

FROM SYNTAX TO SEMANTICS
A Pronominal Approach to Valency in Japanese

Christiane CORMO
Katholieke Vlaamse Hogeschool

1. Introduction

In this paper I want to present a recently developed method for language description, the Pronominal Approach (PA), and its application to the syntax of Japanese, i.e. the description of valency templates of Japanese verbs.

The Pronominal Approach was conceived by Professor K. van den Eynde (1969) expounded in K. van den Eynde & C. Blanche-Benveniste (1978) and developed in C. Blanche-Benveniste et al. (1984).

Research for the compilation of valency dictionaries for French and Dutch with the PA as method, started at the University of Leuven (Belgium) with the Proton project in (1986) under the direction of Prof. Dr. K. van den Eynde.

The ultimate aim of the Proton project is to link parallel descriptions of different languages in an automated translation program. Valency dictionaries based on the PA for Dutch and French are already in use in the Siemens Metal Automatic Translation system.

Pronominal Approach provides a specific research method for the study of basic syntactic structures in any natural language. This approach wants to impose a system on linguistic material and it does so by making use of the pronouns. Pronouns do not stand for nouns. It is quite the opposite. Pronouns are methodologically anterior in that they are the basic deictic elements of a language. (Quine 1964)

This approach offers a linguistic description that is essentially based on a lexicon of construction bearing elements (i.e. verbs and adjectives) and their combinatorics. It has the advantage that one can work with elements provided by the language itself, i.e. the pronouns. The use of pronouns allows a limited field of observation on the basis of which the linguistic information is obtained by induction. This method allows for a syntactic analysis free from specific lexicalization problems while lexicalization by simple matching of paradigmatic features is anticipated.

Contrary to existing dictionaries, valency dictionaries compiled with the PA as method, allow an almost exhaustive description of the construction possibilities for each lemma.

PA allows also to link in a coherent way syntax, semantics and the lexicon.

2. Pronominal Approach (PA)

2.1. Methodology and scope of the present study.

The predictor, verb or adjective, is considered to be the nucleus of an utterance. For Japanese the present valency study is based on single verbal predictor constructions. For each predictor we will investigate all the verb-specific arguments or valents (optional as well as obligatory). Valency is thus the description of the specific construction possibilities determined by the predictor. Each predictor has a specific syntactic value in that it establishes a particular relationship between the arguments it can take. Valents can be pronominal (1), nominal (2), or sentential (3).

1) kare wa sore o kiita

he heard that (it)

2) sawadasan ga nyuusu o kiita¹

Mr. Sawada-ga / news-o / heard

Mr. Sawada heard the news

RF:P0[kare]ga p1[kore]o kiita

3) kare wa ashita tomodachi ga kuru to kiita

he- *wa* / tomorrow friend- *ga* / come- *to* / heard

he heard that tomorrow a friend is coming

RF:kare wa ashita p1 sore o kiita

RF:kare wa ashita pmanner[soo]kiita

This study will however merely concentrate on nominal valents. Also discourse effects on the realisation of a valency scheme are not taken into account for the construction capacity of the verb. Since in Japanese, the predictor is the minimal utterance, verbs no matter how many valents they may take can appear without any valent and yet form a grammatically correct utterance. Unlike in Indo-European

¹ For the meanings of the Japanese pronouns see p. 19.

languages the combination subject-predicator is not obligatory in Japanese for a normal linguistic utterance. The greater majority of Japanese sentences appear without a subject. This is, of course, when the omitted argument can be inferred from the context. The construction capacity of a given verb will be examined in free context and all the omissions of arguments, that frequently occur in spoken language, will not be taken into account.

2.1.1 Pronominal Paradigms

The PA takes advantage of the "algebraic" elements provided by language itself, namely the pronouns, based on the principle that syntactic structures in which a verbal nucleus is completed with merely pronominal elements, function as classifiers for the structures with lexical realisations. By analysing the pronominal sentence structures, abstracted from lexical variations, we can uncover the essential combinatory properties of the language involved. The syntactic features obtained from observation of pronominal sentences fully characterise the basic features obtained from observation of lexicalized sentences. In working with pronominal constructions only, one has the advantage of a limited field of observation on the basis of which the basic linguistic information can be obtained by induction. Linguistic material will be converted onto a level at which only valency bearing elements such as verbs and adjectives, and pronouns will be retained. The predicator, whether verb or adjective is thus the only lexical element of the sentence.

4) kare wa ringo o taberu <---- kare wa kore o taberu

he- *wa* / apple- *o* / eat

he eats an apple

he- *wa* / this- *o* / eat

he eats this

kare wa	kore o	taberu
---------	--------	--------

-----	-----	
-------	-------	--

watashi	sore	
---------	------	--

satoosan	nanika	
----------	--------	--

Sets of pronouns, in which each pronoun is in a relation of proportionality with the corresponding interrogative pronoun and has its specific features, are called pronominal paradigms. Since they are the basic media for reference they provide the standard for comparing lexical syntagms.²

The first practical problem to deal with, then, is the compilation of a list of pronouns and the semantic features, each of the pronouns stands for. A thorough feature analysis will learn us that not all existing pronouns need to be taken into

² W. V. O. Quine [1964] called the pronouns "basic media of reference"

consideration for valency description, since the applicability of number of referentials can be easily predicted from others whose features they share.

According to the practice for valency study in Dutch, French, Portuguese, Danish, Russian, Japanese and Chinese³, not only pronouns in the traditional sense are used but also all other elements for which a relation of proportionality exists with the lexicalized arguments and that have proportional equations between them.

For Japanese, some pronouns used in this study have to a large extent the composition of noun phrases, but they can be used because they are minimal referents. Examples are *sono toki* (that time) or *dono yoo ni* (in which way) or *nan NA* (how many NA). Henceforth pronouns will be referred to as referentials⁴.

dare	dore	doko	itsu
-----	= -----	= -----	= -----
watashi	kore	koko	sono toki
anata	sore	soko	itsumo
kare	are	asoko	itsudemo
daredemo	doredemo	dokodemo	

The interrogative referential asks for the syntagm indicated by a referential. When no interrogative referential is possible one can decide that there is no normal syntagm.

- 5) a) kare wa binboo o [ki ni shinai]
 he- *wa* / binboo- *o* / [don't care]
 he is indifferent to his poverty
 RF: p0[kare]wa p1[kore]o [ki ni shinai]

In (5a) the NP "ki ni" is not related to any referential and is thus no syntagm.

2.1.2. Relation of proportionality

The notion of proportionality existing between the referential paradigm (RP)

³These studies have been done or are under way within the frame of the Proton Project.

⁴Whether the words termed as pronouns in Japanese differ syntactically from nouns is not relevant for this study. There is a set of words that might be labelled as pronouns since it has come to have a well established pronominal use. Since Japanese has not such an obviously distinct category of pronouns and since the PA does not use only pronouns in the traditional sense, the word referential, used by Hiz [1980] seems to be more appropriate to designate the pronouns. Since they indicate the minimal explicit reference they can be called (minimal) referentials.

and the lexical, i.e. non-minimal realisations of given syntactic units, is a basic concept of the PA.

dare	=	nani	=	dono yoo ni
-----		-----		-----
kare		sore		kono yoo ni
chichi		ringo		umaku
.		.		.
.		.		.

This relation of proportionality allows us to confirm that the whole of syntactic relations of the referential phrases will be applicable on the whole of lexical phrases. A lexical phrase can be proportional to a set of underlying referentials. It is the composition of that referential set that reflects the syntactico-semantic properties of the noun phrase. Two noun phrases that contain different lexical elements but have the same relation of proportionality with the referential set have the same syntactico-semantic properties.

- 6) a) *tanakasan ga hon o kau*
 Mr. Tanaka-*ga* / book-*o* / buy
 Mr. Tanaka buys a book
 RF:p0[kare]ga p1[kore]o kau

- b) *otoosan ga ringo o taberu*
 father-*ga* / apple-*o* / eat
 father eats an apple
 RF:p0[kare]ga p1[kore]o taberu

The syntagms *tanakasan ga* and *hondasan ga* are proportionally related to the same RP p0[*kare ga ano hito ga...*]

The syntagms *hon o* and *ringo o* are related to the same paradigm p1[*kore o, kore o, sore o, sorera o...*].

Each valent is related to its own characteristic paradigm.

2.1.3. Preliminary considerations for a feature analysis of referentials

The RP's can be described by the semantic features - induced from formal data - common to the set of referentials within the paradigm. Each referential differs from all others in at least one feature. They can be schematised as proportional equations:

dare	nani	doko
-----	=	----- =
kare	are	asoko

In these equations *dare* stands to *kare* as *nani* stands to *are*, etc. These equations can be represented in a more abstract way:

A	C	A(I,1)	C(II,1)
-----	=	-----	=
B	D	B(I,2)	D(II,2)

In other words each set of referentials (*dare*, *kare*, *A*, *B*, ...) corresponds to a unique set of features (I, II, 1, 2, ...) and each RP can be described with the features of each of the referentials it contains. The paradigm p0: *dare ga* / *watashi ga*, *watashitachi ga*, *anata ga*, *anatagata ga*, *kare ga*, *karera ga*, *kanojo ga*, *kanojora ga*... can be described by the features: [\pm susp/ \pm human/ \pm individual/ \pm plural/ \pm feminine...]. The paradigm ploc ni: *dokoni*/*kokoni*, *sokoni*, *asokoni*... can be described by the features: [\pm suspensive/ \pm proximal or \pm mesial or \pm distal...].

A similar set of features can be projected onto a lexically realised syntagm each time a relation of proportionality to the corresponding referential exists(6). Each referential can be replaced by its feature-cluster and the same relation of proportionality will hold among these feature clusters. Lexicalized phrases correspond to similar sets of referentials or to similar feature-clusters.

In example (6) both the p0's of (a) and (b) are related to the same referential *kare*... If we replace the referential by its feature cluster, we get:

kare = [-interrogative, +human, +individual, -plural...]

Both p0's are proportionally related to the equation of feature clusters.

dare	=	+interrogative, +human, +individual, \pm plural...
-----	=	-----
kare	=	-interrogative, +human, +individual, -plural...

Because lexicalized phrases correspond to similar referentials they can be grouped into similar functional clauses. The RP's can be considered as prototypical markers of the syntactico-semantic relations in the language and their composition reflects the valency properties of the verb. RP's can thus be described in terms of their function in predicative constructions and of the feature-clusters of their members.

7) a) shigoto ga agatta
 work-*ga* / ended
 the work ended
 RF:p0[kore]ga agatta

b) hannin ga agatta
 criminal-*ga* / was found
 the criminal was found
 RF:p0[kare]ga agatta

In sentence (7a) the p0 has the distinctive feature [-human] and in (7b) it has the feature [+human].

Each RP, as it has a specific function, can be indicated with a label representing the referentials that may occur in that paradigm. We will use the label p0, traditionally⁵ used to indicate the subject, for what corresponds most to a similar function in Japanese i.e. the RP followed by the grammatical particle *ga*, in many cases by *wa*, when topicalized, and in some cases *ni(wa)*. The label p1 will be used for the RP of the direct object, followed by the particle *o* and P2 will be used for the RP of the indirect object with the particle *ni*. The other labels p+gram particle stand for the postpositional paradigms. The grammatical particle will indicate its function in the sentence: pni, pkara, pde, etc.

In this way we can describe the valency templates with the labels for the different valency syntagms.

8) watashi wa taroo san ni jitensha o katta
 I- *wa* / Taroo-*ni* / bicycle- *o* / bought
 I bought a bicycle for Taroo
 RF:watashi wa p2[kare]ni p1[kore]o katta

p0	p1	p2	Verb
----	----	----	------

2.1.4. The role of formulations

Not only the number of paradigms and their internal composition are taken into consideration. The predicator and its arguments are also bound by the predicators's valency referential constructs, i.e. the reformulations, the linked constructions, the related constructions and the verbal construction of the deverbative

⁵ According to the valency studies in French, Dutch, Portuguese etc.

noun(see 2.2.4). The possible referential constructions are essential elements for the determination of the valency of the verb.

- 9) a) *anata ga mata otoosan ni amaete iru ne*
 you- *wa* / again / father- *ni* / take advantage of
 you are again making up to your father

RF: p0[anata]ga mata pni[kare]ni amaete iru

Formulations:(D+Ind)pass. ,potent. ,caus. , -te aru, *RN, *RC, *LC.⁶

- b) *kare ga ano hito no shinsetsu ni amaeru*
 he- *ga* / he- *nokindness- ni* / take advantage of
 he takes advantage of his kindness

RF: p0[kare]ga pni[kore]ni amaeru

Formulations:(D)pass. ,potent. ,caus. , -te aru, RN, *RC, *LC.

Both sentences have the same reformulation possibilities except for the indirect passive that is possible in sentence (9a) but not in sentence (9b). On the basis of an exhaustive description of the features of these RP, their distribution and the correspondences between the RP in the different formulations, the primitive semantics will be derived. We thus oppose the primitive semantics of the RP to the secondary semantics which are induced by the lexicalizing elements, i.e. nouns, adjectives, infinitives and sentential complements. The whole of the formulations of a verb can realise with its arguments, forms a group of formulations.

For Japanese we have also taken into consideration the relation of the verbal construction template of the corresponding deverbative noun, i.e. a noun derived from a verb or vice versa and that we have labelled as related noun (RN). (19,20) A verb is thus defined by its number of arguments (10a) is trivalent and (10c) is bivalent, the paradigmatical composition of these arguments: (11a) [p0 Placni], (11b), [p0 pman.], the whole of its formulations of relations with its terms: (10a), (10b) where a shift of the function of the syntagms occurs and related nouns as in (19,20).

- 10) a) *kanojo ga keito de kutsushita o anda*
 she- *ga* / wool- *de* / socks- *o* / knit
 she knit socks out of wool

⁶The abbreviations stand for: D.pass. = direct passive; potent. = potentialis; caus. = causative; LC = linked construction; RN = related noun; RC = related construction; Ind.pass. = the passive formulation where the pni of the active formulation absorbs the function p0 of the passive formulation.

RF: p0[kanojo]ga pde[kore]de p1[kore]o anda

b) kanojo ga keito o kutsushita ni anda

she-*ga* / wool- *o* / sock- *ni* / knit

she knit sock out of wool

RF: p0[kanojo]ga p1[kore]o pni[kore]ni anda

c) kare ga ryokookeikaku o anda

he-*ga* / travel plan- *o* / compiled

he made a plan for a trip

RF: p0[kare]ga p1[kore]o anda

11) a) karera ga tookyoo ni itta

they-*ga* / Tokyo- *ni* / went

they went to Tokyo

RF: p0[karera]ga pni[soko]ni itta

b) hito o koohei ni atsukau

people- *o* /justly / treat

deal justly with a person

RF:p1[kare]o pmanner[sono yoo ni] atsukau

In the (10a) the paradigmatical formulation would be [p0 p1 [pde] Verb] where the ppde is optional. The (10c) sentence [p0 p1 Verb] can not have such an optional ppde. The formulations (a,b) and (c) are different in their number of arguments. The paradigmatical compositions of the p0 and p1 in both sentences are the same. The p0's are proportional to the paradigm *dare/kare...* (who/he...) and the p1's with the paradigm *nani/ kore, sore...* (what/this,that...) As for their formulation possibilities, the (a) sentences is characterised by (D+Aff)pass.,potent.,caus.,-te aru. LC, RN, *RC and the (b) sentence by (D+Aff)pass.,potent.,caus.,-te aru. LC, RN, *RC and (c)(D+Aff)pass.,potent.,caus.,-te aru,*RN,*RC,*LC. (a) and (b) are linked constructions of each other. For (c) there is no possibility of a linked construction nor is there any relation with a corresponding deverbative noun.

The potential referential constructs of a predicator, which are entirely based on the combinatory capacity of the occurring RP's as members of classes, can be roughly divided in four groups: Reformulations, Linked Constructions, Related Constructions and Related Noun Constructions.

2.2. Formulation groups

Different formulations of one and the same predicator are called "formulation group". None of these formulations is considered to be prior or more basic than the other. Passive for instance is not considered as a posteriori conversion of the active sentence. Both are reformulations of each other. (12a) is a reformulation of (12b) and vice versa.

2.2.1 Reformulation groups

One kind of formulations have been called reformulations. Reformulations are characterised by the stability of certain paradigmatical features while the verbal morphology is different. Here two different kind of reformulation groups have to be considered.

2.2.1.1 Equivalent reformulation groups.

Are considered as such those reformulations for which there exists a double implication as exists between the active/direct passive reformulations or between the active/indirect passive reformulations.

- 12) a) act.: sensei wa kono gakusei o hometa
 teacher- *wa* / that student- *o* / praised
 the teacher praises that student
 RF: p0[kare]wa p1[kare]o hometa

- b) D. pass.: kono gakusei wa sensei ni/kara homerareta
 that student- *wa* / teacher- *ni* / was praised
 that student was praised by the teacher
 RF: p0[kare]wa pni/kara[kare]ni/kara homerareta

- 13) a) act.: sensei wa seito ni eigo o oshieru
 teacher- *wa* / student- *ni* / English- *o* / teach
 the teacher teaches the students English
 RF: p0[kare]wa pni[kare]ni p1[kore]o oshieru

- b) Ind. pass: seito wa sensei ni eigo o oshierareru
 student- *wa* / teacher- *ni* / English- *o* / are taught
 the students are taught English by the teacher
 RF: p0[kare]wa pni/kara[kare]ni/kara p1[kore]o oshierareru

In both examples (12) and (13) there exists a relation of equivalence between (a) and (b): if (a) is true then (b) is true too and vice versa.

3.1.2. Implicative reformulation groups

For this type of reformulation group there is only a one-way implication, like for instance between on the one hand the active and on the other hand the affective passive or the causative, potential and -te aru formulations.

14). a) act: Noriko no oniisan ga kodomo o butta

Noriko-*nobrother-ga* / child-*o* / hit

Noriko's brother hit the child

RF:p0[kare]ga p1[kare]o butta

b) Aff. pass: Noriko wa oniisan ni kodomo o butareta

Noriko-*wa* / brother-*ni* / child(ren)-*o* / hit

Noriko had her child(ren) hit by her brother

RF:p0[kanojo]wa pni[kare]ni p1[kare]o butareta

Between the (a) and the (b) sentences of example (14) there is no relation of equivalence. There is only an implication in one direction: if (b) is true then (a) is true too, but not vice versa. The paradigmatical features of the p0 of (14a) are the same as those of the ppni/kara of (14b). The same holds for the p1 of (14a) and the p0 of (14b).

Whether reformulations exist for a given predicator cannot be defined by rules. It is unpredictable and should be investigated verb by verb. They do however occur very frequently with great regularity in the morphological changes of the verb as well as in the change of the function of the valents. Because of their frequency and their regularity they will not be considered as different readings of the same morphological verb. The (im)possibility of a reformulation (passive, causative etc.) might however determine whether a verb should be split up into different readings or not. (15), (16) Each reading refers not to a particular formulation but to a formulation group. The readings of a verb are thus defined by a group of constructions or the construction group. A single construction can be ambiguous.

15) shigoto ga agatta

work-*ga* / ended

the work was finished

RF:p0[kore]ga agatta

*Dp *Affp *caus. *potent. *te aru. *RC RN

16) gekkyuu ga agaru

salary-*ga* / raises

the salary raises

RF:p0[kore]ga agatta

*Dp Affp *caus. *potent. *te aru RC *RN

2.2.2. Linked constructions

Linked Constructions (LC) which differ from reformulations in that the verb is morphologically identical, that some valents in one formulation will be in a different syntactic position in the other formulation and/or that the valents differ in number. Since this type of link is less frequent and more specific than the passive and passive-like formulations they will be considered as a different reading of that particular verb (17).

17) a) satoosan to katoosan ga itsumo arasotte iru

Mr. Satoo *to* Mr. katoo-*ga* / always / are quarrelling

Mr. Satoo and Mr. Katoo are always quarrelling

RF:p0[karera]ga itsumo arasotte iru (monovalent)

b) satoosan ga katoosan to itsumo arasotte iru

Mr. Satoo-*ga* / Mr. katoo-*to* / always / are quarrelling

Mr. Satoo is always quarrelling with Mr. Katoo

RF:p0[kare]ga pto[kare]to itsumo arasotte iru (bivalent)

2.2.3 Related constructions

With related constructions (RC) we indicate the relations such as they exists between pairs of Transitive and Intransitive verbs, which are not morphologically identical but have a common morphological base. Though the valents and the morphology of the verbs are different, there is a relation between the RP's of the grammatical constructions of each verb of such a pair. They are verb-specific construction possibilities (18).

18) a) sensei ga kuji ni jugyoo o hajimeru (Tr)

teacher-*ga* / 9 o'clock-*ni* / lesson-*o* / begins

the teacher begins the lesson at 9 o'clock

RF:p0[kare]ga pni[sono toki]ni p1[kore]o hajimeru

- b) jugyoo ga kuji ni hajimaru (Intr)
 the lesson-*ga* / 9 o'clock-*ni* / begins
 the lesson begins at 9 o'clock

RF: p0[kore]ga pni[sono toki]ni hajimaru

2.2.4. Related noun constructions

Following examples show that a verb that is related to a noun derived from the verb in question is different from the one that hasn't such a relation. Correspondence or absence of correspondence with a related noun is one of the devices to distinguish between different readings of a verb. (19)(20)

- 19) (verb): shijin wa karera no eikoo o shi ni utatta
 poet- *wa* / they- *nog*lory- *o* / poem- *ni* / sang
 the poet sang their glory in a poem

RF: p0[kare]wa p1[sore]o ppni[sore]ni utta

- (noun): shijin wa karera no eikoo ni uta o tsukutta
 poet- *wa* / they- *nog*lory- *ni* / song- *o* / made
 the poet devoted a song to their glory

RF: p0[kare]wa pni[sore]ni p1[sore]o tsukutta

- 20) (verb): ryookoku wa jooyaku ni heiwa no jitsugen o utatta
 both countries- *wa* / treaty- *ni* / peace- *nore*alisation- *o* / sang
 both countries celebrated the realization of peace with a treaty

RF: p0[kore]wa pni[sore]ni p1[sore]o utatta

- *(noun): ryookoku wa heiwa no joouaku no uta o utatta

*RF: p0[korera]wa p1[kore]o utatta

3. Criteria for Valency

3.1. Minimal requirements for valency

A predicator can be constructed with a number of terms. Not all of these terms can be considered as valency-bound.

For a lexical group in order to be considered as a valent there is a first criterion that there must exist a relation of proportionality with a RP. Yet not all arguments

that are proportionally related to a RP can be considered as valency-bound. We have to make a distinction between verb-general and verb-specific arguments. Absence of proportionality indicates that a lexical group is not a real syntagm and as such it is the formal test for distinguishing pseudo-syntagms from real ones. Lexical noun phrases that are not in a relation of proportionality with referentials, as it is the case in locutions and proverbs, do not belong to the normal syntax of the verb. They have only the appearance of a syntagm but in fact they form an indivisible unit with the verb (21).

- 21) *kare ga binboo o [ki ni shinai]*
he-ga / poverty- o / doesn't mind
he is indifferent to his poverty
 RF: p0[kare]ga p1[kore]o ki ni shinai

In this example *ki ni* is not proportionally related to any referential and can thus not be considered as a normal syntagm.

3.2. Verb-general arguments

Arguments like lexical syntagms of place (pde), time (p[ni]) or manner (p[ni]) are related to the referential paradigm with the interrogative referentials *doko* (where), *itsu* (when) and *doo* (how) and the corresponding assertive referentials. They can occur with virtually any verb, and thus are considered as verb general.

- 22) *tookyoo de tanaka-san ni atta*
Tokyo- de / Mr. Tanaka- ni / met
I met Mr. Tanaka in Tokyo
 RF: ppde[soko]de pn1[kare]ni atta

Yet some verbs do require such syntagms in order to build grammatically correct sentences. In that case these paradigms are, of course considered as belonging to the valency of the verb. In the following example (23) a ppni (manner) is needed in order to make sense.

- 23) *kenkyuu wa kantan ni wa ikanai*
research- wa 'simply wa / doesn't go
research doesn't go easily
 RF: p0[sore]wa pmanner[sono yoo ni]wa ikanai

3.3. Verb-specific arguments

Verb specific arguments are those that are specific for a sub-class of verbs. They are considered as valents though they are not always absolutely needed to build up a well formed and complete sentence.

- 24) [yama no ue ni] hatake o tsukutte iru
 mountain- *noup-ni* / field- *o* / are making
 they are laying out fields on that mountain.

RF: pni[soko]ni p1[sore]o tsukutte iru

Contrary to the pde(location) the pni(location) (24) is only required by a sub-class of verbs and as such is verb specific and belongs to the valency of the verb.

- 25) kare wa [oosaka kara] tookyoo ni iku
 he- *wa* / [Osaka- *kara*] / Tokyo- *ni* / iku
 he goes [from Osaka] to Tokyo

RF: kare wa [pkara[soko]kara] pni[soko]ni iku

A pni(direction) (25) can also occur only with a sub-class of verbs and thus belongs to the valency of the verb. The pni(location) can be distinguished from the pni(direction) in that the pni(direction) always can, though not obligatory, be combined with a pkara.

For predicators that can appear in different formulations, i. e. with different sequences of RP's, the correspondence between a RP in one formulation with the RP in another formulation, indicates that the argument involved belongs to the valency of the verb. (10a, b)

3.3.1. Restricted proportionality

For some predicators there exists only a relation of proportionality with the interrogative referential and not with the normally corresponding assertive referentials.

- 26) .kotoshi oikutsu ni narimasu ka
 this year / how old- *ni* / become
 how old will you be this year

For the interrogative referentials *ikutsu* (how many), *ikura* (how much), *nanNA* (how many NA) there is no direct referential answer. The ultimate choice of consid-

ering the term as valency-bound or not depends on whether either of these qualifications will render the linguistic description more effective ⁷

3.3.2. Restricted lexicalization possibilities

This will be also the case for those predicates that occur with an argument that has a proportionality relation to a paradigm but have very restricted lexicalization possibilities.

27) kare wa ototo to seikaku ni ookina chigai ga aru

he-*wa* /brother-*to* / character-*ni* / big difference-*ga* / there is
there is a big difference in character between him and his brother

RF:p0[kare]wa pto[kare]to pni[sore]ni p0[sore]ga aru

In this example the lexicalization possibilities of the p0 with the pronominal paradigm (*nani, dore/kore, sore, are...*) are restricted to: *chigai* (difference), *sa* (difference, variation).

3.3.3. Optional valents.

Given the difficulty, at least in some cases, to distinguish valents from verb-general arguments, also called rection elements, one should, in these cases, adopt the methodologically most effective choice. In many cases it is the (im)possibility of an optional valent that will help determining a different reading of a verb.

28) soo iu hon ga atta

such a books-*ga* / existed

such a books existed

RF:p0[sore]ga atta

29) tookaidoosen de densha no shoototsu ga atta

Tookaidoo Line-*de* / train-*nocollision-ga* / happened

There happened a train collision on the Tookaidoo Line

RF:pde[soko]de p0[sore]ga atta

For both sentences (28) and (29) the formulation possibilities are the same only the optional ppde allows to differentiate the two readings of the same morpho-

⁷ Gebruers [1991:283] "The appropriateness of labelling a Term as valency-bound or valency-free ultimately depends on the extent to which this choice allows the overall linguistic description to be simplified. Clearly, there is no point in lexically storing combinatory characteristics which can be predicted by general rule."

logical verb.

We can summarise by saying that the valency of a verb is not only defined by the relation of proportionality with some RP and its function in the sentence, but also by the whole group of reformulations, linked constructions, related constructions and verbal constructions of the deverbative noun, that exist for a given predicator. They are essential elements for the determination of the valency of a verb.

These relationships, together with the number of valents and the composition of their pronominal paradigms determine the position of a given predicator in the syntactico-semantic network of a language. (30->34)

- 30) kodomo ga soto de booru de asonde iru
 children-*ga* / outside-*de* / ball-*de* / are playing
 the children are playing outside with a ball

RF:p0ga[kare] plocde[soko]de pde[kore]de asonde iru
 (Aff)pass.,potent.,caus.,*-te aru,RN,*RC,*LC

- 31) kodomo ga inu to asobu
 child(ren)-*ga* / dog-*to* / play
 the children play with the dog

RF:p0[kare]ga pto[sore]to asobu
 (Aff)paas.,potent.,caus.,*-te aru,RN,*RC,LC:kodomo to inu ga asobu

- 32) kodomo to inu ga asonde iru
 child(ren)-*to* dog-*ga* / are playing
 the child(ren) and the dog are playing

RF:p0[karera]ga asonde iru
 (Aff)pass.,potent.,caus.,*-te aru,RN,*RC,LC:kodomo ga inu to asonde
 iru

- 33) kare ga enoshima ni asobu
 he-*ga* / Enoshima-*ni* / asobu
 he goes to an excursion to Enoshima

RF: p0[kare]ga ppni[soko]ni asobu

(Aff)pass., *potent., caus., *-te aru, *RN, *RC, *LC

- 34) *kikai ga asonde iru*
 machine(s)-*ga* / are not in use
 the machine is not in use

RF: p0[kore]ga is not in use

*pass., *potent., caus., *-te aru, *RN, *RC, *LC

4. Conclusion.

Above I have tried to expose the essential characteristics of the PA that proves to be a general methodology that can describe the particular systemes of languages.

The PA is a very useful tool for the compilation of valency dictionaries. These can be used in machine translation systems, data base queries, natural language information systems, dialogue handling, etc. It is also useful for the development of software for spoken or written language synthesis and automatic speech recognition as well as computer aided instruction.

Japanese dictionaries provide little or no systematic information about the construction possibilities of verbs. They are only illustrated with some examples and never in an exhaustive way.

Valency dictionaries compiled according to the PA give a complete syntactic description of each verbal entry and as such are also very useful for foreign language students.

Abbreviations

Aff. pass.: *affective passive*

caus.: *causative/permissive*

CPF: *causative/permissive formulation*

D. pass.: *direct passive*

Ind. pass.: *indirect passive*

LC: *linked construction*

NA: *numerary adjunct*

NP: *noun phrase*

potent.: *potential*

p0 : *subject paradigm*
 p1 : *direct object paradigm*
 p2 : *indirect object paradigm*
 p. : *paradigm*
 RC: *related construction*
 RN: *related noun*
 RP: *referential paradigm*
 RF: *referential formula*

2) Translation of the Japanese pronouns used in this article.

dare	who
daredemo	anybody
wata(ku)shi	I, me watashitachi, we, us
anata	you
anatagata	you (plural)
anohito	he, she, him, her
anohitotachi	they, them
kare	he, him
karera	they (-F)
kanojo	she, her
kanojora	they, them (+F)
nani	what
dore	which one
doredemo	anyone
kore	this
korera	these
sore	that
sorera	those
are	that there
arera	those there
dono yoo ni	in what way
kono yoo ni	in this way
sono yoo ni	in that way
ano yoo ni	in that way there
soo	so
doko	where
dokodemo	anywhere
koko	here

soko	there
asoko	overthere
ikutsu	how many
itsu	when
itsumo	always, never
itsudemo	any time
sono toki	that time

Bibliography

- Alfonso, A. 1980. *Japanese Language Pattern*, Sophia University L.L.
- Blanche-Benveniste, Claire & van den Eynde, K. 1987. *Pronom et Syntax* Paris-Selaf.
- Eggermont, C. & van den Eynde, K. 1988. A Pronominal Basis for Computer Assisted Translation. The Proton Project. *Translation and meaning 1*
- Gebruers, R. 1991. *On Valency and Transfer-based Machine Translation*. KUL.
- Harris, Z.S. 1951. *Structural Linguistics* University of Chicago Press.
- Jacobsen, W. 1982. *Transitivity in the Japanese verbal system*. Indiana University Linguistics Club.
- Martin, Samuel, E. 1988. *A reference grammar of Japanese* Tuttle.
- Melis, L. 1987. Formulation, group de formulations et dispositifs. *Travaux de linguistique*.
- Quine, W. V. O. 1964. *From a Logical Point of View* Harvard University Press.
- Rickmeyer, J. 1977. *Kleines japanisches Valenzlexikon* Hamburg Buske Verlag.
- Somers, H. 1987. *Valency and Case in Computational Linguistics* Edinburgh University Press.
- van den Eynde, K. & Blanche-Benveniste. 1987. Syntaxe et mecanismes descriptifs: presentation de l'approche pronominale. *Cahiers de Lexicologie*, 32.1.
- van den Eynde, K. & Broeders, E. et al. 1988. The Pronominal Approach in NLP. A Pronominal Feature Analysis of Coordination in French. *Computers and Translation 3*.