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Basque genitives and part-whole relations:
typical configurations and dependences

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0. Introduction¹

Studies on meronomies (or part-whole relations) have often considered the links of this relation with other important semantic and cognitive notions among which spatial inclusion/localization, class or taxonomic inclusion, possession/ownership, etc. (Cruse 1986) (Winston et al. 1987), (Iris et al. 1988). The aim of this work is not to make a further theoretical analysis of this topic. Rather we try to bring to the fore new linguistic data which may allow to make some progress in the study of the complex links between part-whole relations and other basic semantic relations.

Basque has two distinct genitives respectively called "locative" and "possessive"². According to traditional dictionaries or grammars (Azkue 1905/1984) (Lafitte 1944/1979), the former genitive, materialized by the flexional (or, more exactly, derivational) marker *ko* (*N1ko N2*), indicates that N2 is localized at N1 (1) whereas the latter, which takes the form (*r*)*en* (*N1(r)en N2*), expresses the ownership of N2 by N1 (2).

- (1) *pentzeko zaldia*
meadow-loc gen horse-det sg (the horse of the meadow)
- (2) *Anttonen zakua*
Antton-poss gen bag-det sg (the bag of Antton)

In many cases, these traditional analyses and explanations of grammarians do not allow to decide which of these markers is the most appropriate in a given situation (Lafon 1965/1999). This kind of problem clearly occurs for the expression of part-whole relations³. For instance, one would like to know whether Basque expresses the sole localization of a part in a whole or prefers to underline some kind of ownership of the part by the whole. Or, in the case the use of both genitives would

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²The term "genitive" we use for designating these markers is nowadays widely spread and accepted. This fact is probably due to grammarians who, very early, made a parallel between these two constructions by considering that, in similar situations, French and Spanish usually call for one and the same structure. Our work reveals that these cases and the concepts which underlie their semantics are really different, so much that the term "genitive" seems not to be very accurate. Although we will follow using this term throughout the paper (for reasons of grammatical norms), it would be perhaps more appropriate to speak of "locative" versus "possessive" or "locative" versus "(possessive) genitive" (however, other locative cases exist in Basque (inessive, elative, adlative) and the word "locative" employed in isolation may result confusing).

³Although we exclusively consider here the meronomies expressed by genitive constructions, it is important to note that many other linguistic means are available for describing the relation between a part and a whole among which adjectival/participial constructions, prepositional phrases, composition verbs, etc. (Aurnague & Vieu forthcoming) (Cruse 1986) (Iris et al. 1988) (Winston et al. 1987).

be always possible, which semantic criteria lead to choose one or the other in a particular context ? Moreover, is the use of these genitives influenced by the properties which possibly differentiate distinct kinds of part-whole relations ? Indeed many other questions arise which we will mention and try to clarify all along this paper.

The study we present below completes previous works on Basque genitives and part-whole relations (Aurnague 1995) (Aurnague 1996a) (Aurnague 1996b) and intends to improve them on two main points. First, it is widely grounded on attested linguistic data provided by both questionnaires to native speakers and exploration of corpora. Second, beyond the mere description and classification of uses (mainly according to the properties and nature of part-whole relations), we try to introduce a general characterization of the semantics of the studied genitive markers. In this way we will show that the concept of typical configuration (containment, support, integrated landmarks) as well as distinct notions of dependence seem to underlie the distribution of locative and possessive genitives in expressions and utterances expressing part-whole relations.

In a first section, we make clearer the theoretical and methodological framework of this study. Then, we examine the distribution of both genitives for different kinds/classes of part-whole relations. Finally, we sum up the data obtained and we try to formulate some general properties about the semantics of the studied markers.

1. The theoretical and methodological framework

This section presents the classification of part-whole relations used in this study and provides, as well, some information about the kind of linguistic data we have analyzed.

1.1. Part-whole relations

Part-whole relations or meronomies gave rise to a wide range of studies in linguistics, psychology, philosophy and artificial intelligence (Cruse 1986), (Iris et al. 1988) (Pribbenow 1995) (Tversky 1986) (Tversky 1990) (Vieu 1991) (Winston et al. 87). Some of these works tried to introduce a classification of these relations and to discuss the validity and accuracy of such categories according to linguistic and psychological clues.

Because it is not the place to talk about it, we will not go here into a discussion about the appropriateness of existing classifications. Rather, we will give the main lines of the categorization of part-whole relations we use within this study of Basque genitives. A wider description of this theory of part-whole relations including comparisons with other kinds of classifications is available in (Vieu 91) (Aurnague & Vieu 93) and (Aurnague & Vieu forthcoming). Six classes of (spatial) part-whole relations are distinguished on the basis of linguistic data as well as inferential and deductive properties (mainly transitivity): "component-assembly" (*the wheel of the car, the keyboard of the computer*), "piece-whole" (*the top of the mountain, the front of the house, a bit of the cup*), "portion-whole" (*a slice of the cake, a glass of this delicious wine*), "substance-whole" (*the rum of the punch, the sand of the cement, the butter of the cake*), "member-collection" (*a sheep of the flock, a card of the set/pack of cards*) and "sub-collection/collection"

(*the states of Benelux are members/part of E.U.*). Besides component-assembly and member-collection which are both taken into account in (Winston et al. 1987) and (Iris et al. 1988), this classification makes a clear distinction between pieces and portions (which behave differently in particular for what concerns the alikeness between parts and wholes (homeomerous property)) and considers sub-collection/collection (unlike in (Winston et al. 1987)) as well as substance-whole (unlike in (Iris 1988)) as valid categories.

Although a contrastive characterization of these classes could be made through the sole notions of substance, collection and function, their positive definition calls for a more complex set of properties or criteria since not any material inclusion between two entities can be described as a part-whole relation. The first criterion indicates whether the part is homogeneously distributed over the whole (e.g.: distribution of substances in mixtures) or whether it occupies a specific zone. The second criterion corresponds to the existence or not of a unique substance making up the whole entity and the part. The third and fourth criteria are respectively concerned with the function that the part fulfills in the whole and with the necessity (or not) for the parts (in the whole) to be alike/similar. The fifth criterion states that the relation between the complement of a part (or "rest") and the whole has to be of the same kind than the relation between the part and the whole. The last criterion of this classification focuses on whether the parts are connected entities or not.

Substances are the only entities which need to be homogeneously distributed all over the whole entity (first criterion) and portions as well as substances have to belong to a whole which is a portion of a substance - the same substance in the case of portions and another in the case of substances - (second criterion). Whereas components and members fulfill a precise function in the whole, pieces and portions do not, in general, play any concrete functional role (third criterion). Furthermore, it seems that components and substances imply some kind of differentiation/dissimilarity of parts contrarily to portions and members for which alikeness/similarity is an important property. Moreover, the relation between the complement of a portion ("rest") and the whole-entity has to be itself a portion-whole relation. Finally, let us underline that pieces, portions and substances of a whole entity have to be topologically connected entities.

Unlike other analyses, this theory of part-whole relations takes care of defining a precise ontology/classification of spatial entities which, combined with the categorization of meronomies, allows to give an account of interesting linguistic and cognitive phenomena⁴. As it can be noted, the previously mentioned classes of part-whole relations call for entities characterized as "substances". In the

⁴The term "ontology" used throughout this work does not refer to a predetermined/immutable classification of entities but, on the contrary, denotes the semantic and conceptual categorization of entities made in language and cognition. As a consequence, the ontological notion handled here is not a rigid one and can, in particular, give rise to shifts in categories that reflect the changes of points of view that, very often, occur in language.

In other respects, the use of the adjective "spatial" is not intended to mean that an entity is immaterial. Rather, it indicates that the concerned entity (material or immaterial (space portion)) is mainly conceptualized as having a spatial nature as opposed to other kinds of entities (e.g. temporal entities) for which this property is marginal/secondary or simply missing.

following, we will show that a notion of "location" can be also defined (this notion is wider than the class of geographic locations) which is opposed to the class of entities categorized as "objects" (Aurnague 1995) (Aurnague 1996a). Furthermore, several linguistic expressions (mainly based on "Internal Localization Nouns", see section 3) seem to refer to "space portions" (*the interior/inside of the glass, the underside of the table, etc.*). These space portions do not have a truly autonomous existence but, rather, depend on other material entities (in particular locations and objects) with respect to which they are defined. Finally, let us underline that, besides the already mentioned classes of spatial entities (substances, objects, locations, space portions), part-whole relations seem to be sensitive to the ordinal distinction between atomic entities and collections (as illustrated by the relations "member-collection" and "sub-collection/collection"). Several aspects of this ontology of linguistic space (in particular the opposition location/object) will be tackled in the following sections.

In this study of the way Basque locative and possessive genitives are used for expressing part-whole relations, we will consider successively component-assembly, piece-whole, member-collection (together with sub-collection/collection) and substance-whole relations. Because they are very often expressed by other kinds of constructions than genitives (postponed massic constructions or relative constructions denoting the origin of the portion), we will leave aside here the case of portion-whole relations.

1.2. Linguistic data

In previous work on Basque genitives (Aurnague 1995) (Aurnague 1996a) we adopted an introspective approach and, consequently, these analyses were mainly based on our linguistic intuitions. However, several discussions about this work led us to notice the existence of important interpersonal differences about the way people use or judge/accept the studied expressions and utterances. Indeed, this is the reason for which we decided to go deeper in this study and to ground it on attested linguistic material. This linguistic material includes acceptability/use judgments as well as expressions appearing in texts and, accordingly, takes both an analytic and productive perspective.

The acceptability judgments were submitted to twenty native speakers of the eastern side of Basque country (Donibane-Garazi, Nafarroa-Beherea). These questionnaires were composed of forty couples of expressions (having the structure *N1 gen N2*) which only differed in the chosen genitive (see Table 1⁵). The

⁵Table 1 summarizes the main results provided by the questionnaires. Each line of the table contains the data corresponding to a specific relation (e.g.: component-assembly, substance-whole) and a particular kind of whole entity (e.g.: object, location). This data indicates the number of subjects who use the two genitives (first column), the locative genitive only (second column) or the possessive genitive only (third column) for expressing the considered relation. Because some of the cases distinguished in the table were tested through several couples of expressions (in the questionnaire), we sometimes display margins of positive answers rather than single figures. For each of the three possible choices (two genitives, locative genitive only, possessive genitive only), a percentage is also given which specifies the proportion of subjects having made the considered choice (when the relation has given rise to several tests, the percentage obviously takes into account the various expressions tested).

speakers were asked to indicate which of these expressions they should accept (for each couple), that is to say one of the two genitive constructions or both. We have to underline that most of the material included in the questionnaire concerned the component-whole relation which, as we will see, gives rise to a complex distribution of genitives. A few expressions were also intended to test the behavior of substance-whole relation. As concerns portion-whole, member-collection and sub-collection/collection relations, they were left aside because in these cases the choice of a genitive is less problematic. As we will see in the following sections, it is interesting to note that, beyond interpersonal variations, the overall data seem to bring to light some clear invariants or at least widely accepted rules. This is not a really surprising result and it confirms, in some way, the apparent distortion between individual level and community level data.

Besides these acceptability judgments, we made an inventory of genitive constructions expressing part-whole relations which appear in several books. This corpus includes four main works respectively published in the sixteenth (Leizarraga 1571/1995), seventeenth (Axular 1643/1995), nineteenth (Duvoisin 1858/1996) and twentieth (Atxaga 1995) centuries. It has to be underlined that whereas (Axular 1643/1995) (Duvoisin 1858/1996) and (Atxaga 1995) are "original" works, (Leizarraga 1571/1995) is a translation to Basque (from French) of the New Testament⁶. We also used as complementary sources of our study a recent novel (Etxamendi 1988) making use of the Navarrian dialect of Donibane-Garazi (place where the survey on genitives was made) as well as several dictionaries or encyclopedias (in particular (Lur 1991-1994) and (Sarasola 1996)). However, and contrarily to the four books mentioned above, we did not carry out a complete analysis of these works. In the following, the expressions and utterances extracted from these different books will be indicated by their corresponding code (Lei, Axu, Duv, Atx, Etx, Lur, Sar). The expressions which appear without being mentioned their source are most of the time taken from the questionnaire we submitted to speakers.

Although, in previous work on Basque genitives, we only considered synchronic data, the complexity of the distribution of these markers as well as the possible alteration/modification of the original system through the influence of Romance languages (French and Spanish) led us to integrate non contemporary sources in our corpus. Indeed, the diglossic environment of most Basque speakers and the fact that both French and Spanish use a unique (genitive) form (*NI de N2*) for expressing the distinct part-whole relations we examine here, makes very plausible the hypothesis of an altered system. However, and except slight differences, we will see that the present distribution of genitives does not differ a lot from what can be observed in old texts. These considerations about the necessity or not to resort to diachronic sources (in particular in a diglossic environment) comes within a more general discussion we will not tackle here. Let us only mention that one could wonder to what extent it is desirable to reconstruct a non altered system rather than to synchronically describe the actual facts with all

⁶This translation of the New Testament includes two annexed texts namely Kalendrera (the calender) and ABC (instruction of Cristians).

their shortcomings and incoherences. Moreover, what are the limits and rules which may guide the analysis and exploration of diachronic material ?

Finally, let us give some clarifications about the way we selected the linguistic examples that appear in this paper. As a general rule, and in conformity with our concern to consider diachronic data, we tried, for most of the described phenomena, to integrate examples extracted from the different sources previously referenced. Whereas the situations in which one of the two genitives is only used, and (to a lesser extent) those where the two markers are equally acceptable, are illustrated in a quite obvious way, the cases where one genitive is, to some degree, preferred to the other need further explanation. In such situations, we only provided a selection of the linguistic examples corresponding to the "preferred" genitive whereas most of the examples showing the existence of constructions calling for the other marker were integrated (because the latter ones were very few in comparison with the former ones). As a consequence, the battery of utterances provided for cases in which one genitive is preferred are not always representative of the proportions of actual uses.

In order to remedy to these possible distortions and to make clear the real weight of each use, we often integrate into the text the percentages we got in the corpus and/or in the questionnaire (the results of the questionnaires are also summed up in Table 1). This numerical information is only supplied for situations where the two genitives are (equally) acceptable or where one use is preferred to the other⁷. When data from the corpus and from the questionnaire are both available (mainly for component-assembly relations), important differences can sometimes appear between these two sources. Although these possible variations (in the distribution) have not been really analyzed here, they are likely to reveal some kind of contrast between written and spoken language. However, let us underline that the distributions appearing in the questionnaires often allowed us to temper the results arising from the corpus, in particular when the number of occurrences of a particular construction that appear in the studied texts is very low (speakers are often more permissive).

After this presentation of the methodological framework in which this work has been carried out we examine successively the different part-whole relations previously mentioned. The complex distribution we got for component-assembly relations led us to clearly separate linguistic data from their interpretation. As concerns other part-whole relations, the presentation of the linguistic material and its analysis/interpretation will be made at the same time.

2. Component-assembly relation

As already said, an important property of component-assembly relations relies on the fact that the part plays a functional role in the whole. Moreover, and contrarily to other kinds of meronomies, this functional property very often entails that the part has clear frontiers and is visually well identified. Let us see how Basque expresses this kind of meronymy.

⁷In the cases where one of the two constructions is only possible both the corpus and the questionnaire usually provide a 100%/0% distribution.

2.1. Linguistic data

The expression of component-assembly relations gives rise to a quite complex distribution of locative and possessive genitives.

In the case of geographic locations identified by proper names, the use of a possessive genitive is, most of the time, clearly excluded (**ren*) and the locative genitive appears as the only (genitive) construction to express the considered relation (this is also true, to some extent, for geographic locations identified by common nouns):

- (3) *Jerichoko* *murruak* (Lei)
Jericho-loc gen wall-det pl (the walls of Jericho)
- (4) *Greziako* *parte* *baten* *errege* *bati* (Axu)
Greece-loc gen part one-poss gen king one-dat
(to a king of a part of Greece)
- (5) *Untzagako* *plazan* (Sar)
Untzaga-loc gen square-ines (in the square of Untzaga)
- (6) *Donostiako* *hondartzak* (Sar)
Donostia-loc gen beach-det pl (the beaches of Donostia)
- (7) *Barcelonako* *tren geltoki* *hartan* (Atx)
Barcelona-loc gen train station that-ines
(in that train station of Barcelona)
- (8) *hiriko* *portalea* (Lei)
town-loc gen gate-det sg (the gate of the town)
- (9) *herriko* *plaza* (Sar)
town-loc gen square (the square of the town)
- (10) *ibarreko* *ibaia*
valley-loc gen river-det sg (the river of the valley)

In a similar way as for geographic locations, entities which can be categorized as houses or buildings imply, when they are designated by a proper name, the exclusive resort to the locative genitive (**ren*):

- (11) *Etxeberriko* *teilatua*
Etxeberri-loc gen roof-det sg
(the roof of (the house called) Etxeberria)
- (12) *Bidondoko* *leihoak*
Bidondo-loc gen window-det pl
(the windows of (the house called) Bidondoa)

However, and this is an important difference with the previously mentioned geographic locations, this kind of entities (buildings) seem, in the cases where they are identified by a common noun, to admit both locative and possessive genitives (Corpus: *ko* (74%), *ren* (26%); Questionnaire: both genitives (33,5%), only *ko* (41,5%), only *ren* (25%)). It is important to note that, in such situations, the resort to the possessive genitive is likely to be more frequent in the present

state of the language than in ancient writings. Let us add that, even in the present uses, interesting differences seem to affect the acceptability judgments according to the nature of the entity pointed out (for instance the resort to the locative genitive is higher for a simple house than for a church or a castle). In section 2.2.3.2 we will see that such a phenomenon may be explained through the referential notion of "specification".

- (13) *templeko pinakle gainean* (Lei)
 temple-loc gen pinnacle top-ines
 (on top of the pinnacle of the temple)
- (14) *presondegiko bortak* (Lei)
 jail-loc gen door-det pl (the doors of the jail)
- (15) *etxeko atek* (Axu)
 house-loc gen door-det pl (the doors of the house)
- (16) *gazteluko dorre nagusian* (Sar)
 castle-loc gen tower main-ines (in the main tower of the castle)
- (17) *eliza nagusiko dorre berri goititua* (Sar)
 church main-loc gen tower new heighten-det sg
 (the new heightened tower of the main church)
- (18) *ziegako leihoa* (Atx)
 cell-loc gen window-det sg (the window of the cell)
- (19) *haien habitazionearen mugarriak* (Lei)
 their house-poss gen boundary stone-det pl
 (the boundary stones of their house)
- (20) *etxolaren lastozko estalkia* (Sar)
 shed-poss gen straw-instr-ko roof-det sg
 (the straw roof of the shed)
- (21) *haize errotaren adarretako bakoitza* (Sar)
 wind mill-poss gen branch-det pl-loc gen each
 (each of the branches/sails of the windmill)
- (22) *geltokiaren hormak* (Atx)
 train station-poss gen wall-det pl (the walls of the train station)
- (23) *motelaren kafetegian* (Atx)
 motel-poss gen cafeteria-ines (in the cafeteria of the motel)

Entities which are neither categorized as geographic locations nor as buildings display a fairly distinct behavior. These entity nouns, which as we will show in the following section can be characterized as denoting objects, can always be combined with the possessive genitive whereas their association to a locative genitive seems to be submitted to particular constraints. Three cases of object-type entities can be distinguished according to genitives behavior.

Entities (mainly artifacts) whose main function is to contain or to support (containment or support-type configurations), seem to allow the use of both

locative and possessive genitives⁸ (Corpus: *ko* (11,5%), *ren* (88,5%);
Questionnaire: both genitives (53,7%), only *ko* (12,8%), only *ren* (33,5%)):

- (24) *bizikletako aulkian* (Sar)
bicycle-loc gen seat-ines (on the seat of the bicycle)
- (25) *autobuseko leihoaren bestaldean* (Atx)
bus-loc gen window-poss gen other side-ines
(on the other side of the window of the bus)
- (26) *eserlekuko besoan* (Atx)
seat-loc gen armrest-ines
(on the arm of the seat/armchair)
- (27) *mahaiko zangoa*
table-loc gen leg-det sg (the leg of the table)
- (28) *armairuko atea*
cupboard-loc gen door-det sg (the door of the cupboard)
- (29) *orgaren edo gurdiaren arroda bezala* (Axu)
bullock-cart-poss gen or cart-poss gen wheel as
(as the wheel of the cart)
- (30) *untziaren belak* (Axu)
boat-poss gen sail-det pl (the sails of the boat)
- (31) *txirrinduaren gidoina* (Sar)
bicycle-poss gen handlebar-det sg (the handlebars of the bicycle)
- (32) *automobilaren motorra* (Sar)
car-poss gen engine-det sg (the engine of the car)
- (33) *kutxaren baldia* (Sar)
chest-poss gen lip-det sg (the lip of the chest)
- (34) *eserlekuaren heldulekuan* (Atx)
seat-poss gen handle-ines (on the handle of the seat (in a bus))
- (35) *taxiaren ateraino* (Atx)
taxi-poss gendoor-adl (to the door of the taxi)

On the contrary, the acceptability judgments as well as the studied corpus show that when an entity (which is not a geographic location or a building) is not intended to define a containment or support configuration, the use of a locative

⁸However, in these cases, old speakers seem to prefer the use of a possessive genitive so that it is quite possible to think that the resort to the locative genitive is a recent phenomenon (at least as a generalized means/tool). This assumption is confirmed by what we observed in old writings.

More generally, speakers seem to make a wider use of the locative genitive than what occurs in the texts that were studied. So, we are faced, here, with a situation where data provided by the corpus and information arising from the questionnaire do not really coincide. Whereas the sole corpus may have led us to conclude to a clearly preferential resort to the possessive genitive, data from the questionnaire seem to indicate that both constructions are accepted by the speakers (although they are probably not equivalent, in particular for what concerns markedness).

genitive sounds odd (?*ko*) and the possessive marker is usually preferred (Corpus: *ko* (0%), *ren* (100%); Questionnaire: both genitives (8%), only *ko* (1%), only *ren* (91%)):

- (36) *ezpataren ahoz* (Lei)
 sword-poss gen blade-instr (with/from the blade of the sword)
- (37) *orratzaren xulotik* (Lei)
 needle-poss gen hole-elat (from the hole of the needle)
- (38) *haizkoraren muloaz* (Duv)
 axe-poss gen fitting part-instr
 (with the (handle) fitting/fixing part of the axe)
- (39) *sardearen/aizkoraren giderra* (Sar)
 pitchfork-poss gen/axe-poss gen handle-det sg
 (the handle of the pitchfork/axe)
- (40) *zerraren hortzak* (Sar)
 saw-poss gen tooth-det pl (the teeth of the saw)
- (41) *zigarroaren fita* (Atx)
 cigarette-poss gen filter (the filter of the cigarette)

The difficulty to combine the locative genitive with nouns that refer to objects which are not intrinsically intended to contain/support is even clearer in the case of natural entities (that is to say entities which are not artifacts). Whereas the analysis of our corpus showed that component-assembly relations calling for this kind of entities are systematically expressed by means of a possessive genitive (Corpus: *ko* (0%), *ren* (100%)), the speakers we questioned rejected even more the use of a locative (??*ko*) for this kind of entities (Questionnaire: both genitives (2%), only *ko* (0%), only *ren* (98%)) than in the previous case of non containing/supporting objects (artifacts).

- (42) *palma zuhaitzaren adarrak* (Axu)
 palm tree-poss gen branch-det pl (the leaves of the palm tree)
- (43) *zuhaitzaren erroari/ondoari kheinatua dagokala* (Axu)
 tree-poss gen root-dat/trunk-dat pointed be.pres-that
 (that it is pointed at the root/trunk of the tree)
- (44) *belarraren erroetara* (Duv)
 grass-gen poss root-det pl-adl (to the roots of the grass)
- (45) *haritzaren adaburu guzia* (Duv)
 oak-poss gen foliage all-det sg (all the foliage of the oak)
- (46) *ogi zohiaren lastoa* (Duv)
 corn ripe-poss gen stalk-det sg (the stalk/straw of the ripe corn)
- (47) *otsalahar baten adar ziztadunak* (Etx)
 wild rosebush one-poss gen branch thorny-det pl
 (the thorny branches of a wild rosebush)

- (48) *lorearen* *korola* (Sar)
flower-poss gen corolla (the corolla of the flower)
- (49) *urraren* *oskola* (Sar)
hazel-poss gen shell-det sg (the shell of the hazel)
- (50) *azaren* *zurtoina* (Sar)
cabbage-poss gen stem-det sg (the stem of the cabbage)
- (51) *fruituaren* *azala* (Sar)
fruit-poss gen skin-det sg (the skin of the fruit)

As a conclusion, these data show that three main cases have to be distinguished when analyzing the expression of component-assembly relations. The first case corresponds to geographic entities (designated by proper names as well as by common nouns) which, as we saw, are always associated with the locative genitive. Although the nouns which refer to buildings also give rise to a widespread use of the locative genitive, their association with the possessive genitive is sometimes possible depending on the nature of the considered noun (contrarily to proper names of buildings, common nouns usually admit the possessive genitive). Finally, entities which are neither geographic locations nor buildings (that is to say objects) can always be combined with the possessive genitive, the use of a locative marker being conditioned by their ability to contain or support.

The notion of acceptability we use in this work (and this is true for most research in semantics) is not a narrow/strict one but rather allows a certain kind of flexibility. In particular, the fact that a given form is, in most situations, odd and not used by speakers or writers does not prevent the existence of specific contexts where such a structure could become acceptable. In the following we try to bring to the fore the main factors that could explain which genitive can be used for expressing a given kind of part-whole relation in a "normal" situation but we also intent to characterize some of the contexts which are susceptible to further the resort to non canonical/usual forms.

2.2. Interpretation

After this presentation of linguistic data related to the component-assembly relation, we try, in the following, to analyze and interpret the complex distribution of genitives. We examine successively the constraints which govern the use of locative and possessive genitives. Then we introduce a set of further properties which may also influence the use of these markers.

2.2.1. Locative genitive: ontology of spatial entities and typical configurations

2.2.1.1. Ontology: the location/object distinction

As we showed in previous analyses of part-whole relations in Basque (Aurnague 1995) (Aurnague 1996a), the use of the locative genitive seems to be strongly related to a notion of "location" which relies on two main properties. A spatial entity can be categorized as being a location if it is motionless in a given framework and, furthermore, if there exists a space portion defined with respect to

that (material) entity. In particular, this associated space portion makes possible the localization of another entity at this "location". Geographic locations and buildings/houses fulfill these two constraints. First, they are all fixed entities in the most obvious framework of the earth surface. Second, they have the ability to introduce space portions - their interiors - in which other entities can be localized. The analysis of the French preposition *dans* (in) (Vieu 1991) (Aurnague & Vieu 1993) led to distinguish several kinds of space portions or interiors. The most classical interiors correspond to entities such as glasses, cupboards or buildings, which can limit both vertical and lateral movements of a located entity (notion of containment). If, unlike buildings, they are not strictly containing entities, geographic locations seem to also introduce some kind of space portions with horizontal and vertical limits. Indeed, whereas horizontal boundaries of geographic locations are often materialized by walls, fences or (material as well as abstract) borders, the existence of a vertical limitation is revealed, for instance, by the fact that a bird flying over a field will only be said *in the field* if it is not far enough from the ground/soil level (compare the flight of a chaffinch with that of an eagle or a plane). These remarks confirm the existence of space portions related to geographic locations and buildings and, together with the motionless property already mentioned, indicate that these entities can be characterized as locations. In section 3, we will show that this notion of location is not restricted to geographic locations and buildings but also includes parts/zones pointed out by the markers we call Internal Localization Nouns (*gain/goi* (top), *aitzin/aurre* (front), *barne/barren* (interior) *hegi/bazter/ertz* (edge), *buru/mutur* (extremity), etc.). The observation of genitive constructions expressing part-whole relations show that entity nouns corresponding to the definition of location previously introduced (nouns of geographic locations and buildings/houses) can always be combined with the locative genitive (3-23). On the contrary, when a spatial entity violates the constraints underlying this notion - fixedness and existence of a space portion - the use of this spatial marker is not always possible (24-51). These entities, which can be characterized in a symmetrical way by their movable/mobile or/and purely material nature (no space portion), will be, henceforth, called objects. Because it always allows to resort to the locative genitive, the notion of location we just introduced seems to be, somehow, related to the semantics of this marker. Indeed, this assumption will be confirmed by the behavior of Internal Localization Nouns (section 3) which, as we already said, can also be categorized as locations.

2.2.1.2. Typical configurations

Even if the location notion makes the resort to a locative genitive possible, the use of this marker does not imply that the concerned entities necessarily have to be locations. This is illustrated by examples (24-35) where entities conceptualized as objects can be associated with the locative genitive. So, and contrarily to what was claimed in previous works (Aurnague 1995) (Aurnague 1996a), we will show that the location notion is not the only factor involved in the functioning of the locative genitive. Rather, it appears that the part of this ontological notion is indirectly entailed by important functional properties governing the semantics of this marker.

The contrastive analysis of examples (24-51) reveals that the combination of the locative genitive with nouns referring to objects is often possible when the considered object is intended to localize other spatial entities through a typical relation/configuration of containment (car, bus, cupboard, etc.) or support (bicycle, chair, table, etc.). It is also likely that entities characterized as "integrated sites/landmarks" (Vandeloise 1988) and which, because of their function, give rise to a particular kind of interaction/routine (pianos, benches, etc.) with the user can be associated with the locative genitive. A further observation, which is probably directly entailed by the notion of typical configuration (containment, support, integrated landmarks), is that most of the objects that can be combined with the locative genitive are artifacts rather than natural entities. Indeed, and although some kind of containment, support or integrated function can sometimes arise with natural entities categorized as objects, such a property is much rarer and often less clear than in the case of artifacts. Let us underline that, even in situations where natural objects are used for containing or supporting other entities, this ability is usually not an intrinsic function of the considered (natural) object (contrarily to artifacts which are explicitly intended to fulfill functions such as containment, support or integrated routine).

The fact that functional notions such as containment, support or even integrated landmarks govern the use of the locative genitive is not really surprising.

First, it is well known that containment and support play a great part in the semantics of linguistic and cognitive space (Herskovits 1986) (Talmy 1983) (Vandeloise 1986). This is illustrated, for instance, by the semantics of French prepositions *dans* (in) and *sur* (on) (Aurnague 1991) (Aurnague & Vieu 1993) (Vandeloise 1986) (Vieu 1991). Henceforth, and following C. Vandeloise (Vandeloise 1987), entities which give rise to containment, support or integrated configurations will be described as configurational (as one could note it, containment, support and integrated routines were already called typical configurations in the previous paragraphs). Indeed, C. Vandeloise clearly distinguishes prepositions like *à* (at) which (in some of its uses) relate a trajector to a landmark whose location/position has to be well known (in those uses *à* cannot be associated with an indefinite article: **Jean est à un chalet* (Jean is at a chalet)/*Jean est au chalet* (Jean is at the chalet)) from configurational prepositions such as *dans* (in) and *sur* (on) whose main function is to provide the "access relation" (containment, support, etc.) occurring between the trajector and the landmark independently of the definite/specified character of the latter (these prepositions can be combined with indefinite landmarks: *Jean est dans un chalet* (Jean is in a chalet))⁹.

⁹The uses of the preposition *à* (at) which are based on integrated landmarks usually call for generic definite articles (*Pierre est au piano* (Pierre is at the piano)). Because of this generic aspect, these uses of *à* cannot be strictly considered as locational constructions. Moreover, the important constraints on the spatial arrangement of the trajector and the landmark often induced by the underlying routines makes that these uses of *à* seem to better fit the definition of configurational prepositions than that of locational ones. For all these reasons, we decided to include integrated landmarks in the class of configurational entities together with entities that suggest containment or support.

Second, the role of the previously mentioned semantic properties seems to also fit with what has been proposed in several morphosyntactic works on Basque (Eguzkitza 1993) (de Rijk 1993) according to which the locative genitive is not a real inflexional case (directly associated with the root of the word) but, rather, behaves as a derivational marker that could be aggregated to any locative case (or more generally to prepositional phrases). Such an assumption entails, among other things, that expressions such as *etxeko* (house + locative genitive) or *mahaiko* (table + locative genitive) would derive from underlying forms integrating the inessive case like *etxengo/ko* (house + inessive + locative genitive) or *mahaineango/ko* (table + inessive + locative genitive)¹⁰. At this point, it is important to underline that, in a previous work on the semantics of Basque inessive (Aurnague 1995), we noticed that the interpretation of this very general spatial marker is much easier when the noun with which it is associated refers to spatial entities calling for notions of containment, support or integrated landmarks (similar spatial markers exist in languages such as Japanese (Tagashira 1993) or Zulu (Taylor 1996)). In the absence of such functional properties the interpretation of the sole inessive becomes really difficult and odd and, in many cases, people need to integrate more linguistic material into the utterance (in particular Internal Localization Nouns which make the localization more precise and efficient). So, and to sum up these results, the part played by containment, support or integrated landmarks in the behavior of the locative genitive seems to fully coincide with the previously mentioned morphosyntactic and semantic assumptions. In this way, while morphosyntactic data predict the existence of an underlying structure in which the locative genitive would be combined with inessive (rather than directly associated with the noun), the semantic analysis of the latter marker shows that its interpretation precisely calls for the notion of typical configuration (containment, support, integrated landmarks). One may wonder why typical configurations are restricted to the three mentioned kinds of spatial relations. Beyond the universal character of these relations, cross-linguistic works on "general" spatial markers similar to Basque inessive (among which the studies on Japanese and Zulu previously referenced) seem to indicate that, in many languages, these three notions (containment, support, integrated landmarks) are sufficient for grasping the wide range of typical uses associated with entities of the world¹¹. This is, indeed, a quite fascinating point for the study of linguistic and cognitive space.

A deeper analysis of typical configurations may allow to explain some noticeable differences about the acceptability of the locative genitive we observed between containing or supporting objects (e.g.: car/bus/plane). The application of this notion seems flexible enough so that the more an entity is familiar to the speaker, the more he will make use of its containing or supporting ability. In particular the habitual and durable use of an entity for containment or support purposes is likely

¹⁰A direct consequence of this assumption is that a deletion rule has to be introduced in order to account for the absence of inessive case in the surface forms of the considered expressions.

¹¹However, let us stress that, in accordance with data on Internal Localization Nouns brought to the fore in section 3, the notion of containment has to be taken here in its larger sense because it also covers situations of inclusion in a (non strictly containing) space portion defined with respect to a spatial entity.

to make more salient its ability to give rise to typical configurations. In other words, the knowledge we have about an entity and our propensity to conceptualize it as localizing (via containment, support or integrated routines) other elements (distinct entities or parts) probably condition the resort to the locative genitive. The previous facts and remarks show that the semantics of the locative genitive calls for a notion of typical configuration which depends on properties of entities such as containment, support or integrated landmarks. Because locations define (associated) space portions (interiors) and can be used for supporting or containing other entities, their association to the locative genitive is never problematic. On the contrary, this marker is not systematically associated with all objects but seems to be better accepted for those entities which involve containment, support or integrated landmarks/routines and give rise to a typical configuration. So, we clearly see that this notion of typical configuration not only allows us to give an account of fine grained differences in the behavior of the locative genitive (for instance between distinct kinds of objects) but also clearly explains the (indirect) role of spatial ontology (and more precisely of the opposition location/object) in the distribution of this marker.

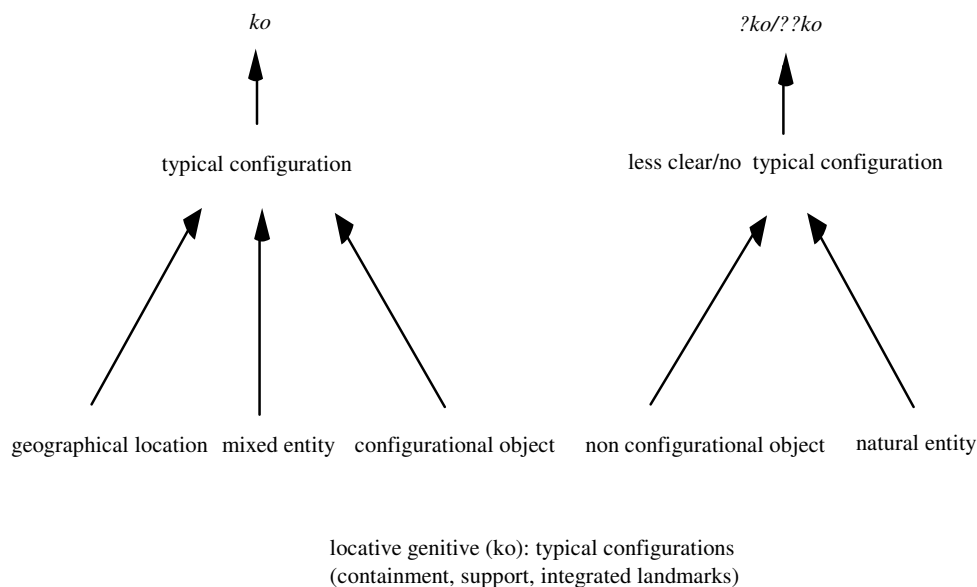


Figure 1: component-assembly relations and locative genitive

2.2.2. Possessive genitive: internal structure of spatial entities and dependences

The distribution of the possessive genitive may be defined in a purely negative way stating that every noun referring to a non-geographic entity (building or object) can be combined with this marker. Such a characterization would be exclusively ontological and it would not allow to grasp the real semantic content of the possessive genitive. In the following we first try to bring to the fore the reasons for which ontological notions seem to be involved in the distribution of

the possessive marker by focusing on the internal structure of entities. In a second part, we go deeper in this analysis and we show that the role of ontology and internal structure is, here again, indirectly entailed by several notions of dependence.

2.2.2.1. Ontology and internal structure of entities

As we previously emphasized, an important property of component-assembly relations relies on the fact that the considered parts have to fulfill a functional role in the whole entity. Although many parts of objects and locations are related to some kind of functional role, this property is often better defined for the former category than for the latter. Even if the intrinsic function of locations can be sometimes relatively clear (roads, car parks, rivers, oases, fields, forests, etc.), it is often difficult to determine how these potential parts contribute to the functioning of an inclusive whole (road/mountain, car park/city, oasis/desert, field/valley, etc.). In many cases, the difficulties encountered when determining the functional contribution of the part to the whole is indeed the direct consequence of the fact that the function of the whole location is itself not clear at all. So, it appears that the internal structure of locations entailed by the functional links between parts and wholes is not always obvious to capture. On the contrary, objects are, most of the time, well structured and the functional role a given part plays in the whole entity seems to be clearer. Indeed, and even if one is not always aware of the exact function fulfilled by a particular part of an object (leg/table, handle/knife, battery/engine, root/tree, leaves/plant, etc.), the existence of such function is at least presupposed.

Let us underline that these functional considerations appear as being strongly related to geometrical and visual properties. In particular, it appears that the functional structuring of entities very often entails that parts are also well delimited zones. In this way parts of objects usually have well defined limits or boundaries which is not always the case for locations.

This notion of functional structure of entities seems to be strongly related to the distribution of the possessive genitive. Objects which, as we just saw, are often well structured can be combined with the possessive genitive (24-51). On the contrary, the fuzzy functional links relating locations seem to exclude the use of this marker (3-10). But the most interesting behavior probably concerns entities we categorized as buildings/houses. We showed that, in the same way as geographic locations, those entities fit the definition we proposed for locations. Here it can also be noticed that, like objects, they generally display a precise functional (and geometrical) arrangement of parts (doors, roof, walls, rooms, etc.). So, from this point of view, buildings/house seem to be closer to objects than to geographic locations and this functional property also explains that (as objects but unlike geographic locations) the nouns which refer to buildings can be combined with the possessive genitive (13-23). So, buildings-type entities bear both properties of locations and characteristics of objects and the use of one or the other genitive constitutes a means of focusing one of these two facets (locative genitive: location facet, possessive genitive: object facet). Because of this two side identity and the possibility we have to change our perspective on them, these

entities will be called "mixed entities" henceforth¹². Although this tendency to use the two genitives (with building-type entities) appears as quite recent (see linguistic data) we think that a semantic analysis has to give an account of such a phenomenon, explaining, as we tried to do, the reasons for which it was not extended to geographic entities. Moreover, let us recall that this behavior of mixed entities is restricted to the cases where they are identified by a common noun. By focusing on the well known and specified character of the entity (see section 2.2.3.2 on specification) , the use of a proper name seems to force a location perspective so that the locative genitive is the only valid marker (11-12).

As we have underscored, the functional structure of spatial entities is, somehow, related to the distribution of the possessive genitive. In this way, entities displaying a clear functional structure such as objects and mixed entities can be associated with this marker whereas geographic locations cannot. A further argument of the validity of these functional properties relies on the fact that, even with geographic entities, the use of a possessive genitive becomes much more acceptable when they have a clearer structure:

- (52) *sumendiaren* *kratera* (Lur)
 volcano-poss gen crater-det sg (the crater of the volcano)
- (53) *leizearen* *pareta*
 cave-poss gen wall (the wall of the cave)
- (54) *zubiaren* *makoak* (Sar)
 bridge-poss gen arche-det pl (the arches of the bridge)
- (55) *Oria ibaiaren* *iturburuetan* (Sar)
 Oria river-poss gen source-det pl-ines (at the sources of the river
 Oria)
- (56) *ibaiaren* *bokalea*
 river-poss gen mouth-det sg (the mouth of the river)

2.2.2.2. Part-whole dependences

Here, we show that several kinds of dependences seem to govern the uses of the possessive genitive. In a similar way as for typical configurations it will appear that the part of ontology and functional structure (in the distribution of this marker) is, actually, indirectly entailed by these notions.

The notion of dependence is really complex and quite difficult to grasp. First let us consider functional dependences. In (Aurnague & Vieu forthcoming) several situations of dependence are distinguished in order to tackle the transitive behavior of component-assembly relations. A first case corresponds to (part) entities that, when actually in function (their canonical intended function being given by their lexical designation), imply the existence of a whole of which they

¹²Let us underline that the word "mixed" does not mean that the concerned entities are considered as being, at the same time, objects and locations. Rather, it indicates that some properties of these entities belong to the definition of objects while other ones fulfill the characteristics of locations. As a consequence, the focusing on one subset of properties or the other allows to conceptualize them from distinct points of view.

constitute a component. For instance handles are intended to move other entities (doors, bags, furniture), bulbs are associated with lamps in order to light and (ink) cartridges provide ink to pens. A second category covers situations where both the part and the whole imply the existence of a third spatial entity which is larger than the former and is a part of the latter. This is the case of a window and a house, the former having to be part of a wall and the latter implying the presence of walls. In a third category, we find entities whose inherent function is a special case of the inherent function of the whole. In other words we could say that the function of the part and the function of the whole are related by a taxonomic link. This is what occurs with a clock in the dashboard of a car, the function of the clock being to measure time and the function of the dashboard being to provide measures and information. The last case is symmetrical to the first one in the sense that the presence of the part entity is entailed by the function fulfilled by the whole. The (exterior) walls of a building and the engine of a car fall in this category because buildings have to include walls for delimiting an enclosed space and motor cars need engines in order to move. These different configurations illustrate well the complexity of functional dependences involved in component-assembly relations. They also show that the functional structure of an entity and more particularly the functional links between parts and wholes are strongly related to the dependences which can arise.

Indeed, the notion of functional structure previously described is probably indirectly involved in the behavior of the possessive genitive through the more general notion of dependence. In this way, entities which have a clear functional structure (objects and mixed entities) may also display strong dependences between parts and wholes, making the resort to the genitive marker possible. On the contrary the fuzzy functional structure of locations would not always entail such (functional) dependences and, as a consequence, the use of a possessive genitive should be ruled out.

We give, in the following, more clues about the role played by functional dependence in the semantics of the possessive genitive. First, let us consider the influence of this notion in situations where both locative and possessive genitives can be used. This is the case, for instance, of a containing object like a car. In such a case, the acceptability judgments show that the resort to the possessive genitive is stronger for the engine of the car than for parts like doors or tires/wheels (see Table 1). This is probably due to the important role played by the engine (with respect to the main function of a car) and the strong functional dependence it entails (opposition between necessary part/contingent part). Whereas every car (or more generally any self-propelled vehicle) has to be equipped with an engine, doors do not constitute necessary parts of such entities and tires/wheels could be very well replaced by other kinds of mechanisms (tacked vehicles, air cushions, etc.)¹³. The comparison between parts like tires and engines brings also to the fore

¹³It is clear that the functional dependences underlying the opposition between necessary and contingent parts are generic rather than specific (we don't consider the relation between a particular car and engine but rather the functional link usually occurring between cars and engines). This is different from the functional dependences considered further when discussing the opposition between stable and ephemeral parts (in this case we will actually examine the link between specific occurrences of spatial entities).

the fact that the notion of dependence is partially related to the opposition between stable and ephemeral/changing parts (this opposition can influence functional dependence by reinforcing or weakening it). Let us stress that what is considered now is the dependence of a particular occurrence of an entity (e.g.: a given tire) on the whole of which it is a part rather than the relation between a part as a generic entity (a tire in general) and a generic whole. This aspect of functional dependence allows to explain apparently deviant uses within situations which, in principle, should only admit one of the two genitives. In this way, if the use of a locative genitive is rare and often odd for most non configurational entities (36-51), it seems to be more acceptable with ephemeral parts like strings or fruits than with stable ones (handle, trunk, etc.) which imply a strong functional dependence:

- (57) *arrabitaren hariak*
violin-poss gen string-det pl (the strings of-poss the violin)
- (58) *arrabitako hariak*
violin-loc gen string-det pl (the strings of-loc the violin)
- (59) *arrabitaren giderra*
violin-poss gen handle-det sg (the handle of-poss the violin)
- (60) *?arrabitako giderra*
violin-loc gen handle-det sg (the handle of-loc the violin)
- (61) *sagarrondoaren fruituak*
apple tree-poss gen fruit-det pl (the fruits of-poss the apple tree)
- (62) *sagarrondoko fruituak*
apple tree-loc gen fruit-det pl (the fruits of-loc the apple tree)
- (63) *sagarrondoaren enborra*
apple tree-poss gen trunk-det sg (the trunk of-poss the apple tree)
- (64) *??sagarrondoko enborra*
apple tree-loc gen trunk-det sg (the trunk of-loc the apple tree)

Conversely, configurations which involve a simple localization rather than a real part-whole relation and (therefore) accept the use of a locative genitive can, sometimes, be also described by means of a possessive marker. These configurations often presuppose that the considered localization link has a stable character and not a contingent one, favoring, in some way, the emergence of a functional dependence:

- (65) *batelaren kordak (Lei)*
small boat-poss gen rope-det pl (the ropes of the small boat)
- (66) *txaluparen arrauak (Axu)*
small boat-poss gen oar-det pl (the oars of the small boat)
- (67) *informazio bulegoaren mostradorea (Atx)*
information office-poss gen counter-det sg

Let us also stress that, as a general rule, we will not tackle the classical problems of identity and the difficult questions raised by the replacement of parts (Thesee's ship).

(the counter of the information office/service)

This is a further illustration of the way spatial stability influences functional dependence (reinforcement/weakening) and indirectly acts on the behavior of the possessive genitive. Indeed, the fact that functional dependence is not restricted to part-whole relations but is involved in other kinds of stable spatial configurations coincides with other linguistic observations. In this way, the study of French verbs taking the prefix *é-* (*ébrancher* (to prune), *écosser* (to shell), *édenter* (to break the teeth of), etc.) showed that the entities denoted by the nominal root of the verb and by its complement are linked by a semantic relation of "usual localization/attachment" which is more general than the sole meronomies and also includes cases of production (*égoutter* (to wring out, to drain)) and fixation/localization (*épouiller* (to delouse)) (Aurnague & Plenat 1996) (Aurnague & Plénat 1997). Let us underline that this notion of "usual localization/attachment" entails, by definition, the stable character of the considered relation and very often involves some kind of functional dependence. The possessive genitive seems to be sensitive to another kind of dependence related to the very existence of parts and wholes. The autonomous emergence/creation of a part (with respect to a whole) has been directly or indirectly mentioned in many works on part-whole relations (Cruse 1986) (Winston et al. 1987) (Iris et al. 1988). This notion underlies, among other things, the distinction usually made between natural entities and artifacts¹⁴. Indeed, the case of natural entities reveals that existential constraints on parts and wholes very often entail important functional links between these entities so that existential and functional dependences appear as strongly related notions (at least for this class of part-whole relations). In particular, the impossibility for a natural part to be created independently of the whole entity leads to a very strong functional dependence of the former on the latter¹⁵. As we showed before, it seems difficult to use the locative genitive with objects which are not intended to define a typical configuration such as containment or support. In the description of linguistic data, we emphasized that the resort to the locative genitive is even more problematic for natural objects (42-51) than for artifacts (36-41). These observations seem to indicate that, beyond the functional aspects, the behavior of the possessive genitive is also conditioned by existential dependence. In accordance with what we indicated just above, we could say that existential dependence maximizes, in

¹⁴ This distinction constitutes a basic criterion for the cognitive categorization of entities and plays an important part in linguistic phenomena like the one we analyze in this work. However, this opposition is very difficult to grasp and define and it seems that it does not really stand up to analysis: for some entities of the world (in particular those entities whose existence is the consequence of both human activities and natural processes) it is quite impossible to decide to which of these categories they belong. Indeed, this is not the sole "incomplete" notion which is involved in human cognition.

¹⁵ In this work we only consider the most typical case of natural entities where the parts cannot emerge out of the whole and cannot be moved to another natural whole (interchanged) either. It is obvious that a deeper analysis of existential dependences would need to distinguish between these two notions - genesical dependence and interchangeability - (Aurnague & Vieu forthcoming). This may allow to account for parts of natural entities which, as a consequence of human activities, can be shifted from an entity to another (grafts, transplants, etc.)

some way, functional dependences between parts and wholes, making the use of the possessive genitive even stronger. Let us stress again that this maximization seems to mainly follow from the fact that the emergence/creation of parts is totally dependent on the whole entity. However, and as illustrated in examples (57-64), the more or less stable nature of parts is an important factor to take into account when evaluating dependences. In the case of natural entities which is considered here, it seems that the ephemeral character of a part often only implies the dependence of the part on the whole (that is to say the one sense dependence holding for every natural entity rather than a double sense one) so that the locative genitive is not excluded. This situation is quite different from parts such as trunks of trees or skin of fruits where the "lifetime" of the part is intimately related to the "lifetime" of the whole entity, entailing, so to speak, a maximal stability of the relation. Indeed, such component-assembly relations display "double sense" or reciprocal functional links because, beyond the sole dependence of the part on the whole (which is always the case for natural entities), the latter seems to also need the presence of the considered (stable) parts and thus to be dependent on the part. Let us recall that the notion of dependence which is involved in the stable/ephemeral opposition focuses on the relation between a particular occurrence of a part and the whole to which it belongs (rather than the part as a generic entity). So, these different observations not only clarify the relationships between existential and functional dependences but also confirm the significance of the stable/ephemeral opposition when dealing with the notion of dependence. In this section we tried to show that the use of a possessive genitive for expressing component-assembly relations mainly relies on the notions of functional and existential dependences. Here again, ontological distinctions seem to be indirectly involved in the distribution through the different internal structures displayed by geographic locations on the one hand and mixed entities or objects on the other hand. The discussion on functional dependence made clearer that this notion is not restricted to meronomies but seems to be involved in other types of spatial configurations (among which usual localization/attachment). It was also underlined that the stable/ephemeral opposition plays an important role in the reinforcement/weakening of the dependence between a particular part and a whole entity.

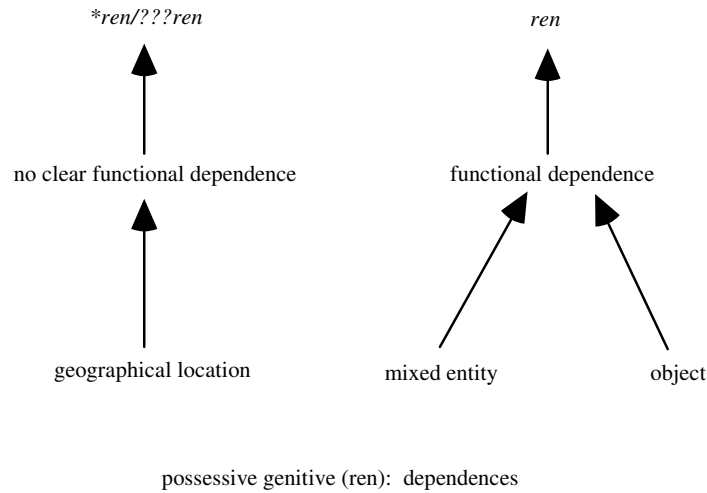


Figure 2: component-assembly relations and possessive genitive

2.2.3. Other factors governing the distribution of genitives

Besides typical configurations (containment/support) and dependences, the distribution of locative and possessive genitives is also influenced by other important factors or properties. In the following we introduce a (non exhaustive) list of these factors, distinguishing three main categories according to whether they are related to the ontology/nature of spatial entities, the way we refer to entities or, more generally, the context of utterance. Most of the considered properties seem to especially influence the resort to a locative genitive (by making its use easier) but we think that they also (indirectly) provide some further indications or clues on the behavior of the possessive marker. More generally, these different remarks and observations seem to confirm the validity of the concepts (typical configurations and dependences) we previously introduced for dealing with Basque genitives and component-assembly relation.

2.2.3.1. Ontology/nature of entities

Here, we successively examine the behavior of specific entities such as body parts and plurals/collections with respect to genitives distribution.

2.2.3.1.1. Body parts

Except some examples which probably focus on the meronomic link itself (by using generic part nouns such as *zati* (part, piece)) or *atal* (part/component, limb), most component-assembly relations involving body parts¹⁶ are expressed by means of a locative genitive (*??ren/?ren*) (Corpus: leaving aside generic part

¹⁶We do not examine here the relations between animate entities and their parts - which usually call for a possessive genitive (see further what we say about the application of spatial markers to animates) - but rather the constructions where both entities (whole and part) are body parts.

nouns (*zati*, *atal*, etc.) *ko* (87,5%), *ren* (12,5%); taking into account generic part nouns *ko* (64%), *ren* (36%)):

- (68) *buruko* *bil* *guziak* (Lei)
 head-loc gen hair all-det pl (all the hairs of the head)
- (69) *gorputzeko* *menbro* *infirmoen* *irudi* *dutenak* (Lei)
 body-loc gen limb ill-det pl-poss gen image aux.pres-that-det pl
 (those being like the ill limbs of the body)
- (70) *buruko* *ileak* (Axu)
 head-loc gen hair-det pl (the hairs of the head)
- (71) *gorputzeko* *mienbroek* (Axu)
 body-loc gen limb-det pl-erg (the limbs of the body)
- (72) *sabeleko* *azala* (Atx)
 stomach-loc gen skin-det sg (the skin of the stomach)
- (73) *giharraren* *zuntzak* (Sar)
 muscle-poss gen fibre-det pl (the fibres/stries of the muscle)
- (74) *urdailaren* *hirugarren* *zatia* (Sar)
 liver-poss gen third part-det sg (the third part of the liver)
- (75) *giza gorputzaren* *atalak* (Sar)
 human body-poss gen part-det pl (the parts/limbs of human body)

This massive resort to the locative genitive is not completely surprising. Indeed, a variety of phenomena observed in many languages of the world seem to indicate that body parts have a particular status among meronymies and more particularly within the class of component-assembly relations. From a semantic and cognitive point of view, body parts seem to display properties which are very close from the constraints we introduced for defining locations (fixedness, existence of a space portion). As geographic locations and mixed entities, they are fixed/motionless in the framework corresponding to the whole body¹⁷. Moreover, and even if it is not as clear as for prototypical locations, they are, in many cases, related to some kind of space portion. These space portions can be (primitive) containing parts or holes (mouth, ears, nose, etc.) or can indirectly result from the application of the "contrast principle" (Vieu 1991) which consists in conceptualizing an entity with some part left aside (head, stomach, etc.). In other cases, however, the interior of a limb simply corresponds to its topological interior and, consequently, appears as being more material than hollow/empty.

Besides their location-like status, body parts nouns refer to zones whose position is often well known. Indeed, one can remark that, because of the commonsense knowledge we have on the internal structure of human body (and contrarily to what occurs with other kinds of complex assemblies), body parts nouns (most of the time) do not only evoke the function but also the (more or less precise)

¹⁷Even if some body parts are not totally rigid and give rise to certain kinds of motions, they often have a prototypical position within the body. As a consequence they can also be considered as being relatively fixed.

location of the considered component. All these facts indicate that body parts are quite similar to entities like locations designated by proper names or Internal Localization Nouns which can be characterized as specified/well known locations (section 3). As it will be stressed further, the fact that many markers of linguistic space - among which Internal Localization Nouns - seem, in a large range of languages, to diachronically derive from body parts nouns (human or animal body parts) (Svorou 1994) is a supplementary clue about the specific status of these nouns within the more general class of component-whole relations. To sum up, if the location-like nature of body part nouns allows (by itself) to associate them with the locative genitive (section 2.2.1), the specified character of the parts pointed out seems to make the resort to this marker even stronger (see section 2.2.3.2 on specification).

2.2.3.1.2. Plurals/collections

In this work, we mainly considered genitive constructions where the whole entity is designated by a singular noun. However, it is interesting to note that the distribution is quite different when plural nouns are used (this observation seems to also be true for indefinite nouns¹⁸). In particular, the resort to the locative genitive becomes possible with objects, like natural entities, which do not introduce typical configurations:

- (76) *xara gazteetako adar mokoak* (Duv)
 copse young-det pl-loc gen branch extremity-det pl
 (the extremities of the branches of the young copses)
- (77) *zuhaitzetako hostoak* (Atx)
 tree-det pl-loc gen leave-det pl (the leaves of the trees)
- (78) *landareetako zurtoinak*
 plant-det pl-loc gen stem-det pl (the stems of the plants)
- (79) *sagarretako azalak*
 apple-det pl-loc gen skin-det pl (the skins of the apples)

We think that such a phenomenon is in great part due to the fact that it is no more a spatial entity - or even each entity of a group - which is considered here but rather the group/collection (identified by the plural) as a whole. A deeper analysis of this data would need to tackle the complex problem of distributiveness/non distributiveness in part-whole relations. If the presence of the locative marker in the previous expressions really leads to consider collections rather than individuals (non distributive reading), then it would be interesting to verify whether parallel constructions calling for a possessive genitive are susceptible to favor a distributive interpretation where the spatial entities themselves (rather than groups/collections) are taken into account.

Indeed, the coincidence of a collective (non distributive) interpretation with the use of a locative genitive is not really surprising. We will see in section 4 that Basque precisely expresses the membership of an entity to a collection through the

¹⁸Three distinct declensions exist in Basque which can be respectively characterized as singular, plural and indefinite.

use of a locative genitive rather than by a possessive marker. It will be suggested that member-collection relations often minimize the dependences between parts and wholes (making the use of a possessive genitive less motivated) so that the relation defined by these entities is not (conceptually) very far from what occurs in situations where we (simply) localize a spatial entity in a given place.

Anyway, this phenomenon seems to coincide with what was observed for other spatial constructions. In particular, although animate entities (humans, animals, etc.) cannot be directly associated with spatial inflexions (inessive (*n*), elative (*tik*), adlative (*ra*), locative genitive (*ko*), etc.) but need the insertion of affixes/postpositions such as *gan* or *baita*, plurals or indefinite forms sometimes allow to ignore this important rule:

(80) *behia(ren)gana joan da*
 cow(-poss gen)-gan-adl gone aux-pres (he went to the cow)

(81) *behietara joan da*
 cow-det pl-adl gone aux-pres (he went to the cows)

As in the case of genitive constructions we think that the integration of the plural or indefinite marker *ta* leads to focus on the group/collection rather than on the animate entities themselves and this semantic shift may explain the neutralization of the basic rule.

2.2.3.2. Specification of entities

The way we refer to spatial entities and more particularly the degree of specification introduced or presupposed by the linguistic material we integrate in the utterance seems to have an influence on the distribution of locative and possessive genitives. These possible changes/variations in the degree of specification rely in great part on the kind of substantive we use (proper name/common noun) as well as in the possible resort to modifiers (in particular determiners and adjectives).

Linguistic data on entities classified as locations provide a good illustration of the role played by specification (2.1). We already stressed that geographic or mixed entities designated by a proper name could only be associated with a locative genitive (3-7, 11-12). Moreover, we indicated, that, in the case of a common noun denoting a mixed entity, the resort to the locative genitive (as revealed by acceptability judgments) was curiously higher for a house (*etxe-ko/aren atea* (the door of-loc/of-poss the house)) than for other kinds of locations (*eliza-ko/aren teilatua* (the roof of-loc/of-poss the church), (*gaztelu-ko/aren dorrea* (the tower of-loc/of-poss the castle))¹⁹. The fact that, in Basque, many entities belonging to the familiar environment (house, father, mother, other relatives) can be pointed out without mentioning the particular link we have with them (*etxea* (the house -> my/our house)), is probably an explanation of the observed differences. Here again, the stronger specification (indirectly) entailed by the use of certain kinds of common nouns would reinforce the resort to the locative genitive. So, these different linguistic data about geographic and mixed entities seem to indicate that

¹⁹This tendency seems to remain even when the nature of the part changes ((*etxe-ko/aren atea* (the door of-loc/of-poss the house), (*etxe-ko/aren teilatua* (the roof of-loc/of-poss the house)).

the degree of specification with which we point out entities (from rigid designation to (direct or indirect) modification: *Etxeberria* (Etxeberria), *(nere/gure) etxea* (my/our house), *muinoaren gibelean den etxea* (the house behind the hill), etc.) is strongly correlated to the use/distribution of the locative genitive.

At this point, two more remarks have to be made.

First, it is interesting to note that, apart from animate beings (or their representations: toys) and particular kinds of objects (e.g.: boats), most of the spatial entities which can be pointed out by a rigid designator are locations (geographic and mixed entities)²⁰. Indeed, the use of a proper name presupposes the definite/specified character of the designated location in the shared knowledge of speakers and more precisely entails that the position of this entity has to be well-known to a certain group of people (this is quite different from animate entities identified by proper names which imply other properties to be known). These observations indicate that locations are spatial entities which admit a very high degree of specification. Besides data on geographic and mixed locations identified by a rigid designator (previously mentioned), we will introduce in section 3 other linguistic facts on Internal Localization Nouns which further illustrate the importance of the notion of specified location and confirm that, in such situations, the locative genitive becomes almost compulsory. Because, in all these cases (proper names of geographic locations, Internal Localization Nouns), the semantics of the spatial noun itself provides - independently of any modifier - precise information about the identity (and in particular the position/location) of the pointed out entity, it will be claimed that the degree of specification is somehow maximal, leading to a generalized use of the locative genitive.

Second, it should not be overlooked that, when the semantic content of a spatial noun does not supply enough data about the spatial entity it refers to (in particular concerning its position), the use of modifiers can allow to make the degree of specification more precise. As a consequence - and although the spatial entity nouns that are intrinsically specified (geographical proper names, ILNs) mainly designate locations - the utterances which call for common nouns of locations (previous examples: *etxe bat* (a house), *etxea* (the/our/my house), *muinoaren gibelean den etxea* (the house behind the hill), etc.) as well as those which include nouns of objects (*mahai bat* (a table), *mahaia* (the table), *etxearen sartzean den mahaia* (the table in the entrance of the house), etc.) can also present a certain level of specification. This possibility of making the specification of entities vary (in particular through the integration of modifiers) opens new perspectives for the study of notions such as objects and locations. In this way, it is likely that changes in the degree of specification may allow to modify the primitive (ontological) categorization of entities. In particular, one can imagine that the introduction of more information about a spatial entity and its environment (frame of reference) may entail that an entity initially classified as object (ontological classification) could, in the context of the utterance (and via specification), become closer to the

²⁰We only consider here the distinction between geographical locations, mixed entities and objects, leaving aside other categories of spatial entities that are susceptible of being identified by proper names (e.g.: collections, in particular groups/associations of people).

properties of a location. Such an assumption (which obviously needs much more work to be made) suggests the possibility of a two level categorization of spatial entities articulating ontological data with information provided by discourse.

2.2.3.3. Specific contexts of utterance

Besides modifications in the degree of specification, other contextual factors seem to influence the use of the locative genitive. In this way, we identified two main semantic contexts/situations where the resort to this marker becomes better acceptable even for cases which usually are not expressed by means of this marker. Let us emphasize that this is not an exhaustive list so that other similar contexts could probably be brought to the fore.

The first type of situations we identified corresponds to "contrastive/parallel" contexts where the speaker identifies a particular part of a whole by contrasting it with a similar part belonging to another whole. In such situations, the mere localization seems to override the expression of dependences and meronomies so that the use of the locative genitive can be considered even with spatial entities (like non containing/supporting objects) which are usually associated with the possessive marker:

- (82) *arrabitako giderra*
violin-loc gen handle-det sg (the handle of the violin)

as opposed to

- biolontxeloko giderra*
cello-loc gen handle-det sg (the handle of the cello)

- (83) *zein gider ?* (which handle?):
arrabitakoa
violin-loc gen-det sg (the one of the violin)
biolontxelokoa
cello-loc gen-det sg (the one of the cello)

- (84) *?haritzeko enborra*
oak-loc gen trunk (the trunk of the oak)

as opposed to

- ?gaztainako enborra*
chestnut tree-loc gen trunk-det sg (the trunk of the chestnut tree)

- (85) *zein enbor ?* (which trunk ?):
haritzekoa
oak-loc gen-det sg (the one of the oak)
gaztainakoa
chestnut tree-loc gen-det sg (the one of the chestnut tree)

Let us mention that these contrastive/parallel contexts possibly entail a better specification of the involved spatial entities and their context, factor that, as we just saw, makes the use of a locative genitive easier. This kind of context is also likely to underlie some of the utterances where people make reference to body parts (*besoko hezurak* (the bones of-loc the arm)/*zangoko hezurak* (the bones of-

loc the leg); *belauneko larrua* (the skin of-loc the knee *lizterreko larrua* (the skin of-loc the thigh)). Beyond the characterization of body parts as location-like and specified entities, this observation constitutes a further argument for their combination with a locative genitive.

A second kind of context, whose influence/importance is even clearer than the former one, groups together all the situations where a particular part is extracted from a whole entity or (conversely) added to it. These situations can be characterized by the weakness or absence of meronomic link after the considered action (extraction) or before it (addition). This property as well as the possible need to focus on the stability (or at least continuity) of the whole entity rather than on its modifications can lead the speaker to use the locative genitive rather than the possessive marker. Let us underline that most of the contexts where speakers told us that they may perhaps combine a locative genitive with a natural entity are precisely spatial configurations in which the part has been extracted from the whole entity:

- (86) *haritzeko adarrekin su eder bat*
 oak-loc gen branch-det pl- soc fire good one
egin dut
 made aux.pres
 (I made a good/big fire with the branches of-loc the oak)

The fact that extraction/addition actions call for spatial relations which are much broader than the sole meronomies is illustrated by the study of French verbs taking the prefix *é-* (Aurnague & Plenat 1996) (Aurnague & Plenat 1997). As we previously indicated, the semantics of these verbs seems to focus on the usual localization/attachment of the extracted part (in the whole entity) rather than on the meronomic link itself.

We terminate here this presentation of complementary aspects governing the distribution of locative and possessive genitives for the expression of component-assembly relations. It is important to note that most of the phenomena described in this section seem to be related to the main notions we first introduced in order to account for the observed distribution (typical configurations, dependences and (often indirectly) the ontology of spatial entities). The behavior of body parts and collections/plurals were respectively explained through the notion of specified location (which itself entails containment) and the weakening of dependence (the analysis of collections will be deepened in section 4). Moreover, it appeared that the different contextual factors favoring the use of the locative genitive (contrastive/parallel contexts, extraction/addition contexts) focus on the mere localization of the part in the whole rather than on the meronomic link and entail, here again, some kind of weakening of the dependence. Finally, and even if it is not a property required for the use of the locative genitive, specification seems to operate as an element reinforcing the resort to this marker.

Let us again underline that most of these complementary factors (in particular contextual ones) cannot be put at the same level as typical configurations or dependences previously introduced. Rather, they operate at a secondary level susceptible to modify the distribution initially observed. In this way, a locative construction involving a natural entity in an extraction context (*haritzeko adarrak*

(the branches of-loc the oak)) is a really different case from a configurational (containing/supporting) object which can be combined with the locative marker without particular constraints on the context (*autobuseko leihoa* (the window of-loc the bus)).

3. Piece-whole relation

Contrarily to component-assemblies, piece-whole relations do not individualize the parts of a whole on the basis of the function they fulfill (Aurnague & Vieu forthcoming) (Vieu 1991). Among the other properties of the relations considered in this class, we should also mention that they point out connected parts of a whole which do not have a similar character (they are not alike). In the following we will mainly examine Internal Localization Nouns (henceforth ILNs) which constitute a very important class of spatial markers identifying parts by means of purely spatial information. Other kinds of piece-whole relations such as nouns of fragments/bits will be left aside.

We first try to underline the main semantic and syntactic properties of ILNs. Then we examine successively the combination of ILNs with nouns of (whole) entities and the behavior of the nominal group composed of these two elements (*Nwhole/ILN*). The distribution of genitives observed for the articulation between ILNs and nouns of entities will be explained through the property of dependence (more particularly referential dependence) whereas the behavior of the nominal group including an ILN (with respect to genitives uses) will be analyzed by means of the notion of specified location.

3.1. Characterization of ILNs

A detailed analysis of French and Basque ILNs (Aurnague 1996a) shows that these part nouns present several syntactic and semantic properties which allow to characterize them as constituting an homogeneous class of markers. We briefly indicate, in the following, some of these properties.

From a semantic point of view, and as already mentioned, the parts identified by ILNs are individualized on the basis of spatial information intended to underline the relative position of the part in the whole. Contrarily to what was noted for component nouns, the various spatial zones that ILNs distinguish in a whole entity often display fuzzy boundaries. Several groups of ILNs can be distinguished according to whether the information they involve is related to the domain of orientation (*gain* (top), *aitzin/aurre* (front), etc.), topology (*barne/barren* (interior), *hegi/bazter/ertz* (edge), etc.) or distance (*erdi* (middle), *buru/mutur* (extremity), etc.). Another important particularity of ILNs (which is related to the previous one) relies on the fact that it is possible to combine them with a wide variety of spatial entity nouns of the lexicon (*mendiaren/etxearen/mahaiaren beherea* (the bottom of-poss the mountain/house/table)). This is quite different from component-assembly relations where the function evoked by the part noun limits the range of spatial entities with which they can be associated (*etxeko teilatua* (the roof of-loc the house), *sardearen giderra* (the handle of-poss the pitchfork)). As a probable consequence of this "generic" character of ILNs, these markers seem to have less referential autonomy than component nouns and (in

particular) to be more dependent on the whole entity²¹. This is illustrated by the difficulty to use classificatory (deictic) sentences involving ILNs such as *?hau gibel-a/bat da* (this is a back) when the identity of the whole entity is not provided by the context or directly mentioned by the speaker (*hau maripulis baten gibela da* (this is the back of a jacket)). Let us stress that, even in cases where such isolated uses of ILNs are possible, these markers have usually lost their initial nature and display characteristics which are much closer to those of component nouns (e.g.: in the domain of clothing trade the term *gain* (top) can refer to the top of a suit). Indeed, and contrarily to ILNs, component nouns can be integrated to similar syntactico-semantic constructions without the necessity for the whole entity to be known (*hau atea/bat da* (this is a door), *hau errota/bat da* (this is a wheel)). These observations as well as other semantic phenomena (like cataphora or even anaphora) illustrate the weak referential autonomy of ILNs and show, at the same time, the "relational" nature of these spatial markers (they allow to make up prepositional phrases which play a great part in spatial localization).

From a morphosyntactic point of view, ILNs are mostly characterized by their tendency to a progressive grammaticalization. This evolution is revealed by two main phenomena. First, we will show in the following section that the articulation of ILNs and entity nouns calls for quite stable mechanisms (possessive genitive, agglutination) and is not really conditioned by the properties of the whole entity (as it was the case for component-nouns). Second, the adjunction of modifiers to the ILNs is often submitted to important constraints or simply not possible. Whereas many modified ILNs cannot be directly associated with a (whole entity) noun through an agglutination process and require the integration of a genitive marker (*etxearen alde iguzkitsuan* (at the sunny side of-poss the house)/*???etxe alde iguzkitsuan* (at the sunny side (of) the house)), other ILNs seem to hardly accept modifications (*kutxa(ren) pean* (at the bottom (of-poss) the chest)/*???kutxaren pe ederrean* (at the beautiful bottom of-poss the chest)/*???kutxa pe ederrean* (at the beautiful bottom (of) the chest)). Moreover, we have the impression that, when possible, the modification of an ILN entails that this marker loses its original status and gets closer to the class of component nouns. In this way, it can be noted that the modified ILN has a clear tendency to be aggregated to the entity noun in order to make up a compound expression designating a well-defined part of the whole (*txapela bizikleta aitzinean da* (the beret is at the front (of) the bicycle), *???txapela bizikleta aitzin gorrian da* (the beret is at the red front (of) the bicycle), *txapela bizikleta-aitzin gorrian da* (the beret is at the red bicycle-front))²².

²¹The wide applicability of ILNs is indeed partly related to the general character of their semantic content which, as we said, is mainly based on (spatial) information concerning relative positions. This specific semantic content of ILNs and, in particular, the fact that the relative positioning entails the identification of the whole entity can also explain the weak referential autonomy of these markers. This contrasts with component nouns which can be characterized and interpreted on the basis of the sole functional information provided by their semantics.

²²Another clue about the possible semantic shift entailed by the modification of ILNs is provided by the fact that the ability of ILNs to define space portions (adjacent to the designated material parts) and the possibility (which follows) to locate the trajector at some distance from the landmark (see section 3.3) appear as being less clear.

Other important properties of ILNs will be brought to the fore subsequently which, together with the already mentioned facts, clearly indicate the particular nature of these markers and their opposition on several points to component nouns. Indeed, a detailed analysis of this data reveals that, beyond a strict opposition, components and ILNs define a kind of continuum. This synchronic observation is confirmed by the fact that most ILNs of Basque seem to diachronically derive from nouns of components (Aurnague 1996a) (Aurnague 1996b). In accordance with what is proposed in (Svorou 1994), the transformation of nouns of components in markers of spatial localization like ILNs appears to be underlied by three main evolutive schema which mainly differ in the anthropomorphic, zoomorphic or environmental nature of the original marker.

3.2. Combination of ILNs and nouns: referential dependence

The articulation between ILNs and nouns (designating whole entities) is generally made by means of a possessive genitive or more simply without using any particular inflexional or derivational marker (agglutination) (87-101). This combination process is quite different from what we observed for component-assembly relations, the main particularity lying in the fact that ILNs are less sensitive to the nature of the entity denoted by the noun and allow to associate the genitive possessive with a large range of spatial entities - geographic entities, mixed entities or objects - (Corpus: association of ILNs with common nouns of entities *ko* (8,5%), *ren/agglutination* (91,5%)).

- (87) *munduaren* *bazterretarano* (Lei)
world-poss gen edge-det pl-adl (to the edges of the world)
- (88) *lurraren* *hondarrean* (Axu)
earth-poss gen end-ines (at the end/center of the earth)
- (89) *itsasoaren* *erdian* (Lei)
sea-poss gen middle-ines (at the middle of the sea)
- (90) *soroaren* *hegala* (Sar)
meadow-poss gen edge-det sg (the edge of the meadow)
- (91) *monumentuaren* *aldean* (Lei)
monument-poss gen side-ines (at the side of the monument)
- (92) *elizaren* *erdian* (Sar)
church-poss gen middle-ines (at the middle of the church)
- (93) *atearen* *alboak* (Sar)
door-poss gen side-det pl (the sides of the door)
- (94) *tronoaren* *eskuinean* (Lei)
throne-poss gen right-ines (at the right of the throne)
- (95) *mahaiaren* *buruan* (Sar)
table-poss gen extremity-ines (at the extremity of the table)
- (96) *oihalaren* *bazterra* (Axu)
material-poss gen edge (the edge of the material/fabric)

- (97) *trunkoaren* *aurkan* (Lei)
 box-poss gen front-ines (in front of the box)
- (98) *basatearen* *muturrean* (Duv)
 young plant-poss gen extremity-ines (at the extremity the young
 plant)
- (99) *bide* *erdian* (Sar)
 road middle-ines (at the middle of the road)
- (100) *itsas* *hegalean* (Sar)
 sea edge-ines (at the edge of the sea)
- (101) *ohe azpitik* (Sar)
 bed bottom-elat (from the bottom of the bed)

The relatively stable character of the linguistic tools (possessive genitive and agglutination) involved in the combination of ILNs with entity nouns is indeed the consequence of the grammaticalization process previously mentioned. This grammaticalization/ossification phenomenon and, in particular, the generalized resort to the possessive genitive (rather than the locative genitive) is, in our sense, partly the consequence of semantic properties.

In the same way as component-assembly relations calling for natural entities do, the parts identified by ILNs and their corresponding wholes are related by a very strong dependence. The side of a house or the middle of a table usually cannot have an autonomous existence with respect to the considered whole²³ so that we are faced, here again, with what we called existential dependence. Because the semantic content of ILNs is grounded on spatial aspects rather than on the function of entities, these existential dependences are not related to functional aspects and, seem, from this point of view, slightly different from existential dependences underlying component-assembly relations between natural entities. Rather, we believe that the particular type of existential dependences observed here is mainly referential. This referential dependence is first revealed by the weak semantic autonomy of ILNs that, as we underscored, often need to appear together with the noun of the whole entity to which they apply. Besides this "surface" or "predicative" dependence, another referential property seems to characterize ILNs which concerns the individuation of the parts they refer to. We said that the parts identified by ILNs often have fuzzy boundaries but a deeper observation indicates that, more generally, these parts do not have a real perceptual existence and are "temporary" entities whose creation/emergence is directly entailed by the designation action itself. In other words the parts denoted by ILNs seems not to be really perceptible and individualizable (as separated entities) beyond the enunciative act which allows to point out them. These individuation problems may explain several linguistic observations (concerning cataphora, anaphora,

²³In particular, the part pointed out by the ILN is usually not created independently of the whole. Although some ILNs can sometimes be employed for referring to geometrically and functionally well defined parts of a whole (possibly created independently of it: the top of a suit, the bottom of a dresser, etc.), we previously said that, in such uses, the considered markers are not any longer real ILNs but rather have the status of component nouns.

possessive adjectives, etc.) that tend to show that the parts designated by ILNs are not so available/accessible as other kinds of parts (in particular components) at the discourse level (Aurnague 1996a).

So, the resort to the possessive genitive appears, once again, as the direct consequence of dependence relations between parts and whole entities. The very strong character of these referential dependences also explains that the use of a locative genitive is often excluded. Let us underline that existential and referential dependences are (jointly) involved in other cases of part-whole relations and, in particular, in expressions pointing out the fragments or the portions of entities ((*gatiluaren zati bat* (a bit of-poss the cup), *bixkotxaren zati bat* (a slice of-poss the cake)). These relations are characterized by the fact that the considered parts result from the achievement of a precise action on the whole entity (breaking, cutting, etc.) so that the former cannot emerge independently of the latter²⁴.

Besides the generalized use of the possessive genitive, we indicated that ILNs and entity nouns can be combined or articulated without resorting to a particular linguistic marker. Such an agglutination phenomenon is very common in Basque and it probably constitutes here a further step in the grammaticalization process to which ILNs seem to give rise. However, let us recall that the description of component-assembly relations brought to light that locations identified by proper names (geographic or mixed entities) cannot be combined with a possessive genitive (3-7,11-12). This fact suggests that, during the transformation of component nouns into ILNs, the previously observed widespread use of the possessive genitive may have come up against proper names designating locations. From this point of view, agglutination could also be viewed as a linguistic mechanism intended to resolve tensions or contradictions appearing in language.

The assumption according to which ILNs of Basque mostly derive from component nouns is reinforced by the fact that these lexemes display different degrees of grammaticalization, a fair number of them being in part sensitive to the nature of the whole entity (like component nouns). In this way, many ILNs appear to still allow the use of a locative genitive in situations where they are applied to locations (geographic or mixed entities) designated by proper names and some of them even accept the locative marker with common nouns of locations (Corpus: association of ILNs with proper names of locations *ko* (71%), agglutination (29%); association of ILNs with common nouns of locations *ko* (14%), *ren*/agglutination (86%)). In preventing a generalized resort to a stable/invariable set of linguistic tools (possessive genitive, agglutination), this phenomenon reveals, to some extent, the partial grammaticalization of the considered ILN. An illustration of the differences arising in the articulation of ILNs with location nouns is provided, for instance, by the observation of rigid designators. Whereas some ILNs (mainly applied to geographic entities) are often combined with proper names of locations through the use of a locative genitive rather than through agglutination, other ones (among which some ILNs designating proximity) seem to accept the two mechanisms:

²⁴The action of breaking up/cutting underlying these relations and the idea of extraction which follows does not prevent, however, the resort to a locative genitive.

- (102) *Irauko ttutturua*
Irau-loc gen summit-det sg(the summit of Irau)
- (103) *?Irau ttutturua*
Irau summit (the summit of Irau)
- (104) *Italiako muga igarorik* (Sar)
Italia-loc gen border cross-ptv
(crossing the border of Italia)
- (105) *?Italia muga igarorik*
Italia border cross-ptv
(crossing the border of Italia)
- (106) *Suizako aldean* (Duv)
Swiss-loc gen side-ines (around Swiss)
- (107) *Tolosa aldean* (Sar)
Tolosa side-ines (around Tolosa)
- (108) *Lurdesko ondoan* (Sar)
Lourdes-loc gen proximity-ines (near Lourdes)
- (109) *Donostia ondora* (Sar)
Donostia proximity-adl (to a place near Donostia)
- (110) *Parisko inguruetatik* (Sar)
Paris-loc gen surrounding-det pl-elat
(from the surroundings of Paris)
- (111) *Azkaine inguruan* (Sar)
Azkaine surrounding-ines (in the surroundings of Azkaine)

It is very likely that the ILNs which, in the above data, accept both the use of a locative genitive and the resort to agglutination (proximity ILNs: *alde/ondo/inguru*) are more grammaticalized than those which preferably call for the locative marker (*ttutturru* (summit), *muga* (frontier)).

More generally it is obvious that a deeper analysis of ILNs which would focus on the slight differences occurring in their behavior with respect to genitives may provide very interesting clues about the grammaticalization level/stage of each marker. In other words, this information may allow to better know the position of the distinct markers in the continuum going from component nouns to real ILNs. Such an analysis should, here again, operate fine distinctions according to the nature of the spatial entity combined with the ILN (geographic entities, mixed entities, objects) and the way this entity is pointed out (common noun, proper name). So doing, and beyond the differences previously noted for the articulation with a proper name of location, further important distinctions will appear, in particular, concerning the use of the locative genitive with common nouns of locations (*bere etxeko aldetik* (Etx) (from the side of-loc his house; *?etxeko gibelean* (at the back of-loc the house)).

Finally, let us underline that the possibility of using the locative genitive with ILNs which are not completely grammaticalized seems to be, most of the time,

restricted to entities categorized as locations (geographic and mixed entities). In other words, the articulation between object nouns and this kind of ILNs preferably calls for the possessive genitive or for agglutination (Corpus: association of ILNs with object nouns *ko* (0%), *ren* (100%)). This appears, for instance, in the case of the above mentioned proximity ILNs (102-111) and configurational (containing/supporting) objects:

- (112) *kadera(ren)* *aldean*
 chair(-poss gen) side-ines (by the side of-poss the chair)
- (113) *???kaderako* *aldean*
 chair-loc gen side-ines (by the side of-loc the chair)
- (114) *txirrindu(aren)* *ondoan*
 bicycle(-poss gen) proximity-ines (in the vicinity of-poss the bicycle)
- (115) *???txirrinduko* *ondoan*
 bicycle-loc gen proximity-ines (in the vicinity of-loc the bicycle)
- (116) *kutxa(ren)* *inguruan*
 chest(-poss gen) surrounding-ines
 (in the surroundings of-poss (around) the chest)
- (117) *???kutxako* *inguruan*
 chest-loc gen surrounding-ines
 (in the surroundings of-loc (around) the chest)

These observations suggest that the grammaticalization process entailed by ILNs (generalized use of the possessive genitive and agglutination) apply to objects before to locations (or is, at least, stronger for the former ones than for the latter ones) and confirm, in some way, the (indirect) role of ontology in the distribution of locative and possessive genitives.

3.3. Behavior of the *Nwhole/ILN* nominal group: notion of specified location

We just saw that the articulation between ILNs and entity nouns mainly calls for stable linguistic tools such as possessive genitive and agglutination. Now, we examine the way the nominal group made up of an ILN and a noun (*Nwhole/ILN*) can be associated with another spatial entity noun for expressing a part-whole relation (*(Nwhole/ILN)/Npart*). As it will appear, the part-whole expressions considered here are component-assembly relations rather than piece-whole relations. However, we think that these further data provide valuable clues about the very nature of ILNs and contribute, from this point of view, to the study of nouns identifying pieces of a whole entity. This is our main reason to discuss this linguistic material within the analysis of piece-whole relations.

The articulation between a spatial entity noun and a nominal group integrating an ILN is made, most of the time, by means of a locative genitive, the resort to the possessive genitive being odd and usually ruled out (*???ren*) (118-123). In any case, the possible use of a possessive genitive (*armairu(aren) gibelaren taula* (the plank/board of-poss the back (of-poss) the cupboard)) is, once again, likely to

entail a change from the class of ILNs to the category of component nouns which can be grasped through both morphosyntactic (tendency to make up a compound expression: *armairu-gibela* (cupboard-back)) and semantic (necessity of a contact with the landmark) clues.

- (118) *armairu(aren)* *gibekeko* *taula*
 cupboard(-poss gen) back-loc gen plank
 (the plank/board of the back of the cupboard)
- (119) *bizikleta(ren)* *aitzineko* *argia*
 bicycle(-poss gen) front-loc gen light-det sg
 (the light of the front of the bicycle)
- (120) *klarinetaren* *ezkerreko* *giltzak*
 clarinet(-poss gen) left-loc gen key-det pl
 (the keys of the left of the clarinet)
- (121) *ganibeta(ren)* *muturreko* *itzea*
 knife(-poss gen) extremity-loc gen nail-det sg
 (the nail of the extremity of the knife)
- (122) *arbola(ren)* *gaineko* *adarrak*
 tree(-poss gen) top-loc gen branch-det pl
 (the branches of the top of the tree)
- (123) *sagar(raren)* *azpiko* *azala*
 apple(-poss gen) bottom-loc gen skin-det sg
 (the skin of the bottom of the apple)

The possibility to combine the locative genitive with the nominal group integrating the ILN is all the more interesting since, as we already observed, the use of this marker is heavily sensitive to the nature of the entity noun to which it is combined (section 2). In particular, the above data show that the group composed of a non configurational (supporting/containing) object and an ILN (*klarinetaren ezkerre* (the left (of-poss) the clarinet); *ganibeta(ren) muturra* (the extremity (of-poss) the knife); *arbola(ren) gaina* (the top (of-poss) the tree); *sagar(raren) azpia* (the bottom (of-poss) the apple) seems to semantically behave quite differently from such entities when they are used alone (*?klarinetako giltzak* (the keys of-loc the clarinet), *??arbolako adarrak* (the branches of-loc the tree)). So, the adjunction of an ILN to an entity noun appears to entail a kind of semantic shift which allows the resort to the locative genitive even with spatial entities that initially do not accept it.

In the following, we try to account for the behavior of nominal groups integrating ILNs by showing the particular nature of the parts pointed out by these markers. We claim that the massive resort to the locative genitive results from the fact that the parts/zones designated by ILNs can be ontologically characterized as specified locations.

Let us stress that the parts identified by ILNs fulfill the two constraints (fixedness, existence of a space portion) we introduced for defining the notion of location (section 2.2.1.1). First, these parts are motionless/fixed in the framework

corresponding to the whole object. Second, a detailed analysis of ILNs reveals the existence of space portions associated with the material part they designate (Aurnague 1996a). This property clearly appears when comparing localization sentences calling for ILNs with similar utterances integrating component nouns. Whereas, in the former case (ILN), the trajector or located entity is not necessarily in contact with the landmark, the integration of a component noun makes such a contact almost obligatory.

- (124) *Piltzarra* *besaulkiaren* *saihetsean* *da*
dish towel-det sg armchair-poss gen side-ines be-pres
(the dish towel is at the side of/beside the armchair)
- (125) *Piltzarra* *besaulkiaren* *besoan* *da*
dish towel-det sg armchair-poss gen armrest-ines be-pres
(the dish towel is on the armrest of the armchair)
- (126) *Zakua* *txirrinduaren* *gibelean* *da*
bag-det sg bicycle-poss gen back-ines be-pres
(the bag is at the back of/behind the bicycle)
- (127) *Zakua* *txirrinduaren* *puskaketakoan* *da*
bag-det sg bicycle-poss gen luggage rack-ines be-pres
(the bag is on the luggage rack of the bicycle)

In this way, the dish towel and the bag of the above sentences can be viewed as being situated at some distance from their respective landmarks (armchair and bicycle) only when the localization is made by means of an ILN. The fact that all these sentences use the same locative marker, namely the inessive case, indicates that this distinct behavior of ILNs and component nouns (with respect to space portions) cannot be attributed to this factor. Moreover, this property/faculty of ILNs is not restricted to localization sentences and can be also observed in attributive constructions (such as *atearen gaina zikina da* (the top of-poss the door is dirty)) where the predication introduced by the adjective can apply to the landmark itself (the door) as well as to a space portion near it (the wall above the door).

The fixedness of the parts identified by ILNs in a whole entity and the existence of space portions (related to these material parts) make that these markers can be characterized as locations in a similar way to geographic and mixed entities. Here again the possibility of using the locative genitive is not directly entailed by this ontological characterization but rather derives from the presence of space portions in entities categorized as locations.

We previously emphasized that the core semantic content of ILNs indicates the relative position of the part pointed out within the framework of the whole. We also stressed that this ability to localize the part in the whole was mainly due to the spatial information conveyed by ILNs which call for several domains of cognitive geometry such as orientation, topology or distance. This property of ILNs clearly contrasts with the semantics of component nouns which is mainly grounded on the function fulfilled by the part in the whole and, as a consequence, does not provide any precise data about relative location. Moreover, the well-

known character of the positions of parts designated by ILNs entails that these zones are not only locations (as just showed) but can also be characterized as specified entities. In other words, ILNs identify parts which fit the constraints of specified locations and, from this point of view, appear as being quite close from locations (geographic or mixed entities) identified by proper names. Let us recall that linguistic data on component-assembly relations (sections 2.1 and 2.2.3.2) calling for rigid designators (of locations) showed that entity nouns categorized as specified locations usually need to be combined with a locative genitive. What is remarkable here, is that, in both cases (ILNs and proper names of locations), the semantic content of the spatial noun is directly or indirectly related to information on the position/location of the designated entity (independently of any modifier) so that the specification level is, in some way, maximal.

Consequently, the categorization of ILNs as specified locations seems to account for the data previously set out (118-123) according to which the association of the locative genitive with this kind of markers is not only possible but appears, most of the time, as a necessary construction (the use of a possessive genitive being odd or ruled out).

The behavior of the noun phrase made up of an entity noun and an ILN and, in particular, the articulation of this structure with other part nouns ((*Nwhole/ILN*)/*Npart*) provides interesting data about the nature of spatial entities pointed out by ILNs. The characterization of these markers as specified locations and the fact that they are most of the time combined with a locative genitive confirms what has been already underlined for geographic and mixed entities designated by proper names.

Indeed, the notion of specified location seems to go beyond the scope of this work on part-whole relations and is likely to play an important role in other fields of linguistic space (and in other languages). In this way, it can be showed that spatial entities characterized by C. Vandeloise as fulfilling a "localization function" and which, accordingly, can be combined with the French preposition *à* (Vandeloise 1988) fit quite precisely the constraints we introduced for defining specified locations (Aurnague 1996a). This notion allows to operate fine distinctions among prepositional phrases calling for the preposition *à* according to the nature of the spatial entity noun (+/- location) and the degree of specification entailed by both the noun and its possible modifiers (+/- spec) (e.g.: (-loc/-spec: **à un arbre* (at a tree); -loc/+spec: ??*à l'arbre* (at the tree); +loc/+spec: *à l'Arbre du Pendu* (at the Hangman Tree)). An Oceanic language like Longgu provides another interesting illustration of the role played by the notion of specified location. As described in (Hill 1996), it appears that simple locative prepositions of this language (in particular general locative *i* (at) and allative *vu* (to)) can take as object those nouns which point out a place whereas their (direct) association with common nouns is usually not possible. The class of "place nouns" which underlies the functioning of the considered simple prepositions includes proper names of locations, local and directional terms (ILNs) as well as common nouns denoting "home places" (my/our village, my/our house) and, consequently, seems to be very close to the category of specified locations we introduced in this work.

In this section on piece-whole relations we mainly considered parts identified by means of ILNs. We indicated that these nouns display specific semantic and

syntactic properties and constitute an homogeneous category of markers which contrasts on several aspects with component nouns. It has been shown that the association of an ILN with an entity noun (*Nwhole/ILN*) is made, most of the time, through stable linguistic tools such as possessive genitive or agglutination and seems, consequently, to be less sensitive to the nature of the whole entity (grammaticalization). This generalized resort to the possessive genitive has been explained, among other things, by the existence of a strong referential dependence between ILNs and whole entity nouns. On the contrary, we observed that the articulation between a nominal group integrating an ILN and a part noun (*(Nwhole/ILN)/Npart*) very often calls for the sole locative genitive. We accounted for these data by showing that the parts designated by ILNs can be characterized as being specified locations in a similar way to geographic and mixed entities identified by proper names.

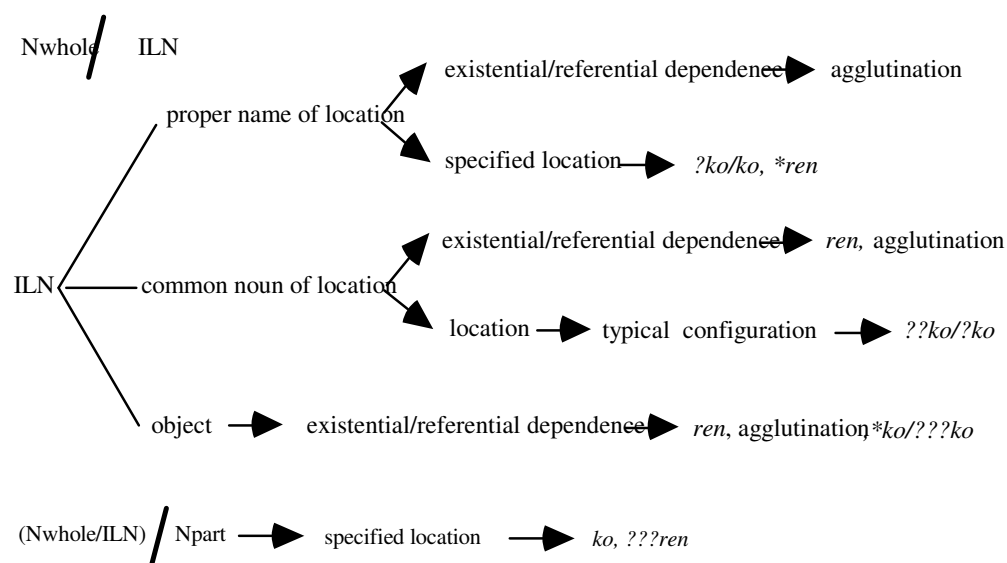


Figure 3: Internal Localization Nouns

4. Member-collection and sub-collection/collection relations

In the following we examine which of the two genitives of Basque can be used to express the relations between a collection and its members. After introducing some linguistic data, we try to account for the observed distribution by underlying the minimal dependence existing between members and collections and the relative autonomy of parts and wholes which follows from this property. Subsequently, some additional information is provided concerning the specific case of constructions involving sub-collections of a collection.

The relation between an ordinary member of a collection and this particular collection is usually expressed by means of a locative genitive, the resort to the possessive marker being, most of the time, excluded (**ren*):

- (128) *arthaldeko ardiak* (Lei)
 flock-loc gen sheep-det pl (the sheeps of the flock)

- (129) *Elizako* *menbro egiten* *gaituenean* (Lei)
Church-loc gen member make-ines aux.pres-ines
(when he makes us member of the Church)
- (130) *multzo horretako zenbait elementuk*
set that-loc gen some member-det indef-erg
(some members of that set)

If, contrarily to the previous case, the designation of a particular part stresses the properties which differentiate it from other members of the collection and, so doing, underlines its specific status within the whole entity, then, locative as well as possessive genitives can be used (Corpus: *ko* (42%), *ren* (58%)):

- (131) *Eusko jaurlaritzako burua* (Sar)
Basque government-loc gen head-det sg
(the head of Basque government)
- (132) *Euskaltzaindiko lehendakaria* (Sar)
Euskaltzaindia-loc gen president-det sg
(the president of Euskaltzaindia (Basque academy))
- (133) *Nazarenoen sektaren buru* (Lei)
Nazarene-det pl-poss gen sect-poss gen head
(head of the Nazarene sect)
- (134) *Christ Elizaren buru* (Lei)
Christ Churh-poss gen head (Christ head of the Church)
- (135) *udalbatzarraren lehendakaria* (Sar)
town council-poss gen president-det sg
(the president of the town council)

The following expressions extracted from a unique entry of an encyclopedia about a Basque personality (Lur 1991/1994) and relating the different groups to which this person belonged along his life, confirm the previously mentioned facts by showing that the relation between an ordinary member and a collection is always expressed with a locative genitive whereas the relation between a particular (often unique) member of a collection (like a president, a secretary) and this collection can be described by means of the two genitives:

- (136) *Bilboko Athletic Club taldeko jokalaria*
Bilbao-loc gen Athletic Club team-loc gen player-det sg
(player of the Athletic Club of Bilbao)
- (137) *E.A.J.ko militantea*
E.A.J.-loc gen militant-det sg (militant of E.A.J.)
- (138) *Minoria Vasco-Navarra delakoaren idazkaria*
Minoria Vasco-Navarra so-called-poss gen secretary-det sg
(secretary of the so-called Basque-Navarrian minority)
- (139) *Euskal-Herriko alkateen batzordearen*

- Basque country-loc gen mayor-det pl-poss gen assembly-poss gen
buru
 head
 (head of the assembly of mayors of Basque country)
- (140) *erbesteko* *jaurlaritzaren* *lehendakaria*
 exile-loc gen government-poss gen president-det sg
 (president of the government in exile)
- (141) *Ekintza Katolikoaren* *Gazteriako* *buru*
 Action Catholic-poss gen young movement-loc gen head
 (head of the young movement of Catholic Action)

The observed distribution of locative and possessive genitives can be explained through the notion of functional dependence and, more particularly, by noting that ordinary members and collections appear as being quite autonomous the one from the others. In this way, let us underline that members of a collection can often be changed and replaced without really altering the identity of the whole entity. As a consequence, members can, in many cases, emerge (be created) and exist independently of the collection to which they belong. This phenomenon is well illustrated by human groups (teams, councils, etc.) where the collections preserve some kind of integrity along time in spite of the frequent and important changes which can affect their members. This minimal dependence between members and collections - and the autonomous character which follows - constitutes, in our sense, a crucial element in order to account for the fact that the locative genitive rather than the possessive marker is used for expressing this kind of relation (let us recall that the possessive genitive is usually ruled out) (128-130, 136-137). Moreover, minimal dependence seems to be strongly related to the similarity/alikeness property characterizing members of collections which constitutes a basic condition for an entity to belong to a given group (Aurnague & Vieu forthcoming). Indeed, and contrarily to what occurs with other categories of part-whole relations (for instance component-assemblies), functional aspects involved in member-collections (in particular the function of the part in the whole) are intended to grasp common properties of the parts (guaranteeing, in some sense, their membership to the collection) rather than to differentiate them by underlining their differences. These various properties - and, in particular, the autonomous character of members and collections - suggest that the concept of collection which underlies the considered linguistic data is more intensional than extensional. Note that this way of handling collections is quite different from the definitions usually proposed in set theory where a collection/set is extensionally characterized by the list of its members.

Beyond the notion of dependence, the relative autonomy of members and collections and the tendency to conceptualize the former ones as being simply located in the latter ones can be related to other linguistic data (mainly diachronic) revealing a probable proximity between the concepts of collections/plurals and locations. In this way, the geographical origin of many collections is illustrated, in Basque, by the existence of a range of suffixes denoting the plurality or abundance

of a given entity in a location (eg.: *eta: olaeta* (factory + *eta*, place of factories); *aga: haritzaga* (oak + *aga*, place of oaks, oak grove); *tegi: lorategi* (flower + *tegi*, place of flowers); *di/dei/doi/dui/ti,tei/toi/tui: sagardoi* (apple tree + *doi*, place of apple trees, apple orchard)). In many cases, these suffixes can be used for pointing out both the group of spatial entities making up the collection (collective reading) and the place where this collection is located (locative reading; these suffixes are very frequent in toponymy). The link between collections and locations is also illustrated by the clear spatial origin (*alde* (side, area)) of the substantive *talde* which is usually employed for designating groups of animate entities (*dantzari talde bat* (a group of dancers)). Finally, the behavior of the affix (*e*)*ta* that indicates, in the declensions, the plural or indefinite aspect provides interesting clues about the way Basque handles plurals and collections. We showed in section 2.2.3 that the adjunction of this affix clearly entails that the concerned entities are no more considered as individual objects but rather are viewed as constituting a whole structure so that the semantic and syntactic rules/constraints governing the use of genitives with singular nouns do not apply. These remarks which applied to component-assembly relations remain basically valid in the case of collections since the link between a member and a plural collection (integrating the affix (*e*)*ta*) has to be, here again, expressed through the use of a locative genitive (*arboletako bat* (one of the trees))²⁵. All these observations suggest a very strong link in Basque between the notions of collections and locations.

The linguistic data introduced above indicate, that, contrarily to what occurs with ordinary elements (which only allow to resort to the locative genitive), the relation between a specific member and a collection can be expressed by both locative and possessive constructions (131-135, 138-141). This fact seems to confirm, to some extent, the role played by functional dependence in the distribution of genitives observed in utterances expressing member-collection relations. By focusing on the specific status of a given member and by underlining its differences with respect to other elements of the same whole, one makes functional dependence (between this member and the whole) clearly increase. Whereas the similar character of ordinary elements is likely to be related to the autonomy of members and wholes (see above), the emergence of dissimilarities seems (conversely) to entail some kind of functional dependence between the member pointed out and the collection. So, the existence of a stronger functional dependence between specific members and collections would explain the possibility to resort to the possessive genitive in such cases. Let us stress, however, that these relations can also be described through the use of a locative marker.

Although sub-collection/collection relations are not so common, their specific nature within constructions involving collections led us to also observe and analyze their behavior. In a similar way to specific members of a collection (and

²⁵The previous remarks about the relative autonomy of parts and wholes and the minimal (functional) dependences between these entities essentially concerned singular collections (*artalde* (flock), *jaurlaritza* (government), *sekta* (sect), *talde* (group/team), etc.). The fact that plural collections also call for the locative genitive seems to indicate that, in Basque, the "intensional" way of defining collections applies in this case too. Although this point is susceptible to raise important and difficult theoretical questions, we leave them aside in this work.

contrarily to ordinary members), sub-collections are often defined on the basis of properties which differentiate them from other elements of the whole entity. From this point of view, they are likely to entail a greater functional dependence with respect to the whole collection and, consequently, the resort to the possessive genitive may be, here again, expected. Curiously, sub-collection/collection relations seem to be expressed, most of the time, by means of a locative genitive rather than with a possessive marker (Corpus: *ko* (62,5%), *ren* (37,5%)) (142-144). Thus, this kind of construction appears as being closer to what was observed for ordinary members than to the behavior displayed by specific elements. Let us underline that we are probably faced here with a case which is, indeed, an intermediary situation between ordinary (exclusive use of the locative genitive) and specific (the two genitives are allowed) members of a collection. In this way it has to be noted that beyond the preferential resort to the locative genitive just mentioned, the use of a possessive marker seems to be often less odd in the case of sub-collections than for ordinary members (**armadaren soldadua* (a soldier of-poss the army), *armadaren bigarren konpainia* (the second company of-poss the army)). This point is confirmed by the fact that some cases of sub-collections calling for the possessive genitive were found in our corpus, contrarily to what occurred with ordinary members (145-147).

- (142) *populuko anzianoak* (Lei)
 people-loc gen elder-det pl (the elders of the people/nation)
- (143) *Elizako anzianoak* (Lei)
 Church-loc gen elder-det pl (the elders of the Church)
- (144) *gizarteko agintaritzak* (Sar)
 society-loc gen authority-erg (the authority of the society)
- (145) *bigarrena lehenaren zati-multzoa dela* (Sar)
 latter-det sg former-poss gen subset being
 (the latter being a subset of poss the former)
- (146) *multzo baten azpimultzo guztien*
 set one-poss gen subset every-det pl-poss gen
multzoa (Sar)
 set-det sg
 (the set of every subset of a set)
- (147) *Euskaltzaindiaren Iker saila eta Jagon saila* (Sar)
 Euskaltzaindia-poss gen Iker section and Jagon section
 (Iker section and Jagon section of Basque academy)

This analysis of part-whole relations involving collections confirms, in some way, the role of several concepts previously introduced in order to account for the distribution of genitives, and in particular the importance of the dependence notion. In this way the impossibility to use a possessive genitive for expressing the relation between an ordinary member and a collection was explained by the similar character of such members and the minimal dependences it implies. On the contrary, the strong functional dependence (based on dissimilarity) entailed by

specific elements of a collection seems to allow the resort to such a marker (together with the locative genitive). So, in a similar way to component-assembly and piece-whole relations, the distribution of the possessive genitive is greatly dependent on the notion of dependence between the part and the whole.

We also underlined that the very weak dependence occurring with ordinary members and the relative autonomy of parts and wholes which follows (revealed by several properties such as changes/replacements of elements, persistence of the whole identity through time, etc.) leads to conceptualize ordinary elements as being just localized in the whole collection. This observation coincides with other diachronic facts which suggest some kind of ontological proximity in Basque between collections/plurals and locations.

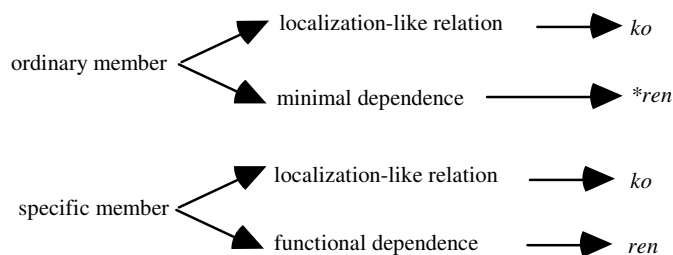


Figure 4: member-collection relations

5. Substance-whole relation

Substance-wholes constitute the last category of part-whole relations we examine in this study of Basque genitives. Although the specific ontological nature of substances makes this particular relation quite different from the cases previously analyzed, we will show that, here again, the distribution of locative and possessive genitives can be accounted for by means of notions such as typical configuration (and more exactly containment) and dependence. We first set out the linguistic material and then introduce the factors or parameters which, in our sense, may explain the observed distributions.

Most substance-whole relations are expressed by means of a possessive genitive (148-152), but, unlike what has been noted in other cases, the use of a locative marker seems to be often possible or, at least, not really excluded (?*ko/ko*). Indeed, the distributions arising from the corpus and the questionnaire seem to be, here, partially in opposition. In this way, whereas the substance-whole relations found in the texts systematically call for possessive constructions, the speakers have a preference for the possessive genitive but, at the same time, seem to not completely rule out the possibility to use the locative marker (Corpus: *ko* (0%), *ren* (100%); Questionnaire: both genitives (26%), only *ko* (22%), only *ren* (52%).

(148) *soineko baten gaiak* (Sar)
 cloth-loc gen one-poss gen matter-det pl
 (the matters/substances of a cloth)

(149) *saltsa baten osagaiak* (Sar)
 sauce one-poss gen ingredient-det pl (the ingredients of a sauce)

- (150) *gaztaren osagai nagusiak* (Lur)
 cheese-poss gen ingredient main-det pl
 (the main ingredients/substances of cheese)
- (151) *bixkotxaren pasta*
 cake-poss gen pastry (the pastry/mixture of the cake)
- (152) *taloaren irina*
 pancake-poss gen flour-det sg (the flour of the pancake)

This basic behavior of substance/whole relations can be modified by two important factors which respectively favor the use of locative and possessive markers.

First, the acceptability judgments show that the distribution of the two genitives is partly influenced by the nature of the considered substances and, more particularly, by the solid/liquid consistency of the whole. In this way, situations where the whole substance is a liquid seem to make the resort to the locative genitive much easier (153-156), the use of a possessive marker being still possible (Questionnaire: both genitives (30%), only *ko* (45%), only *ren* (25%)). Let us underline, however, that this phenomenon was mainly noted for liquids resulting from human activities.

- (153) *koktelaren rona*
 cocktail-gen poss rum-det sg (the rum of the cocktail)
- (154) *kokteleko rona*
 cocktail-loc gen rum-det sg (the rum of the cocktail)
- (155) *kalimotxoaren ardoa*
 kalimotxo-poss gen wine-det sg (the wine of the kalimotxo)
- (156) *kalimotxoko ardoa*
 kalimotxo-loc gen wine-det sg (the wine of the kalimotxo)

Second, and in a similar way to component-assemblies, substance-whole relations involving natural entities (as opposed to artifacts) seem, here again, to be mainly described through the use of a possessive genitive, the resort to the locative marker being odd or even excluded (*?ko, ?ko*) (Questionnaire: both genitives (15%), only *ko* (0%), only *ren* (85%)):

- (157) *samatsaren urina* (Duv)
 litter-poss gen sap-det sg (the sap/juice of the litter)
- (158) *arbolaren zura* (Duv)
 tree-poss gen wood-det sg (the wood of the tree)
- (159) *zuringoaren osagai nagusia* (Sar)
 (egg) white-poss gen substance main-det sg
 (the main substance/component of the (egg) white)
- (160) *odolaren zati isurkaria* (Sar)
 blood-poss gen component liquid-det sg
 (the liquid component of blood)

(161) *mahatsaren jusa/zukua* (Sar)
 grape-poss gen juice-det sg (the juice of the grape(s))

We try, in the following, to analyze this linguistic data by considering successively the notions which may explain the distribution of locative and possessive genitives.

The fact that most substance-whole relations can be expressed by means of a possessive genitive but, at the same time, do not really exclude the resort to the locative marker (this is mainly true for "non natural" relations) is due, in our opinion, to the very specific nature of substances. In this way, it can be observed that a containment-like property is often associated with entities categorized as substances. Such a property is revealed by the possibility, in many languages, to associate nouns or verbs denoting containment with substance nouns:

(162) *edari baten alkohol edukia* (Sar)
 drink one-poss gen alcohol content-det sg
 (the alcohol content of a drink)

(163) *gai edo janari bat(ek) barnean duen*
 substance or food one interior-ines have.pres-that
ura edo isurkaria (Sar)
 water or liquid
 (the water/juice or liquid that a substance or food has inside))

Let us stress, however, that the containment property involved in substance-whole relations is quite different from the containment notion underlying "classical" interiors of entities which, as we already indicated (section 2.2.1.1), corresponds to space portions limiting the lateral and vertical motions of a trajectory.

The increase of locative uses in situations where the whole entity is classified as a liquid substance is likely to be also related to some kind of containment (153-156). Indeed, our hypothesis is that such constructions could result from the application of a metonymic process which may lead to take into account the containers in which liquids - and particularly non natural ones - are often located. As a consequence, the resort to the locative genitive may not only express the localization of the part in the whole but also its inclusion in the spatial entity containing this liquid substance. If this assumption is correct, classical containment would then operate as a factor strengthening the containment notion ontologically associated with substances.

The distribution of the possessive genitive and more particularly the possibility to use this marker with almost every substance-whole construction (148-152) is probably due, here again, to the existence of clear dependences between parts and wholes. Indeed, and in a similar way to component-assembly relations, the substances making up a whole entity fulfill, most of the time, important functions with respect to this whole, be them gustative, curative, related to strength or more generally chemical. This means that the properties of a whole entity depend, in a large part, on the contribution of its constituent substances so that we are likely to be faced here with functional dependences.

The part of dependences in the use of the possessive genitive is confirmed by two important observations. First, the distinction between prototypical and contingent parts mentioned in other analyses of part-whole relations (Borillo A. 1996) is not without interest for this study on genitives. Indeed, the resort to the possessive marker will be even stronger for prototypical substances of a whole than for contingent substances which display a clear tendency to be simply localized in the whole entity (locative genitive). In this way, it is likely that the milk making up a yogurt will be more clearly viewed as constituting a basic part of this yogurt than the jam or the sugar added to it (this is even stronger if these last substances have been added by a consumer after the production/elaboration of the whole). This necessary/canonical belonging of a part to a whole entails an important functional dependence between these two entities (the whole is dependent on the part) which may explain the stronger resort to the possessive genitive. Moreover, the functional dependence arising with prototypical substances seems to be accompanied by a greater stability of the relation between the part and the whole (contrarily to contingent relations which are generally not stable). Let us note, however, that this apparent correlation between the necessary/canonical character of the presence of a substance in a whole and the stability of the part-whole relation is not always the case for other kinds of part-whole relations (in particular component-assemblies).

Another clue about the role of dependence relies on the fact that the resort to this marker becomes even more massive when the substance-whole relation involves natural entities rather than products resulting from human activities (157-161). The dependence involved in these "natural" cases is an existential one. As it was pointed out in the analysis of component-assembly relations (section 2.2.2.2), existential dependences occurring with natural entities are not disconnected at all from functional aspects and seem, on the contrary, to entail a kind of "maximization" of functional dependences. This phenomenon is mainly due to the very weak autonomy of the parts whose creation and existence is heavily conditioned by the natural whole (this obviously entails a strong dependence of the parts on the whole entity). Indeed, whereas substances of prepared/created wholes often exist previously to the whole product and independently of it, the emergence and development (the "lives") of many natural constituents and wholes seem to be much more closely related (even if, in some cases, natural substances can have emerged independently of the whole entity they make up). Note that this last point is partly connected to the "addition actions" underlying the elaboration of artifacts that we will discuss further. Let us also mention that, in a similar fashion as for component-assembly relations, the functional dependences between natural parts and wholes can be reinforced or weakened by the more or less stable character of the considered part. In this way, the stability of the part in the whole seems to entail a dependence of the latter on the former which adds further to the already mentioned dependence (of parts on wholes) arising with natural entities. These interesting properties of substance-whole relations and the generalized resort to the possessive genitive which follows reveal a quite clear ontological closeness between substances and objects, confirming, at some extent, what was underlined in other studies (Vieu 1991).

Besides dependence and containment notions which respectively account for the use of possessive and locative genitives other factors seem to also influence the distribution of genitives observed for this particular kind of part-whole relations. Here, we will mention two of them, one being related to a particular kind of context and the other relying on the ontology of spatial entities (and more exactly on internal structure). First, actions consisting in adding/extracting a substance to/from a whole seem to make the resort to the locative genitive easier. Whereas the former process (addition) is usually related to prepared/created substances (artifacts), the latter (extraction) is more likely to be associated with natural wholes. In the two cases, the part is, at the time of the process, conceptualized as being independent/dissociated from the whole entity so that the sole localization relation is focused rather than the very part-whole link resulting from or preceding the process. This fact would mainly explain the greater possibility to resort to the locative genitive in such cases. By focusing on the localization relation, these addition/extraction processes also entail that the whole entities are conceptualized as being quite stable along time, in spite of the modifications of their internal structure following from the considered actions. It is important to note that these "addition/extraction" processes are probably also connected to the containment-like property which seems to be associated with substances.

Another factor conditioning the uses of locative and possessive genitives concerns the way the substance is distributed over the whole. As we previously emphasized (section 1.1), substance-whole relations are the only meronymies for which the part has to be homogeneously distributed all over the whole. This property of substance-wholes is confirmed by the behavior of Basque genitives since the use of the locative marker clearly increases when the pointed out substance is conceptualized as constituting disconnected and clearly identifiable individuals (164). In this way, the non distributed (or less distributed) character of the substance seems to orient the speaker towards the sole localization of the part in the whole (locative genitive) rather than to the real expression of a part-whole relation (possessive genitive).

(164) *saldako lursagarra*

soup-loc gen potatoe-det pl (the potatoes of the soup)

The role of distribution is also revealed by additional commentaries (on (164)) of some subjects who indicated that it would be easier for them to use the possessive genitive if the mentioned potatoes were mashed in the soup. So, the homogeneous distribution of a substance in a whole seems to strongly reinforce the use of the possessive genitive whereas non distributed configurations are often interpreted as simple localizations and described by means of a locative marker. It is likely that the homogeneous distribution of a substance entails a greater stability of the relation between the part and the whole as well as a clearer dependence between these two entities.

So, and in a similar way to component-assembly relations, these supplementary factors conditioning the distribution of locative and possessive genitives (addition/extraction actions and distribution) seem to be, to some extent, related to the main properties we previously introduced in order to account for the expression of substance-wholes, that is to say containment and dependence.

This analysis of the expression of substance-whole relations showed that entities classified as substances can fulfill different kinds of functions in a whole entity, entailing clear dependences between parts and wholes. This may explain that substance-whole relations are most of the time described by means of possessive constructions. The part of dependence in the distribution of the possessive genitive was indeed confirmed by the fact that the relations which involve natural entities are preferentially expressed through the use of a possessive marker. However, it was showed that substances also call for some kind of containment property and, consequently, often allow the resort to the locative genitive. These different observations indicate that, once again, the distribution of locative and possessive genitives can be mainly explained through the notions of typical configurations and dependences. Moreover, they also suggest a kind of ontological/conceptual closeness between substances and objects.

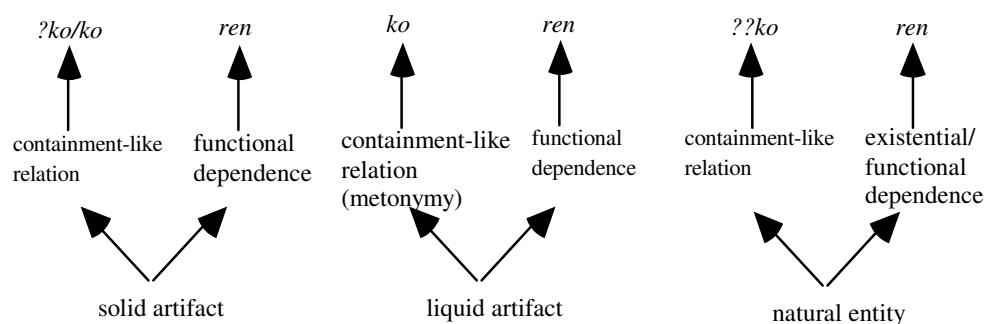


Figure 5: substance-whole relations

6. Basques genitive and part-whole relations: towards a global semantic characterization

After having described and analyzed the distribution of Basque locative and possessive genitives according to the nature of the expressed part-whole relation, we sum up, in the following, the main results we got all along this study. We try in particular, to show that the behaviors of the two genitives observed for different classes of meronomies coincide on several aspects so that we probably have here important clues for a more global characterization of these markers (at least concerning their meronomic uses).

The observations made for the four classes of part-whole relations we analyzed (component-assembly, piece-whole, member-collection (and sub-collection/collection), substance-whole) suggest that two main notions seem to underlie the semantics of locative and possessive genitives. Whereas the former is greatly sensitive to the notion of typical configuration (containment, support or integrated landmark), the latter is very often governed by several kinds of dependences (functional, existential or referential which as we saw are related by complex conceptual links). We also noted that the ontology of spatial entities (in particular the distinctions between locations, objects and mixed entities) seems to

influence the distribution of genitives but, as we indicated, the role of this factor can be understood as an indirect consequence of the behavior of entities with respect to typical configurations and dependences.

Other factors seem to combine and interact with the basic notions just mentioned conditioning, to some extent, the distribution of locative and possessive genitives. In this way - and as already noted - the degree of specification of the designated whole entity associated with the notion of location is likely to influence the use of the locative genitive. In particular, we saw that situations of "maximal" specification occurring when the spatial noun itself (independently of any modifier) indicates the position/location of the pointed out entity (usually characterized as a location) make the resort to the locative marker almost obligatory. Another interesting factor concerns the stable/ephemeral character of a part in a whole which can reinforce or weaken the functional dependences between these two entities and, as a consequence, appears as indirectly acting upon the use of the possessive genitive.

Some other secondary properties introduced throughout this study could be also mentioned because of their role in the distribution of the two genitives. Rather, we prefer to briefly recall the main uses of the studied markers by underlining, in each case, their obligatory, preferred or indifferent/neutral character. Table 2 sets out the acceptability level of locative and possessive genitives according to the kind of meronomic relation and the nature of the whole. The characterization of the whole entity is based on its ability to give rise to a typical configuration (configurational entity: containment, support or integrated landmark) and on the dependences which arise between the considered part and whole. The ontological nature of the whole and its degree of specification is also mentioned.

Let us consider, first, the situations where the resort to a given genitive marker appears as quasi systematic. In this way, we noted that when the noun of the whole entity designates a (maximally) specified location, the use of a locative genitive becomes almost obligatory. This is the case of both proper names of locations (component-assembly) and ILNs (piece-whole) which identify entities associated with space portions (allowing an inclusive interpretation) and indicate in their very semantic content the position of these entities. The link between a collection and an ordinary member is also expressed through the exclusive use of a locative genitive. This is mainly due to the very low dependence (usually) occurring between a collection and its (ordinary) members which leads to conceptualize the considered relation as a simple localization rather than through a real meronomic link. The minimal dependence observed in such cases is likely to be entailed by the similar/alike character of ordinary members which guarantees they belonging to the whole collection. This autonomous status of ordinary members (with respect to the whole collection) is illustrated by several phenomena, among which their ability to exist independently of the whole and the fact that they can be easily replaced/changed. In the case of possessive genitive, the only example of quasi systematic use concerns the articulation of an ILN (piece-whole) with a noun referring to a whole entity (*Nwhole/ILN* in Table 2). We claimed that the resort to this marker could be explained by the strong existential/referential dependence existing between ILNs and nouns of spatial entities. Moreover, we indicated that the predominance or generalization of this mechanism was also due to the

grammaticalization tendency displayed by ILNs. However, it should be not overlooked that the systematic use of the possessive marker can vary according to the grammaticalization level of the considered ILN and the nature of the whole entity with which it is associated (see Table 2).

Apart from these cases of systematic or massive use of a particular genitive marker, two other kinds of situations exist. In the former situation the description of meronomies is preferably made by means of one of the two genitive markers (without preventing the resort to the other in specific contexts) whereas in the latter case both markers can be equally used (with the corresponding semantic distinctions). The preference for one genitive or the possibility to use both markers can be here again accounted for on the basis of the notions of typical configuration and dependence.

Besides the obligatory uses previously mentioned, the locative genitive can express a component-assembly relation if the considered whole entity is a location designated by a common noun (possessive genitive being also possible for certain locations: mixed entities) or a configurational object (these entities also accept the possessive genitive). The locative marker is also acceptable for referring to most substance-whole relations (together with the possessive genitive which is sometimes preferred), at least when the described meronomy does not involve natural entities. In all these cases, the possibility to resort to the locative genitive can be explained through the notion of typical configuration. In this way, we noted that locations are containing entities whereas configurational objects can give rise to containment, support or integrated interactions. We also indicated that, because of their specific ontological nature, substances seem to be associated with a containment-like notion.

As concerns the possessive genitive (and again leaving aside obligatory uses), this marker allows to describe component-assembly relations in which the whole is a mixed entity designated by a common noun (we previously saw that the locative genitive is acceptable too) or an object (the locative is also used for certain kinds of objects: configurational objects). The resort to the possessive marker is also possible for expressing the relation between a particular member and a collection (together with the locative genitive) as well as for describing substance-whole relations (the locative genitive is, most of the time, also acceptable). These uses of the possessive genitive are not surprising at all and can be accounted for by means of the concept of dependence. Let us recall that mixed entities as well as objects usually display clear functional dependences between parts and wholes and that substances appear as fulfilling particular functional roles in the wholes they make up. Finally, the specific status of a "non ordinary/particular" member of a collection also entails some kind of dependence between this element and the whole collection.

Data contained in Table 2 has to be completed, recalling an important point already mentioned in this study. In situations where a particular genitive is preferred to the other or at least more generalized, the resort to the alternative/concurrent form is not really excluded and can, indeed, be favored by particular factors. Some of these factors - among which contexts of utterance - were previously evoked (plurals, specification level, "contrastive/parallel" contexts, extraction/addition contexts, etc.) in particular concerning the cases

which seem to lead towards the use of the locative marker. Obviously, the proposed list of factors/parameters is not exhaustive and a deeper analysis of genitives' semantics would need to make this point clearer.

After having summed up the most important results of this work and recalled the basic role of typical configurations and dependences for the semantics of locative and possessive genitives (respectively), let us make two further remarks on the distribution of these markers.

In previous studies on Basque genitives (Aurnague 1995) (Aurnague 1996a), our approach consisted in focusing on the characterization of the locative marker and in (contrastively) explaining the distribution of the possessive genitive according to the more or less obligatory character of the former. The parallel analysis of these two markers we carried out in this work gave us the impression that the semantics of the possessive genitive (based on dependences) is more constrained than the semantics of the locative marker (based on typical configurations) so that a "negative" characterization of the former derived from the sole observation of the latter seems to be difficult. Indeed, conceptual deductions going from dependences to typical configurations/locations can be often drawn. In this way, the absence or weakening of dependences between two spatial entities leads, most of the time, to relate them through a simple localization link (rather than through a part-whole relation) so that one can predict the use of a locative genitive (instead of a possessive marker). Converse reasoning and predictions (from typical configurations/locative genitive to dependences/possessive genitive) seem more difficult to make since the presence/absence of a configurational relation does not allow to deduce particular information about dependences.

The second remark concerns the possible role of analogy or similarity processes in the functioning of genitives and, in particular, in the distribution of component-assembly relations. Indeed, it is probable that initial/original uses of a part noun (*gizonaren zangoa* (the leg of-poss the man)) may have (partly) influenced the kind of genitive which appeared in later constructions calling for the same noun (*mahaiaren zangoa* (the leg of-poss the table)). Even if such analogical processes are likely to play a part in the observed data, they are obviously not the only - nor the most important - mechanism underlying the distribution of genitives because, as we already saw, many uses differing from the original pattern can be found (**gizoneko zangoa* (the leg of-loc the man), *mahaiko zangoa* (the leg of-loc the table)). In any case, we think that these analogical processes are not "blind" mechanisms where the genitive marker would only be conditioned by the nature of the part noun (right context, e.g.: *N-ren zangoa* (N-of-poss leg)) but rather are grounded on more complex patterns taking into account the properties of parts and wholes as well as the relations between these entities (that is to say both left and right contexts). In other words, a detailed and accurate account of analogy or similarity mechanisms has to integrate the semantic properties of parts and wholes which are relevant for the functioning of genitives that is to say the features we tried to bring to the fore all along this work.

7. Conclusion

The existence of two genitives in Basque constitutes an interesting property of this language. However, and as we tried to illustrate, these two markers display a

complex distribution and their semantic content is not easy to grasp. In the particular case of part-whole relations (these genitives being used for expressing a large range of other semantic relations), the acceptability/use judgments and the corpus analyzed in this work showed that, beyond the interpersonal differences that appear in a first approximation, several invariants or massive tendencies seem to emerge (at a more global level).

From a practical point of view, the results provided by this study may be useful for people working on the standardization/normalization of Basque. In particular, the complexity of data indicates that the analyzed phenomena can definitely not be grasped by simple (or even simplistic) rules. Even if a grammatical and pedagogical perspective can make such simplifications satisfactory or tempting, they are often based on wrong semantic concepts/categories and they do not account for the real linguistic facts.

From a more theoretical point of view and beyond the sole inventory and description of linguistic data, this study tried to introduce some elements which may provide a first explanation of the observed distribution. We think that several of the points previously introduced are susceptible to contribute to the theoretical works on part-whole relations and more generally to the analyses of linguistic and cognitive space. In this way, the different kinds of typical configurations highlighted all along this work (containment, support, integrated landmarks) confirm the basic role of such notions on the functioning of spatial expressions. This study also allowed to better grasp several notions of dependences underlying the semantics of the possessive genitive (functional dependence, existential dependence related to function or to reference) as well as to specify some of the links existing between them. Secondary factors like the level of specification and the stable/ephemeral character were introduced, their relations with typical configuration and dependence (respectively) being explained. Finally, this analysis may contribute to a better knowledge and definition of the ontology of entities which underlies linguistic and cognitive space.

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Uses	Two genitives	Locative genitive (<i>ko</i>) only	Possessive genitive (<i>ren</i>) only
Kind of relation/ Kind of whole			
Component-assembly			
<u>Geographical location</u> (proper name)	0 (0%)	20 (100%)	0 (0%)
<u>Mixed entity</u> (common noun)			
House	6 (30%)	13 (65%)	1 (5%)
Other	7 (35%)	6 (30%)	7 (35%)
Object			
-Natural entity	0-1 (2%)	0 (0%)	19-20 (98%)
-Non configurational entity	0-2 (8%)	0-1 (1%)	17-20 (91%)
-Configurational entity			
Vehicle			
Car	12-14 (63,5%)	1-6 (20%)	2-5 (16,5%)
Tire/wheel	12 (60%)	6 (30%)	2 (10%)
Door	12 (60%)	5 (25%)	3 (15%)
Motor	14 (70%)	1 (5%)	5 (25%)
Bus	11-12 (58,5%)	1-3 (10%)	6-7 (31,5%)
Bicycle	9-10 (48,5%)	2-4 (15%)	6-8 (36,5%)
Furniture			
Cupboard	10-11 (53,5%)	0-4 (11,5%)	5-10 (35%)
Table, chair	6-11 (45%)	0-1 (3,5%)	8-14 (51,5%)
Substance-whole			
Solid artifact	5-6 (27,5%)	1-3 (10%)	12-13 (62,5%)
Liquid artifact	6 (30%)	8-10 (45%)	4-6 (25%)
Natural entity	3 (15%)	0 (0%)	17 (85%)

Table 1: questionnaires and acceptability/use judgments

Properties Kind of relation/ Kind of whole	typical configu- -ration	dependence	ontology/ specifica- -tion	locative genitive : <i>ko</i>	posse- -ssive genitive : <i>ren</i>
Component-assembly					
<u>Geographical location</u>					
Proper name	+	not clear	location/ max spec	+	-
Common noun	+	not clear	location	+	???
<u>Mixed entity</u>					
Proper name	+	functional	location/ max spec	+	-
Common noun	+	functional	location	+	+
<u>Object</u>					
Natural entity	-	existential/ functional	object	??	+
Non configurational object	-	functional	object	?	+
Configurational object	+	functional	object	+	+
Piece-whole (ILNs)					
<i>Nwhole/ILN</i>					
<u>Location</u>					
Proper name	+	existential/ referential	location/ max spec	?/+	-
Common noun	+	existential/ referential	location	??/?	+
<u>Object</u>	dependin g on the whole object	existential/ referential	object	-/???	+
<i>(Nwhole/ILN)/Npart</i>	+	depending on the whole entity	location/ max spec	+	???
Member-collection					
Relation ordinary member-whole	localiza tion-like	minimal/-	collection	+	-
Relation specific member-whole	localiza tion-like	functional	collection	+	+
Substance-whole					
Solid artifact	contain ment-like	functional	substance	?/+	+
Liquid artifact	contain ment-like	functional	substance	+	+
Natural entity	contain ment-like	existential/ functional	substance	??/?	+

Table 2: part-whole relations and Basque genitives