read\INTROV(INCMP(L))
‘I read/study’

Extraversion:

In extraversion, effectuated in Yucatec Maya by means of an extraversive transitivizing suffix (E30f), a participant of the situation is integrated which is absent from the base predication. This distinguishes extraversion from the applicative, which promotes a clause component to a more central position; s. §3.3.3.

- E30 a. k-in ts’íib
YM IMPF-SBJ.1.SG write
‘I write’
b. k-in ts’íib-t-ik (le analte’-a’)
IMPF-SBJ.1.SG write-TRR-INCMP(L)(ABS.3.SG) DEM book-D1
‘I write it / this book’
E31 a. k-in meyah
YM IMPF-SBJ.1.SG work
‘I work’
b. k-in meyah-t-ik-ech
IMPF-SBJ.1.SG work-TRR-INCMP(L)-ABS.2.SG
‘I serve you’

3.2.5 Relations between actor and undergoer alternations

The representation of Table 5 suggests a set of mirror-image relations between the paradigmatic relations and corresponding operations concerning actor and undergoer. One of these may be formulated as follows: Deagentivization undoes the effect of agentivization, just as introversion undoes the effect of extraversion. This symmetry is, in fact, reflected in linguistic structure to a certain extent. For instance, the causative as illustrated in E25 introduces an additional highest agent. This effect is undone by the reflexive appearing in E32.b, as this marks coreference of the new argument with the argument already present in the base. The result is near-synonymy of E32.a and b.

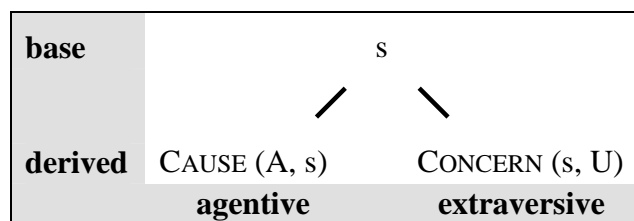
- E32 a. k'abéet a mas he'l-el
 YM necessary SBJ.2 more rest-INCMPL
 'you must rest more'
- b. k'abéet a mas he'-s-ik a báah
 necessary SBJ.2 more rest-CAUS-INCMPL POSS.2 self
 'you must get yourself more rest' (BVS_10.01.09)

However, this symmetry has limits. The following two subsections deal with the asymmetries between these operations.

3.2.5.1 The agentive – extraversive asymmetry

Agentivization and extraversion were introduced in Table 5 as mirror images. Just as agentivization introduces an actor that causes the base situation, so extraversion introduces an undergoer that is concerned by the base situation. This is depicted in Diagram 1:

Diagram 1. *Agentivization and extraversion*



This symmetry extends, to some extent, to the internal composition of s in Diagram 1: Since the causative adds an actor, it applies most easily, and most commonly, to situations which comprise an undergoer, but lack an actor (Lehmann 2016, §2.3). Conversely, since the extraversive adds an undergoer, it applies most easily, and most commonly, to situations which comprise an actor, but lack an undergoer. However, this symmetry concerns only the prototypes. Apart from these, there are essential asymmetries between the two operations as they appear in linguistic structure.

What appears, at first sight, as a symmetry, viz. the mirror image relation of the argument structure of the two base situations just mentioned, proves to be an asymmetry on deeper inspection: The presence of an actor presupposes a dynamic situation (with the partial exception of controlled postures), while the presence of an undergoer makes no requirement on the dynamicity of the situation. As a consequence, extraversion of a stative situation is the

exception, while agentive alternants may easily be formed from stative situations. Such alternants are, in fact, so basic and widespread that they often differ structurally from causatives based on dynamic situations, a fact which earned them the term ‘factitive’ in descriptive linguistics.

While causatives are formed more easily on the basis of situations that lack an actor, nothing in principle excludes agentivization of an active situation. As a result, none of the situation types enumerated in Table 3, Table 4 and Table 6 is in principle immune to agentivization. A productive causativization process may causativize even causative constructions. This is in sharp contrast with the productivity of extraversion: only active situations may be extraverted; and the operation is not recursive.

The two operations differ also in their structural manifestations: Most languages have a periphrastic causative construction based on a verb which means something like ‘do’ (including ‘make’, ‘cause’ and the like), thus coding pretty much the semantic structure shown on the left-hand side of Diagram 1. Its extraversive mirror image would be a periphrastic applicative construction based on a transitive light verb which means ‘affect’, ‘extend to’, ‘concern’ or the like, thus coding the predicate appearing on the right-hand side of Diagram 1. While such a construction is certainly not unheard of, it is not the default applicative construction; and existent applicative morphology, to the extent that its etymology may be ascertained, is generally not grammaticalized (or lexicalized) from such verbal bases.

The semantic role born by the actor introduced by agentivization is essentially unitary: It is the argument that has highest control in the situation; thus, a prototypical agent. This is true whether the base situation already comprises an actor or not. On the other hand, the semantic role born by the undergoer introduced by extraversion varies considerably (Peterson 2007) and depends essentially on the meaning of the predicate and of the undergoer constituent. For instance, in E33.b from Warembori (Lower Mamberamo, Indonesia), the fact that the river serves both as a place and as an instrument in the situation follows exclusively from the meanings of the verb and the undergoer plus world knowledge. The applicative suffix does nothing but transitivize the verb.

- E33 a. make matin-do (nana ipa-yave)
 WAREM boy wash-IND OBL river-DEF
 ‘(the) boy is washing (in a/the river)’
- b. make matin-na ipa-yave
 boy wash-APPL river-DEF
 ‘(the) boy is washing in the river’ (Donohue 1999:9)

The picture offered by Diagram 1 thus hides a basic asymmetry: While the additional Ac in a causative construction does bear the prototypical agent role which is appropriately represented by some such predicate as CAUSE, the role of the additional undergoer in an extraversive construction is not the prototypical patient role (Kittilä 2011:354) and therefore only characterized rather vaguely by the predicate CONCERN. Putting it yet another way: agentivization is semantically specific in a way that is compatible with many base situations in essentially the same way, while extraversion is semantically non-specific, gets its specific relational meaning from the context and is yet incompatible with many situation types.

3.2.5.2 The deagentive – introversive asymmetry

Again, just as the deagentive blocks the actor argument, the introversive blocks the undergoer argument. And it is true that these two operations are symmetric to a certain extent. For instance, quite a few languages use one detransitivizing process to achieve both. The Russian reflexive is a case in point (cf. Kulikov 2011:376, 382): From the transitive base *rugat* ‘scold’, the reflexive shows an introversive meaning: *rugat’sja* ‘grumble, curse’; but on the transitive base *razrušat* ‘destroy’, the reflexive *razrušat’sja* ‘get ruined’ has a deagentive function.

Quite generally, given a construction produced by an operation that introduces a certain argument, then that argument cannot be omitted in the construction, since its presence is exactly what that operation conveys. Instead, the obvious way of getting rid of the argument in question is simply not to apply the operation in question. Consequently, there is generally no deagentive of a causative;¹⁵ and likewise there is no introversive of an extraversive.¹⁶

However, it is not the same transitive verbs that may be deagentivized and introverted. Almost all of the basic action-processes of Table 4 may easily be introverted, but can hardly be deagentivized. Likewise, extraversive action-processes need not be introverted; it suffices to revert to their base; but they cannot easily be deagentivized, either. Conversely, the agentive changes of state of Table 6 are easily deagentivized by reverting to their base, but hardly introverted. In the opposition between agentive and extraversive action-processes, basic action-processes thus side with the extraversive ones. The actor is constitutive for them; if it is eliminated, a different situation (or none at all) results. This may indicate that basic action-processes are not as balanced as assumed in §2.5 and that instead they are essentially actions that extend to an undergoer.

3.2.6 Indirectus alternations

While there are elementary, i.e. undecomposable, monovalent and bivalent predicates, probably all trivalent predications can be decomposed into combinations of bivalent predications. If a non-first argument of a trivalent predicate is high on the empathy hierarchy, it is most probably an indirectus. There are essentially two ways that such a situation may be composed. One is by an expansion of a bivalent situation which demotes one of the basic arguments to indirectus function. For instance, upon agentivization of a possessive situation, we get a transfer situation, whereby the possessor becomes an indirectus. Upon agentivization of an experiential situation, the experiencer remains or becomes an indirectus. Likewise, the goal or recipient of a transport has that macrorole, too. Such cases were subsumed in Table 6 and need not be repeated in Table 8, although some relevant examples will be given below. On the other hand, upon introduction of an undergoer in a bivalent situation that already

¹⁵ Constructions like E32.b constitute an explicable exception to this, as the actor introduced by causativization is not actually suppressed in the reflexive construction, but rather identified with the undergoer.

¹⁶ The latter is, incidentally, the reason why the ‘omission test’ by which Germanists seek to distinguish between complements and adjuncts (hoping that complements are non-omissible) works well for derived transitive verbs such as *bearbeiten* ‘process’ and the like, but shows nothing for base transitive verbs like *jagen* ‘hunt’.

contains an animate being as second argument, the latter may be demoted to indirectus function. Since these cases involve demotion, they will be reviewed in §3.3.3 (s. E56). One of the most important situations involving an indirectus, viz. communication, will be analyzed separately in §3.2.7.

The other way of expanding a predication by an indirectus is by introducing it without further change, normally in a bivalent situation. This is schematized in Table 8.

Table 8 Indirective situations

type	base (Table 4)	constellation	participant properties	roles	example predicates
indirective situation	s	DO (1, s) & UNDERGO (2, s) & INDIRECTLY_CONCERNED (3, s)	1: animate 2: - 3: animate	1: Ac 2: U 3: Ind	tell, excuse

In what follows, the alternations provided for in the last column of Table 5 will be illustrated.

Indirectus lability:

- E34 a. Linda brought the packet.
b. Linda brought me the packet.

Lexical indirectus alternation:

- E35 a. Erna entschuldigte den Lapsus.
GERMAN Linda excused the:ACC lapse
b. Erna verzieh mir den Lapsus.
Linda forgave me:DAT the:ACC lapse

Equipollent indirectus alternation:

What is sought here is a pair of derivations of a common base one of which produces a monotransitive stem while the other produces a ditransitive stem, with actor and undergoer kept constant. If the process were anything like regular, the base would probably have to be intransitive. No data corresponding to this construct have been found.

Indirectus suppression:

Most of the processes known in this domain demote rather than suppress the indirectus (see §3.3.2). However, one of the many functions of the German prefix *ver-* is exactly that (although E37 is relatively marginal because the role suppressed is the goal).

- E36 a. Erna meldete mir den Erfolg.
GERMAN Linda reported me:DAT the:ACC success
b. Erna vermeldete den Erfolg.
Linda VALENCY.DECREASER:reported the:ACC success

- E37 a. Erna schüttete die Suppe in die Terrine.
GERMAN Linda poured the soup in the tureen
b. Erna verschüttete die Suppe.
Linda VALENCY.DECREASER:poured the soup
'Linda spilled the soup.'

Indirectus introduction:

In German, one of the functional variants of what is structurally preverbatum with *zu* ‘to’ has this function.¹⁷ In the following series, the #a examples contain the base verb, whose valency excludes an indirectus, while the #b examples show the derived verb, whose valency includes an indirectus.

- E38 a. dass Erna diese Ausgaben billigte
 GERMAN that Linda these expenses approved
 b. dass Erna mir diese Ausgaben zubilligte
 that Linda me.DAT these expenses conceded
- E39 a. dass Erna die Schilder ordnete
 GERMAN that Linda the.PL tags ordered
 b. dass Erna die Schilder den Gästen zuordnete
 that Linda the.PL tags the:DAT.PL guests assigned
- E40 a. dass Erna ‘Hallo’ rief
 GERMAN that Linda hello shouted
 b. dass Erna mir ‘Hallo’ zurief
 that Linda me.DAT hello to:shouted
- E41 a. dass Erna den Ball spielte
 GERMAN that Linda the:ACC ball played
 b. dass Erna mir den Ball zuspielte
 that Linda me.DAT the.ACC ball to:played
- E42 a. dass Erna arbeitete
 GERMAN that Linda worked
 b. dass Erna mir zuarbeitete
 that Linda me.DAT to:worked
 ‘that Linda did preparatory work for me’
- E43 a. dass Erna blinzelte/zwinkerte
 GERMAN that Linda blinked/winked
 b. dass Erna mir zublinzelte/zuzwinkerte
 that Linda me.DAT winked_at

Indirectus introduction is not to be confused with the applicative derivation: the former creates an actant position for an indirectus, which in several European languages including German surfaces as an indirect object, while the latter creates an actant position for an undergoer, which generally amounts to a direct object. The *locus* of the indirectus is in trivalent verbs, as in E38.b – E41.b. In languages which have such a syntactic function and mark it by some dative-like case, an indirectus may even be introduced on an intransitive verb, as shown by E42 and E43. In languages lacking an indirect object, indirectus introduction on intransitive verbs might reduce to an applicative derivation.

As implied by its definition (§3.2.2), the macro-role of the indirectus is less central in an argument frame than the other two macro-roles, the actor and the undergoer. And since, in the

¹⁷ The same derivational process has several other functions, and even some verbs which show the same valency change as those of the example series may be lexicalized in a completely different meaning, like *gestehen* ‘confess’ vs. *zugestehen* ‘concede’.

prototypical case, it only appears if these two are already there, it generally corresponds to argument #3 in a frame. A corollary of this is that syntactic functions subsumed under this macro-role are either complements, but less central ones, or they are adjuncts, but the most central ones. Since we are here dealing with valency alternations, the possibility of having adjuncts in one of the indirectus functions (beneficiary or goal) is of little concern here. Suffice it therefore to say that in many languages, the dative (or allative) used to mark the indirect object also marks the beneficiary, as in E44f:

E44 Erna trug mir den Koffer.
 GERMAN Linda carried me.DAT the:ACC suitcase

E45 Erna reparierte mir das Fahrrad.
 GERMAN Linda repaired me.DAT the bike

While there is an indirect object in E35.b and E38.b – E43.b, there is none in E44f, as proved by the usual tests for actancy: while the adjunct in the latter examples is easily replaced by whatever construction yields the benefactive sense, the complement in the former examples is in the form required by its verb. Moreover, the indirect object in most of E38.b – E43.b is obligatory.

3.2.7 The communication situation

The situation of communication has a complicated status in the set of situation types. On the one hand, it is the one situation whose model is omnipresent in language: the speech situation is, of course, the model of this situation type. One might therefore expect it to constitute a basic trivalent situation type. However, as already anticipated, all trivalent situation types can plausibly be generated by expansion of a bivalent situation. This is true for the communication situation, too. And similarly to the manipulative situation type (§3.3.5), there is more than one way of composing a situation of communication.

A situation of communication may be analyzed as shown in Table 9 (cf. Van Valin & LaPolla 1997, ch. 3.2.3.1):

Table 9 *Situation of communication*

constellation	participant properties	roles	example predicates
COMMUNICATE (1, 2,3, 4)	1: human 2: human 3: [ling. object] 4: -	1: Ac 2: (Ad) 3: U.eff 4: (U.cd)	say, tell
COMMUNICATE (1)		1: Ac	talk, sing
COMMUNICATE (1, 2)		1: Ac 2: Ad 2: Com	speak to sb. chat with sb.
COMMUNICATE (1, 3)		1: Ac 3: U.eff	utter, say sth.
COMMUNICATE (1, 2, 3)			shout sth. at sb.; tell sb. sth., order, promise

COMMUNICATE (1, 2, 4) | | |talk with sb. about sth., ask sb. for sth. |

COMMUNICATE (1, 2, 3, 4) involves the following participants: 1 is the active communicator, 2 (Ad = addressee, Com = comitative) is the interlocutor, 3 is the message uttered by 1, and 4 is the topic of communication. 1 and 2 are prototypically human beings, 3 is a linguistic object which may either be quoted or characterized, and 4 may be anything. Some of the semantic roles follow from this constellation: 1 = Ac; 2 may be an Ad and, thus, an indirectus; 3 is an effected undergoer; and 4 may get the undergoer macro-role if that has not yet been assigned. All four participants are present in E46.

E46 Linda said nothing to Bill about the matter.

Now the various predicates of communication differ by the selection they make from among this maximum scenario. Some important constellations are enumerated in Table 9 and illustrated in the last column by English constructions instead of verbs from other languages whose valency is actually confined to the respective frame. For instance, the verbs meaning ‘say’ in Hoocak, Indonesian and Ojibwe are just bivalent, illustrating the frame COMMUNICATE (1, 3). The basic verb rendering ‘talk’ instantiates the pattern COMMUNICATE (1, 4) in Ainu, Balinese, Chintang, and Sliammon, but the pattern COMMUNICATE (1, 2) in Bezhta, among others.

Although most predications representing a situation of communication are only partial renditions in that sense, they are often composed from even simpler predications. A few examples from the wide cross-linguistic variation may be mentioned. In E47, the predication COMMUNICATE (1, 2, 3) is conceptualized as CAUSE (1, PERCEIVE (2, 3)); thus, like the caused experience of Table 6.

E47 sinrit oruspe an=e=nu-re na
 AINU ancestor story IND.A=2SG.O=hear-CAUS FIN
 ‘I will tell you the story of the ancestors’ (ValPal Database, Ainu, (101))

Similarly in E48, ‘tell sb. sth.’ is conceptualized as ‘give sb. sth. to know’:

E48 Erni kasi-tahu Tom rencana outing
 INDONES Erni give-know Tom plan outing
 ‘Erni told Tom the plan for the outing’ (ValPal Database, Indonesian, (114))

Here the addressee is plainly conceived on the model of the recipient and, thus, an indirectus.

3.3 Diathetic operations

Diathetic operations change the functions of the dependents of the verb much like valency operations (or semantic role operations) do. The difference is that valency operations affect the semantic roles carried by these syntactic components, while diathetic operations only change their information status. Their main purpose is to give a certain syntactic component that syntactic function that best suits its information status.

3.3.1 The hierarchy of syntactic functions

The paradigmatic relation between two diatheses of a given predication is commonly conceived in terms of operations of promotion and demotion. These refer to a hierarchy of

syntactic functions which is displayed in Diagram 2. They involve additional argument functions beyond the actor, undergoer and indirectus which are the object of valency operations. That is because one of these may be demoted to a lower position on the hierarchy, or may be the goal of a promotion from a lower position on the hierarchy. This concerns, specifically, local, beneficiary and similar adjuncts.

Diagram 2. Hierarchy of adverbial syntactic functions

subject	absolute
direct object primary object	ergative
indirect object secondary object	
other complement	
adjunct	

The hierarchy of syntactic functions plays an important role in many fields of syntax. In independent declarative sentences, it mainly reflects the thematicity of the nominal expressions occupying its levels.¹⁸ The principle is: the more thematic a verbal dependent is, the higher the function assigned to it on Diagram 2.

Syntactic functions have little semantic import taken by themselves. The higher up a syntactic function is in the syntactic function hierarchy, the emptier it is semantically. In particular, the subject function by itself in most languages including English does not code the actor role, since there is a subject in the passive construction that is transparent to the undergoer role. The opposition (paradigmatic contrast) among syntactic functions represented by Diagram 2 pertains more to their discourse function. The little semantic potential that is associated with syntactic functions stems from the fact that many verb roots pair the same structural valency frame with the same semantic role frame, so that this set may serve as a model exerting a certain analogical attraction. The semantic role potential of a syntactic function may therefore remain latent and become relevant only in syntagmatic contrast.

For instance, although the subject by itself does not code actor function, in the transitivity schema, its referent is ascribed the highest control in a situation (s. Hopper & Thompson 1980), since there the subject contrasts with the direct object. The latter's semantic potential is itself weak enough, but in the transitivity schema, the direct object is the undergoer, so that the actor role remains for the subject. Similarly the indirect object in languages such as Latin and German by itself means very little. Its semantic potential remains mostly latent even in bivalent frames such as E49.a and E50.a.

- E49 a. Erna folgte dem Einbrecher.
 GERMAN 'Linda followed the burglar.'
- b. Erna verfolgte den Einbrecher.
 'Linda pursued the burglar.'

¹⁸ Roughly, a referent is more thematic the shorter the distance from its last mention and the denser the frequency of its mentions in comparison with other referents in the preceding discourse (Givón (ed.) 1983).

- E50 a. Erna folgte Erwins Rat.
 GERMAN ‘Linda followed Irvin’s advice.’
 b. Erna befolgte Erwins Rat.
 ‘Linda adhered to Irvin’s advice.’

However, in E49.b and E50.b, the dependent in question has been promoted to direct object function by a derivational process that marks this promotion (s. §3.3.3). It is chiefly by the paradigmatic contrast between transitive #b versions and the intransitive #a versions that we perceive a stronger control cline in the former than in the latter, the agent being more exclusively focused on the patient.

Just as in the case of valency operations (§3.2.1), the direction of an operation of promotion or demotion is determined by markedness. Roughly, the variant that involves more grammatical formatives is the derived one, and it constitutes the target of a promotive or demotive operation. If no difference in markedness is to be discerned, then no directed operation can be diagnosed.

- E51 a. Linda outwitted Irvin.
 b. Irvin was outwitted by Linda.
 E52 a. Linda loaded the wagon with hay.
 b. Linda loaded hay on the wagon.

Thus, in E51, the passive is clearly marked against the active by an additional auxiliary and an additional preposition. Therefore the active is basic and the passive is derived; and consequently we speak of passivization rather than of activization. Conversely in E52, no difference between the two versions in terms of structural complexity can be discerned, and it is therefore not possible to know which of them is basic.¹⁹

In English, the passive promotes a nominal constituent from any position on Diagram 2 up to the highest level, at the same time demoting the nominal constituent that was there. Since this is a bipartite operation, its function may be either to get the promoted referent into the position that corresponds to its thematicity or else to move out of the thematic chain the argument that would occupy the subject position in the active version. Similarly, the antipassive promotes the actor to the highest position on Diagram 2 while at the same time demoting the undergoer so that it gets out of the way. Eliminating a referent from the thematic thread is a negative step with two facets: either that referent is not mentioned at all, or else it is mentioned, but in the rhematic part of the sentence. In the first case, we have a passive or antipassive construction with only the subject or absolutive, resp.; in the second case, the passive actor or antipassive undergoer appear in an adjunct.

Similarly, applicativization promotes an argument to direct object position, thus allowing it to function as secondary topic. If the base is already transitive, this entails demotion of the less thematic noun phrase occupying the direct object position. Just as in the former case, this

¹⁹ The question of directionality poses itself in a different way for diathetic operations than for valency operations as discussed in §3.2.1. Since the function of a diathetic operation is getting a certain referent into a certain discourse position, semantic effects such as those mentioned in §3.2.1 cannot be relied on as a criterion. There may still be distributional differences in the sense that one diathesis has a restricted distribution and can be considered as less basic, as shown in §3.3.5.

is an ambivalent operation, as it may entail either omission of that argument or, on the contrary, its appearance in an adjunct with rhematic function.

If an operation of demotion frees a position high on the syntactic function hierarchy, the grammar of the language may require that position to be occupied, so that the demotion triggers a promotion. That is true of the passive in most languages, where demotion of the subject is accompanied by promotion of the erstwhile direct object to subject function. Similarly, if an operation of promotion targets a position on the hierarchy already occupied by another actant, it will normally oust the latter from that position so that it is demoted. That is, for instance, true of the applicative, which may be applicable to transitive bases; but then the erstwhile direct object has to vacate its position and take a lower one. From the point of view of the result, such operations may appear to be operations of rearrangement, which make two verbal dependents swap their places. We will assume, instead, that every diathetic operation has either a promotive or a demotive function, and that any further rearrangements are just side effects conditioned by general constraints of the grammar. In what follows, only a few diathetic operations will be briefly illustrated, for the sole purpose of delimiting valency operations against them.

3.3.2 Antipassive

The antipassive is the diathetic counterpart to the valency operation of introversion. If the direct object affected by the operation is not suppressed, but demoted, it is antipassivization rather than introversion.

- E53 a. ti he-v
 WARIS tree chop-PRS
 ‘chop down a tree’
- b. ti-m he-the-v
 tree-DAT chop-INTR-PRS
 ‘chop on a tree’ (Foley 1986:109)

E53.b shows antipassivization, with accompanying demotion of the undergoer from direct object to indirect object, indicating lack of a complete change of state.

3.3.3 Applicative

The applicative is the diathetic counterpart to the valency operation of extraversion. Whenever the alternation between two syntactic constructions one of which comprises a direct object which the other lacks does not affect the semantic roles and may instead be described by a rule of syntax, it is applicativization rather than extraversion. In that case, any direct object already present in the base version is not suppressed, but demoted. E54 illustrates the German *be-* applicative, E55 the Yucatec *-t* applicative.

- E54 a. Erna denkt (an ihre Aufgabe).
 GERMAN Linda thinks at her task
- b. Erna bedenkt ihre Aufgabe.
 Linda APPL:thinks her task
- E55 a. h áalkab-nah-en t-u beel-il in kool
 YM PRV run-CMPL-ABS.1.SG LOC-POSS.3 way-REL POSS.1.SG milpa
 ‘I ran on the way to my milpa (field)’
- b. t-in wáalkab-t-ah u beel-il in kool
 PRV-SBJ.1.SG run-TRR-CMPL POSS.3 way-REL POSS.1.SG milpa
 ‘I ran the way to my milpa’ (AVC_0003/4)

As anticipated in §3.1, a given structural process may have a purely diathetic function in some cases, but may, in addition, change the semantic roles in other cases. Thus, the Yucatec *-t* transitivization is applicativization in E55.b, but extraversion in E30f.

In some cases, the applicative and the causative are alternative means of expanding a bivalent predicate into a trivalent one. This is shown in E56:

- E56 a. anak=e luh ento ngisin-ang yeh ke lumure=e ento
 BALINESE person=DEF female that fill-CAUS water to glass=DEF that
 lit.: ‘the girl filled water into the glass’
- b. anak=e luh ento ngisin-in lumure=e ento aji yeh
 person=DEF female that fill-APPL glass=DEF that with water
 ‘the girl filled the glass with water’ (ValPal Database, Balinese, (75) and (44))

Visibly, the causative derivation of the base has the instrument of the manipulation predicate (the liquid, in this case) in direct object function, while the applicative promotes the affected object (the container) to direct object function.

3.3.4 Indirectus demotion

The same structural process that was seen in §3.2.6 to suppress the indirectus with some verbs demotes it with others. This is shown in the series E57 – E59.

- E57 a. dass Erna uns die Preise gab
 GERMAN that Linda us the awards gave
- b. dass Erna die Preise (an uns) vergab
 that Linda the awards at us gave_away
- E58 a. dass Erna uns die Briefe sandte
 GERMAN that Linda us the.PL letters sent
- b. dass Erna die Briefe (an uns) versandte
 that Linda the.PL letters at us sent_out
- E59 a. dass Erna uns das Buch lieh
 GERMAN that Linda us the book lent
- b. dass Erna das Buch (an uns) verlieh
 that Linda the book at us lent_out

The indirect object is part of the valency of the simplex in the #a versions, but at most adjoinable by a preposition in the derived #b versions. The prefix might be glossed as a valency decreaser as before. However, it is not clear that the former indirectus falls out of

verbal valency, since the preposition *an* is not replaceable by any other one and consequently appears to be valency-governed.

3.3.5 Locative shift

Manipulation (§3.2.3) is a particularly complex situation type. It involves three participants whose mutual relationships allow for two alternate conceptions of this situation type:

1. MANIPULATE (1, 2, 3) is an action-process in which 1 manipulates 2. The kind of treatment is such that it necessarily involves another object 3 which 1 uses as an instrument and which, by the manipulation, comes into contact with 2. For instance, ‘1 fills 2 with 3’ may be decomposed into s: CAUSE (1, BECOME (FULL (2))) & USE (1, 3, s). Consequently, 1 = Ac, 2 = U.aff and 3 = I.
2. MANIPULATE (1, 2, 3) is a kind of transport in which 1 causes 3 to move to 2. This conception is in consonance with the fact that 3 typically (though not in the case of ‘hit’ and ‘throw’) remains with 2. For instance, ‘1 fills 3 into 2’ (as in E56.a) may be decomposed into CAUSE (1, MOVE (3, 2) & BECOME (FULL (2))). Consequently, 1 = Ac, 2 = L.Goal and 3 = U.loc.

As may be seen, the two conceptions differ in the assignment of argument positions to participants 2 and 3: In the first conception, 2 is U, whereas in the second conception, 3 is U. In either case, U becomes direct object in English, whereas the other argument is demoted to an adjunct function in which its particular role – instrument or goal, resp. – may be coded.

In the first conception, the use of an instrument is intrinsic in the concept of the treatment, and often a verb of this semantic class involves a specific kind of instrument as a semantic feature, like *sprinkle* involves some kind of liquid. On occasions when the nature of the instrument used is not specified beyond what is implied by the lexical meaning, the instrument need not be exteriorized (s. §2.1), so that a bivalent predication MANIPULATE (1, 2) results, like *sprinkle the lawn*. This is another example of selection among the participants involved in a situation for representation in an argument frame. Thus, the double nature of manipulation is the precondition for variation concerning predicates of manipulation both across languages and within a language: On the one hand, such situations are converted, in different languages, into bivalent predicates of different argument structure. On the other hand, predicates of this class participate in peculiar valency alternations, among them the English locative shift and the alternation, seen in E56 above, between a causative and an applicative construction of the same base.

E60 and E61 illustrate locative shift in English and German:

- E60 a. Linda stuffed the chicken with onions
 b. Linda stuffed onions into the chicken
- E61 a. Erna schmierte die Achse mit Fett
 GERMAN Linda smeared the axle with grease
 b. Erna schmierte Fett an die Achse
 Linda smeared greaseat the axle

The argument frame of manipulation that allows this alternation was introduced in §3.2.3: Apart from the actor, there is an affected undergoer which may alternatively be conceived as a goal, and there is an instrument that may also be conceived as a locomoted undergoer. Apparently, these two verbal dependents swap their syntactic functions. However, as said

above, the notion of an object that serves as an instrument in the manipulation is intrinsic in the lexical meaning of such verbs. Consequently, it may easily be omitted, as in E62.a and E63.a, while omitting the goal in the #b versions leads to unacceptability.²⁰

- E62 a. Linda stuffed the chicken
b. *Linda stuffed onions

- E63 a. Erna schmierte die Achse.
GERMAN ‘Linda smeared the axle’
b. *Erna schmierte Fett
*‘Linda smeared grease’

This is, thus, not a symmetric alternation. Instead, it appears that the instrumental role of the movable participant is basic, so it cannot be rendered as in the #b sentences. By this criterion, the alternants of E60.a and E61.a, which code this participant as an instrumental argument, are taken to be basic. The #b versions are derived by applicativization of that instrumental argument. As a side effect, the affected undergoer is demoted and adjoined by a semantically appropriate preposition.

3.3.6 Indirect participation

E64f (from ValPal Database, Eastern Armenian, (26), (25), (100), (97)) and E66 display an alternation which has been dubbed ‘indirect participation’ in Lehmann et al. 2004.

- E64 a. aʒʒik-ə mak^hr-ec^h seʒan-ic^h p^hoʃi-n
ARMENIAN girl-DEF remove-AOR.3SG table-ABL dirt-DEF
‘the girl wiped the dirt from the table’

- b. aʒʒik-ə mak^hr-ec^h seʒan-i p^hoʃi-n
girl-DEF remove-AOR.3SG table-GEN dirt-DEF
‘the girl wiped the dirt from the table’

- E65 a. tʒa-n p^hajt-ic^h keʒev-ə klp-ec^h
ARMENIAN boy-DEF stick-ABL crust-DEF peel-AOR.3SG
‘the boy peeled the bark off the stick’

- b. tʒa-n klp-ec^h p^hajt-i keʒev-ə
boy-DEF peel-AOR.3SG stick-GEN crust-DEF
‘the boy peeled the bark off the stick’

- E66 a. ts’a’-b nook’ti’
YM give-CMPL.PASS dress LOC(3.SG)
‘he was given a dress’

- b. ts’a’-b u nook’
give-CMPL.PASS POSS.3 dress
‘he was given a dress’ (HK’AN 0040.1)

²⁰ By such omission tests, English verbs undergoing locative shift are assigned to different subclasses in Goldberg 1995:176-178.

The alternation concerns situations with three participants, an actor, an undergoer and another participant which may have any semantic role except undergoer. This third participant appears in a local role in E64.a and E65.a and in recipient role in E66.a. The alternants of the #b versions involve possessive constructions, with the participant in question in syntactic possessor function. This construction is quite natural if the participant in question is, in fact, the possessor of the undergoer. This semantic condition is not fulfilled in E64 and E65. In E66, he will be the possessor of the transferred object. E66.b is nevertheless the version that appears in the corpus. The alternation is peculiar in that a verbal construction alternates with a nominal construction.

3.3.7 Valency and diathetic operations

Although valency operations and diathetic operations have little in common in functional terms, they both affect the presence and syntactic function of nominal components of a clause. The following parallelisms obtain:

Deagentivization suppresses the actor, and passivization demotes it so that it may as well be absent. In an accusative language, both operations tend to entail promotion of the undergoer to subject function. Similarly, introversion suppresses the undergoer, and antipassivization demotes it so that it may as well be absent. In an ergative language, both operations tend to entail promotion of the actor to absolute function. Finally, both extraversion and applicativization imply introducing a direct object, the sole difference being that in applicativization, that argument is promoted to that position from a lower position on Diagram 2, while in extraversion it comes out of the blue. Again, the latter criterion does not establish a categorial distinction.

Because of this parallelism, many languages do not distinguish formally between deagentivization and passivization, or between introversion and antipassivization, or between extraversion and applicativization. For instance, a language may have a single operation of promoting the direct object to subject function while omitting the basic subject, and depending on contextual factors, the construction may sometimes have a passive reading and sometimes a deagentive reading. That is, for instance, the case with the Latin passive. The passive voice appearing in E67 is translated as deagentive. However, if an agent phrase like *a deo* ‘by god’ were added, E67 could only be a passive construction.

E67 et verbum caro factum est
 LATIN and word:NOM.SG flesh:NOM.SG make:PART.PERF:NOM.SG is
 ‘and the word became flesh’ (Angelus prayer)

By the same token, it is often methodologically not easy to tell valency operations and diathetic operations apart. In particular, if a diathesis leaves the number of arguments represented intact, this does not entail that it has a pure discourse function. For instance, applicativization affords higher thematicity for the newly introduced direct object. However, given the control cline regularly associated with the transitive construction, it may also be relevant in applicativization, with the consequence that the argument in question is more

intensely affected by the situation. Then the operation is, at the same time, a semantic and a diathetic operation.²¹

4 Conclusion

1. The valency of a linguistic sign is the union set of the actant positions that it provides, including the grammatical constraints associated with them.
2. The structural basis of valency is the necessity to provide structural relations among components of a verbal construction. However, such relations may also be provided by adjunction (adverbial modification).
3. Verbal valency has its functional basis in the argument frame rendering a situation core. However, the argument frame of a predicate is not given a priori, but subject to conceptual operations.
4. Participants that are part of the conceptual structure may not be assigned a semantic role and, thus, not be coded.
5. Valency frames have their functional basis in recurrent types of situations. Elementary situations are conceived holistically, and central semantic roles are based on such elementary situations.
6. Valency frames are manipulated not only by valency operations, but also by diathetic operations.

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²¹ In Yup'ik (Mithun 2000), a benefactive adjunct may be promoted to subject by causativization just in order to guarantee subject continuity, with no causation being involved semantically.

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