CAUSATION AND SEMANTIC CONTROL. DIAGNOSIS OF INCORRECT USES IN MINORIZED LANGUAGES

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Abstract

Data obtained about the use of language for special purposes can be a valuable tool for checking theoretical predictions concerning semantics and syntax of certain kinds of verbs.

The goal of this paper is to find some kind of test to prevent incorrect uses in Basque specialized texts, without refusing available but previously not achieved uses. We characterize agents, circumstantial causes, instruments and themes according to the features self-initiator, controller, controlled and affected. We also compare unaccusatives which take part in the "causative alternation" with pure unaccusative verbs, with regard to the above-mentioned features. We conclude that both bear subjects which can be defined as internal causes. Neverheless, uncontrollable causes are avoided as affected themes, and either they avoid all kinds of transitive constructions or they allow transitive constructions with circumstantial causes as subject. On the other hand, we claim that clauses with an instrument as subject bear an empty cause, which complement allows restricted kinds of aspectual interpretations. We also show that experiencer predicates can be related to the above mentioned semantic features. When experiencers take part in a transitive construction they are affected objects, but experiencers can also be internal causes. Finally, we explore the selectional behavior of some affixes which derive deverbal nouns or adjectives, and we conclude that the above mentioned semantic features are relevant in the competence of speakers when they generates deverbal nouns or adjectives.

1. Introduction

Basque dictionaries usually provide information about the auxiliary required or allowed by verbal entries. Basque verbs agree with subjects, direct objects and indirect objects, which show ergative, absolutive or dative case, the ergative and dative cases being morphologically realized affixes, while absolutive is a morphologically unmarked case. Therefore when the user of the dictionary knows the auxiliary required by a verb, he also knows the case which each argument must be assigned. However, in order to ensure that the speaker using the dictionary to solve competence doubts will generate acceptable sentences, much further information about arguments is required.[1] For

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[1] More data about the information provided by Basque dictionaries for verbal entries in Gràcia et al. (2000: 586-589).

example Basque dictionaries characterize the verb *adierazi* 'to express' with the dyadic or the triadic auxiliary. Example (1a) illustrates a sentence in which this verb is correctly used: an ergative, an absolutive and a dative argument agree with the verb. Nevertheless, dictionaries do not provide the user with any information that will prevent (1b).[2]

(1) a. Jonek   *adierazi* digu   herrialde hau   oso hezea dela.
        Jon-ERG notify   AUX-3sA-2pD-3sE country this(ABS) very humid is-that
        'Jon notified us that this country is very humid.'

    b. *Zelai berdeek   *adierazi* digute   herrialde hau   oso
        field green-ERGpl. notify   AUX-3sA-2pD-3sE country this(ABS) very
        hezea   dela.
        humid is-that
        'The green fields notified us that this country is very humid.'

Since (1a) and (1b) have similar syntactic structures, one may hastily conclude that what accounts for the ungrammaticality in (1a) is animacy: animate subjects must be required with the verb *adierazï* 'to express'. The examples in (2) seem to corroborate this idea, since the verb *iradoki* 'to inform, to suggest' is acceptable with both kinds of subjects, as illustrated in (2).

(2) a. Jonek   *iradoki* digu   herrialde hau   oso hezea dela.
        Jon-ERG inform AUX-3sA-1pD-3sE country this(ABS) very humid is-that
        'Jon informed us that this country is very humid.'

    b. Zelai berdeek   *iradoki* digute   herrialde hau   oso hezea dela.
        field green-ERGpl. inform AUX-3sA-1pD-3pE country this(ABS) very humid is-that
        'The green fields informed us that this country is very humid.'

However, example (3a) is perfectly acceptable, even with an inanimate subject, which suggests that the verb *adierazi* has more intricate argumental requirements. Comparing the inanimate subjects in (3) *(gezi* 'arrow' and *zelai berde* 'green field'), we conclude that they differ in a crucial aspect: (3a) expresses an intentional eventuality, because there is a voluntary decision of someone for arrows to express the direction of flow. However, what is expressed by *zelai berde* 'green field' can not be intentional.

(3) a. *Geziek*   jarioaren   noranzkoa   *adierazten* dute.
        arrow-ERGp. flow-DET-GEN direction-DET(ABS) express   AUX-3sA-3pE
        'Arrows indicate the direction of the flow.'

    b. **Zelai berdeek*   *adierazi* digute   herrialde hau   oso
        field green-ERGp. indicate AUX-3sA-1pD-3pE country this (ABS) very
        hezea   dela.
        humid is-that
        'The green fields notified us that this country is very humid.'

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2 Concerning wrong uses of Basque verbs in specialized contexts see Zabala (1995) and Odriozola & Zabala (2000).

Another example of incorrect usage involves the verbs *esleitu* 'assign' and *egotzi* 'attribute', which are also frequently confused, since they bear the same valency, the same auxiliary and the same kind of arguments concerning case.

(4) a. Aurkitu duten   substantziari   X izena *esleitu* diote.
       find   AUX-REL substance-DET X name assign AUX-3sA-3sD-3pE
       'The substance found has been assigned the name X.'

    b. *Substantziari   zahartzearen azkartzea   *esleitu* diote.
       Substance-DAT ageing-GEN acceleration-DET assign AUX-3sA-3sD-3pE
       'The substance has been assigned the acceleration of ageing.'

The incorrect sentence in (4b) becomes an acceptable one with the verb *egotzi* 'attribute' (5). In this confusion inanimate objects are involved. What semantic characteristics are responsible for this confusion?

(5) Substantziari   zahartzearen azkartzea   egotzi   diote.
    Substance-DAT ageing-GEN acceleration-DET attribute AUX-3sA-3sD-3pE
    'They attributed to the substance the acceleration of ageing.'

When speakers use the language for special purposes, verbs, just like any other kind of words, are sometimes used in a new way, and these uses differ apparently from those reflected in general dictionaries. Lexicographic work is based on the real corpus of a language and thus the information contained in dictionaries must be used very carefully. For example, the verb *adierazi* is used in (6) as intransitive with the monadic auxiliary *izan* 'to be', that is, it is used as an unaccusative verb.[3] Nevertheless, dictionaries assign to this verb only a transitive use, by codifying only the dyadic auxiliary. A superficial corrective attitude should perhaps rule out this use, arguing that the wrong auxiliary has been chosen. In fact this kind of positioning is rather frequently found in the context of minorized languages such as Basque, in which speakers, teachers, correctors, language academy members and even linguists are always worried about damage to the language.

(6) Hormona batek   agindua   ematen dienean,   geneak
    hormone a-ERG order-DET(ABS) give   AUX-3sA-3pD-3sE-when, gene-DETp(ABS)
    adierazi egiten dira
    express do   AUX-3pA

    'When a hormone gives the order, gene expression takes place.'

In our opinion, there is a much more constructive, and thus much preferable attitude that we could take. By examining the corpus of a certain language, we collect the different ways in which a verb has been used in this language, but should make allowance for possible uses of this verb that have never been fulfilled because the

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[3] Basque intransitive unaccusative verbs take the auxiliary *izan* 'to be', but intransitive unergative verbs take the auxiliary *edun* 'to have'. See for example Levin (1983) and Laka (1995).

required context has never happened. Specialized contexts are good candidates for these possible options to be fulfilled. Moreover, one can expect new uses to be much more frequent in minorized languages which, in their recovering process, are extending more and more to previously non-existent specialized areas. Thus, data obtained about the use of language for special purposes can be a valuable tool for checking theoretical predictions concerning semantics and syntax of certain kinds of verbs.

In this paper we examine the behavior of certain Basque verbs in the light of a number of concepts developed in the fields of generative semantics and syntax, such as agentivity, control, causation and animacy. The goal is to find some kind of test to prevent incorrect uses, without refusing available but previously not achieved uses. Section 2 collects some classic tests for detecting control and intentionality. We characterize agents, circumstantial causes, instruments and themes according to the features self-initiator, controller, controlled and affected. In the end of the section the example in (3a) is explained by attributing to the subject the instrumental theta role. Section 3 explores the behavior of unaccusatives which take part in the 'causative alternation' and compare them with pure unaccusative verbs, with regard to the above-mentioned features. We conclude that both bear subjects which can be defined as internal causes. Internal causes can be characterized at the same time as self-initiator of the event and affected by this event, although whether the cause is controllable or uncontrollable should be distinguished. Controllable causes can also be affected themes and thus can be found in transitive constructions with agent subjects. Uncontrollable causes are avoided as affected themes, and either they avoid all kinds of transitive constructions or they allow transitive constructions with circumstantial causes as subject. At the end of the section the example in (4) is explained by attributing to the subject an internal uncontrollable cause status. Section 4 explores the behavior of the two major classes of psychological predicates from the viewpoint of causation, control and affectedness. Section 5 is concerned with aspectual readings of transitive constructions with instrumental subjects. We attribute to these constructions reportive or ability readings. Different kinds of instruments should yield to different kinds of these aspectual readings. Section 6 explores the way in which syntactic instantiation of the verb affects the possibility of control of the event. In particular, we characterize the behavior of dative oblique arguments when they are interpreted as goal, possessor or starting point. Finally, section 7 is concerned with Basque affixes which derive deverbal nouns or adjectives. We explore their selectional behavior concerning features studied in the other sections, in order to show that they are relevant features in the competence of speakers when they generate new deverbal nouns or adjectives.

2. Causation, intentionality and control

Basque is an ergative language. Transitive constructions are characterized by a subject case-marked ergative and an absolutive object (7a), and they select the auxiliary *edun* 'to have'. As for intransitive constructions, unergative verbs case-mark the subject with ergative case, and also take the auxiliary *edun* 'to have' (7b). On the other hand, unaccusative constructions case-mark the subject with the absolutive case (the case of the direct object in transitive constructions) and take the auxiliary *izan* 'to be' (7c). Therefore Basque subjects are sometimes case-marked ergative and sometimes absolutive. This behavior contrasts with that of accusative languages in which subjects always show nominative case.

(7) a. Jonek   atea   ireki du.
       Jon-ERG door-DET(ABS) open AUX-3sA-3sE
       'Jon opened the door.'

   b. Jonek   bazkaldu   du.   c. Jon   etxera   joan da.
      Jon-ERG have-lunch AUX-3sA-3sE   Jon(ABS) home-to go   AUX-3sA
      'Jon had lunch.'   'Jon went home.'

However, knowing what auxiliary is required and what case is to be assigned to different arguments does not suffice to make sure that a sentence will be correctly generated. It is well known that predicates impose semantic restrictions on their arguments. For example, if we interchange the arguments in (7a) we make the sentence ungrammatical (8a). By contrast, both combinations of arguments are perfectly allowed with the verb *jo* 'hit' in (8b, c).

(8) a. *Ateak   Jon   ireki du.
        door-ERG Jon(ABS) open AUX-3sA-3sE
        'The door opened Jon.'

   b. Ateak   Jon   jo du
      door-ERG Jon(ABS) hit AUX-3sA-3sE
      'The door hit Jon.'

   c. Jonek   atea   jo du.
      Jon-ERG ate-DET(ABS) hit AUX-3sA-3sE
      'Jon hit the door.'

In the examples in (7) Jon is the argument that initiates all events expressed by the verbs *ireki* 'open, *bazkaldu* 'have lunch' and *joan* 'go'. Furthermore, in (7a) *atea* 'the door' is an object affected by the event initiated by Jon, because the door is opened as a result of this event. An affected argument is an internal argument which undergoes some change (state, location, possessor) (Tenny 1988, 1989, 1994). What is failing in sentence (8a)? Is the subject *ate* 'door' unable to initiate the event? The response must be no, because the verb 'open' can be used as unaccusative with *atea* 'the door' as subject (9). The door itself is able to initiate the action expressed by the verb *ireki* 'open', but it is not able to affect any object different from itself.

(9) Atea   ireki da.
    door-DET(ABS) open AUX-3sA
    'The door opened.'

The sentence in (7c) with the unaccusative verb *joan* 'go' is very similar to (9): the subject itself (Jon) starts the event and is itself affected, because there is a change of location. However, there is an important difference between (7c) and (9), which concerns what is known as 'semantic control'. Authier and Reed (1991) define semantic control as "the possibility of canceling what is denoted by the predicate if the

subject of this predicate decides to stop doing it." Control entails intention. Two classic tests can be used to reveal this intentional control. The complement of obligatory control constructions of subject control verbs such as *try, endeavor, refuse, condescend* and *dare,* and of object control verbs such as *persuade, force, convince, tell* and *order,* must be an intentional action, that is, this action must be within the intentional control of the subject (Berman 1970, Lasnik and Fiengo 1974, Lasnik 1991). Only animate subjects can be subjects of obligatory control constructions:

(10) a. *Atea   behartu dute   [PRO irekitzen]
         door-DET(ABS) obliged AUX-3sA-3pE PRO opening
         'They obliged the door to open.'

     b. Jon   behartu dute   [PRO etxera   joaten]
        Jon(ABS) force   AUX-3sA-3pE house-ALAT going
        'They forced Jon to go home.'

Control of the action requires animacy and intentionality: only animate beings can bear intention. Jackendoff (1993) argues that "purposes can only go with volitional acts" and all purposes presuppose an intention. The behavior of the two sentences above contrasts also in purpose clauses:

(11) a. Atea   ireki da,   *jendea sartzeko⁴ [unaccusative interpretation]
         door-DET(ABS) open AUX-3sA people come in-FOR
         'The door opened, to let people in.'

     b. Jon   etxera   joan da,   ama   agurtzeko.
        Jon(ABS) home-to go   AUX-3sA mother(ABS) greet
        'Jon went home to greet his mother.'

Our first distinction must therefore be that between subjects of self-initiated events there are controllers of the action and there are non controllers of the action denoted by the verb. This will be our starting point for looking at different kinds of subjects. Causatives are transitive constructions in which an argument causes a second argument to be affected. These constructions are assumed to express events that can be broken down into two subevents: a causative subevent and a resultative subevent (Pustejovsky 1991, 1995). Some verbs allow different kinds of cause arguments: agents or interactive causes, instruments, circumstantial causes.⁵ Inanimate subjects (instruments and

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⁴ The purpose clause is allowed with an impersonal interpretation, that is if it means *The door has been opened,* but not if it means *The door opened.*

⁵ The term 'cause' is often used for any argument related to the causative subevent, but it is also used to make reference to non-controller causes such as forces of nature (*wind, rain, etc.*). Therefore, we use here the terminology in Kural (1997), i.e. interactive and circumstantial causation. As for interactive causation, there is direct interaction between the cause and the affected object, so the cause is an agent. On the other hand, with circumstantial causation, the cause may only create the circumstances in which the object is affected.

natural forces) are avoided with purposes (12), because they lack intentionality, and thus they are not the controller of the event.

(12) a. *Jonek*   atea   ireki du,   sartzeko [interactive cause = agent]
        Jon-ERG door-DET(ABS) open AUX-3sA-3sE, get in-for
        'Jon opened the door, in order to get in.'

     b. *Giltzak*   atea   ireki du,   *sartzeko   [instrument]
        Key-DET-ERG door-DET(ABS) open AUX-3sA-3sE, *get in-for
        'The key opened the door, *in order to get in.'

     c. *Haizeak*   atea   ireki du,   *sartzeko [circumstantial cause]
        wind-DET-ERG door-DET(ABS open AUX-3sA-3sE, *get into-for
        'The wind opened the door, *in order to get in.'

Moreover, causes and instruments differ in their availability to appear with an agent: instruments are allowed as adjuncts when the agent fills the subject's site (13a) but circumstantial causes are avoided with agents (13b) (Shin 1998). This contrast reveals that instruments can or must be controlled by a controller argument (agent), whereas circumstantial causes avoid being controlled.

(13) a. *Jonek*   atea   ireki du   *giltzaren   bidez.*
        Jon-ERG door-DET(ABS) open AUX-3sA-3sE key-DET-GEN by means of
        'Jon opened the door using the key.'

     b. **Jonek*   atea   ireki du   *haizearen   bidez.*
        Jon-ERG door-DET(ABS) open AUX-3sA-3sE wind-DET-GEN by means of
        'Jon opened the door using the wind.'

This makes us think of circumstantial causes and agents as both sides of the same theta position, although instruments represent a different theta position. Following Minkoff (1997), AGENT thematic relations are the result of applying to the argument filling a certain theta position a certain lexical interpretation made available in accordance with abstract syntactic principles, referred to as "animacy entailment". When "animacy entailment" doesn't apply the CAUSER thematic relation is obtained. Animacy is required for a subject to be a controller of the action denoted by the verb. However, animate subjects related to the causative subevent of a causative construction are not necessarily agents. In fact, with a verb such as *ireki* 'to open' in (14) there are two possible readings, which are disambiguated using control adverbs: the adverb *nahita* 'voluntarily' gives us the control reading (14a), and the adverb *nahi gabe* 'involuntarily' gives us the 'out of control' reading (14b). That is, the control reading requires intentionality. Only the control reading is compatible with the AGENT thematic role, and non controller animate causes are therefore circumstantial causes. We call the reading in (14b) 'out of control reading', following the terminology in Demirdache (1997).

(14) a. Jonek   atea   ireki du   nahita [control reading: agent]
        Jon-ERG door-DET(ABS) open AUX-3sA-3sE voluntarily
        'Jon opened the door voluntarily.'

   b. Jonek   atea   ireki du   nahi gabe
      Jon-ERG door-DET(ABS) open AUX-3sA-3sE involuntarily
      'Jon opened the door involuntarily.'
                                          [out of control reading: circumstantial cause]

   However, instruments are avoided with a circumstantial cause (15a), and therefore ap-
pear to require voluntary actions. That is, the presence of an instrument in a causative
construction characterized by optional animacy entailment makes animacy entailment
obligatory. We conclude therefore that even when the instrument fulfills the subject
position, an (empty) interactive cause is necessary in the causative subevent (15b). That
is, sentences with instrumental subjects require controlled eventualities: instruments
presuppose interactive causes. The conclusion is that instruments are not able to
initiate an event, but interactive and circumstantial causes are.

   (15) a. *Haizeak   atea   ireki du   giltzaren   bidez.
            wind-DET-ERG door-DET(ABS) open AUX-3sA-3sE key-DET-GEN by means of
            '*The wind opened the door using the key.'

         b. [INTERACTIVE CAUSE [Giltzak atea ireki du]]
            [I. CAUSE [key-DET-ERG door-DET(ABS) open AUX-3sA-3sE]]
            [INTERACTIVE CAUSE [The key opened the door.]]

   Instruments take part in certain kinds of control constructions. For example, verbs
such as *serve, help* and *suffice* require an instrument as subject of their clausal
complement (Higgins 1973). Since instruments are not controllers, another controller
is required in these constructions, in order to control the category PRO.

   (16) Giltzak   balio du [PRO   atea   irekitzeko]
        key-DET-ERG serve AUX-3sA-3sE door-DET(ABS) open-FOR
        'The key serves to open the door.'

   Causative verbs often allow unaccusative variants. Such verbs are referred to as verbs
with "causative alternance". Basque unaccusative constructions (17a) are very similar to
impersonals (17b) (see Levin 1983): both constructions require the auxiliary *izan* 'to
be', and both case-mark the subject absolutive. However, the two types of construction
behave differently with the adverb *berez* 'spontaneously'. This adverb expresses the
absence of an external cause, and it is therefore avoided with impersonals like (17b),
since impersonals presuppose a non specified empty subject. *Eskolako atea* 'the school's
door' in (17b) is not a subject, but a direct object.

   (17) a. Atea   (berez)   ireki da.
            door-DET(ABS) (spontaneously) open AUX-3sA
            'The door opened spontaneously.'

         b. Eskolako   atea   zortzietan irekitzen   da   (*berez).
            school-GEN door-DET(ABS) eight-at   open-IMPF AUX-3sA (*spontaneously)
            'The door of the school is opened at eight o'clock.'

With the verb *ireki* 'open', "animacy entailment" is optional, but as Minkoff (1997) pointed out, there are some verbs which assign a theta role to the subject characterized by an obligatory animacy entailment. This obligatoriness is illustrated by examples such as (18), in which an inanimate subject is clearly avoided with the verb *margotu* 'to paint'.

(18) a. Jonek   atea   zuriz   margotu du.
        Jon-ERG door-DET(ABS) white-INSTR paint   AUX-3sA-3sE
        'Jon painted the door white.'

    b. *Haizeak   atea   zuriz margotu du.
        wind-DET-ERG door-DET(ABS) paint   AUX-3sA-3sE
        'The wind painted the door white.'

Verbs with obligatory agents as subjects absolutely lack unaccusative variants (19). *Atea* 'the door' is an affected object in (19a) but it lacks the intrinsic property necessary for being spontaneously painted. The eventuality expressed by the verb *margotu* 'to paint' requires an external cause. On the other hand, however, the door has the relevant intrinsic property to open by itself. Chierchia (1989) argues that unaccusative variants of causative verbs are similar to reflexives in which the only argument is both the cause and the affected theme. He argues that these constructions have a causative event, which is interpreted statively.[6] Pustejovsky (1995) agrees with Chierchia: causative/ unaccusative alternation should result with causative events non specified for a head. An unaccusative or a transitive causative will be determined by which subevent in the semantic representation is headed: causative transitive verbs without an unaccusative counterpart (*kill, murder*) should be left-headed, and pure unaccusatives should be right-headed. In our opinion this headedness is related to the possibility of the second argument to self-initiate the event and the possibility of this argument to be affected. In the examples in (19) the door is affected by the event initiated by Jon, but it is not able to self-initiate this event.

(19) a. Jonek   atea   margotu du.
        Jon-ERG door-DET(ABS) paint   AUX-3sA-3sE
        'Jon painted the door.'

    b. *Atea   (berez)   margotu da.
        door-DET(ABS) (spontaneously) paint   AUX3sA
        'The door got painted spontaneously [i.e., by itself].'

The empty subject of impersonal constructions licenses final adjunct clauses. These clauses are avoided with unaccusatives, because they lack an agent, and so they do not express an intentional controlled action:

(20) a. *Atea   berez   ireki da,   ikasleak   sartzeko.
        door-DET(ABS) spontaneously open AUX3sA, student-DETpl(ABS) get in-for
        'The door got opened spontaneously [i.e. got itself open] in order for the students to get in.'

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6 Reflexive constructions would differ from unaccusatives because the causative event is dynamic.

b. Eskolako   atea   zortzietan irekitzen da,   ikasleak
school-GEN door-DET(ABS) eight-at   open-IMPF AUX-3sA student-DETp(ABS)
sartzeko.
get into-for
'The door of the school is opened at eight o'clock, in order for the students to
get in.'

The adverb *berez* 'spontaneously' is a subject-oriented adverb which invalidates every possibility for an external cause to be presupposed. If this adverb applies to an agent (21) it invalidates the possibility of an external causer.

(21) Jonek   berez   ireki du   atea   (inork
Jon-ERG spontaneously open AUX-3sA-3sE door-DET(ABS) (anybody-ERG
behartu gabe).
force   without)
'Jon opened the door spontaneously (, without being forced by anybody).

In this sense, sentences with an instrumental subject behave similarly to impersonal constructions with regard to the adverb *berez* 'spontaneously'. That is, these constructions require an (empty) cause, and therefore, the negation of this cause via an adverb is avoided (22).

(22) Giltzak   atea   ireki du   (* berez).
Key-DET-ERG door-DET(ABS) open AUX-3sA-3sE spontaneously
'The key opened the door spontaneously.'

There are verbs with transitive/unaccusative alternations which exhibit interesting behaviour. An example is the case of the verb *abiatu* 'set off', taken from Etxepare (2003). In (23a) we have an unaccusative verb which self-initates the event. An inanimate subject is avoided with this verb, so the subject must be a controller (23b).

(23) a. Hiru langile   abiatu dira.
three worker(ABS) set.off AUX-3pA
'Three workers set off.'

b. *Projektu berri bat abiatu da. [with the unaccusative reading]
project   new one set.off AUX-3sA
'A new project set off.'

By contrast, in the transitive variant (24) the object must be an affected object (24a), and animate objects are avoided (24b). In a lexical causative construction, only one of the arguments can be a controller.

(24) a. Enpresak   proiektu berri bat abiatu du.
company-DET-ERG project   new one set.off AUX-3sA-3sE
'The company set off a new project.'

    b. *Enpresak   hiru langile abiatu ditu
       company-DET-ERG three worker set.off AUX-3sA-3sE
       'The company set off three workers.'

The event 'workers set off' can be caused but not controlled. This causation can be instantiated as a morphological causative (25). The subject of this construction is a circumstantial cause, and circumstantial causes are characterized by the absence of control.

(25) Enpresak   hiru langile   abiarazi   ditu.
     Company-DET-ERG three worker(ABS) set.off.CAUSE AUX-3pA-3sE
     'The company set off three workers.'

The following table summarizes semantic characteristics reviewed in this section, related to different kinds of arguments.

	Agents	Circumstantial Causes	Instruments	Themes
intentionality = controller	+	−	−	−
self-initiator	+	+	−	−
controlled	−	−	+	+
affected	−	−	−	+

Turning to the example (3a), repeated here as (26a), we can characterize the inanimate subject *gezi* 'arrow', as an instrument, since it is compatible with an agent (26b), that is, it can be controlled and it is unable to express a self-initiated action (26c).

(26) a. *Geziek*   jarioaren   noranzkoa   adierazten dute.
       arrow-ERGp. flow-DET-GEN direction-DET(ABS) express   AUX-3sA-3pE
       'Arrows indicate the direction of the flow.'

    b. Liburu honen   egileek   gezien   bidez   adierazi dute
       book   this-GEN autor-ERGp. arrow-GENpl. by means of express AUX-3sA-3pE
       jarioaren noranzkoa.
       flow-GEN direction
       'The authors of this book expressed the direction of the flow using arrows.'

    c. [CAUSE [*Geziek*   jarioaren   noranzkoa   adierazten dute]]
            arrow-ERGp. flow-DET-GEN direction-DET(ABS) express AUX-3sA-3pE
       'Arrows indicate the direction of the flow.'

    d. *Geziek   berez   adierazten dute
       arrow-ERGp. spontaneously express   AUX-3sA-3pE
       jarioaren noranzkoa.
       flow-GEN direction-DET(ABS)
       'Arrows spontaneously express the direction of the flow.'

We can conclude that the verb *adierazi* 'to express', even with inanimate subjects, requires causative constructions expressing controlled eventualities or situations: the subject must be either human or an instrument.

3. External causes and internal causes

Intransitive predicates express an internal cause eventuality, when the only argument of the verb bears an intrinsic property that is responsible for the event to take place (Levin and Rappaport Hovav 1995: 92). In addition, internal cause verbs grammatical-ize sometimes as unergative and sometimes as unaccusative (Mendikoetxea 1999).

(27) a. Haurra   jaio da.
         baby-DET(ABS) born AUX-3sA
         'The baby is born.'

     b. Izarrek   distiratzen   dute.
         Star-DET-ERG shine-IMPER AUX-3sA-3pE
         'Stars are shining.'

Internal cause verbs are predicated of animate beings or natural phenomena which bear intrinsic properties required for the event denoted to be possible. Mendikoetxea considers two tests to be relevant in order to delimit external and internal cause verbs: internal cause verbs lack transitive variants and are avoided with adverbs of the type *berez* 'spontaneously'. Moreover, she argues that internal cause verbs impose strict restrictions on the subject, in the sense that only a few entities are available for this function: only mammalians are born, only certain kinds of plants bloom, only metals go rusty, only certain kinds of objects shine and so on.

(28) a. Haurra   jaio da.
         baby-DET(ABS) born AUX-3sA
         'The baby is born.'

     b. *Sendagileak/   *sendagaiak/   *lurrikarak
         doctor-DET-ERG/medicine-DET-ERG/earthquake-DET-ERG
         haurra   jaio du.
         baby-DET(ABS) born AUX-3sA-3sE
         'The doctor/the medicine/the earthquake borned the baby.'

     c. ? Haurra   berez   jaio da.
           baby-DET(ABS) spontaneously born AUX-3sA
           'The baby was born spontaneously.'

Nevertheless, the sentence in (28c) can be improved if the sense of the adverb *berez* 'spontaneously' is justified, or if a circumstantial cause is added as a postpositional adjunct. Naturally, the circumstantial cause adjunct is incompatible with the adverb *berez*.

(29) a. Haurra   berez   jaio da,   oxitozinarik   gabe.
baby-DET(ABS) naturally born AUX-3sA oxitozine-PART without
'The baby was born naturally, without oxitozine.'

b. Haurra   jaio da,   lurrikararen kausaz.
baby-DET(ABS) born AUX-3sA, earthquake-because of
'The baby was born because of the earthquake.'

In any case, it is difficult to see how subjects of unaccusatives without transitive alternance (*haurra jaio da* 'the baby is born') differ from subjects of unaccusatives with transitive alternance (*atea ireki da* 'the door opened'). In both cases the only argument itself initiates the event, and it is both the cause and the affected object of this event. Moreover, both require a subject with a certain kind of intrinsic property. Certainly, verbs such as *erori* 'fall', *apurtu* 'break', *hondatu* 'ruin' allow transitive counterparts and are compatible with practically any kind of argument, but then there is the Basque verb *hil* 'die/kill', a verb with transitive/unaccusative alternance, but whose subject/object is restricted by the fact that only living creatures die.

(30) a. Jon   hil da.   b. Lapurrak   Jon   hil du.
Jon(ABS) die AUX-3sA   thief-DET-ERG Jon(ABS) kill AUX-3sA-3sE
'Jon died.'   'The thief killed Jon.'

In the unaccusative counterpart (30a), to die is a self-initiated process, just like to be born is in (28a). The two kinds of event differ with regard to the possibility of the event's being controlled: babies are born in nine months and one can not directly cause a baby to be born in two months. With respect to dying/killing, ruining or breaking persons or things, there is a natural process whereby living creatures and objects are brought respectively closer and closer to death, ruin or breakage, but these processes can be controlled by an external agent, which can decide to terminate the process. By contrast, an uncontrollable self-initiated process can be interrupted, but an external agent can not decide to complete the event.

Non controllable internal causes are incompatible with agents, that is, with interactive causes, but they are allowed with circumstantial causes. However, the possibility for this cause to fulfill the subject site appears to be an idiosyncratic lexical property of each verb in each language. For example, Spanish equivalents of Basque verbs such as *loratu* 'bloom', *herdoildu* 'rust' —i.e., the verbs *florecer* and *oxidar*— are avoided with a cause subject (Mendikoetxea 1999), whereas Basque frequently allows transitive counterparts of these verbs. In any case, the subject can never be an agent nor an instrument.

(31) a. Zuhaitza   loratu da.
tree-DET(ABS) bloom AUX-3sA
'The tree bloomed.'

b. Beroak   zuhaitza   loratu du.
Heat-DET-ERG tree-DET(ABS) bloom AUX-3sA-3sE
'The heat bloomed the tree [i.e. caused the tree to bloom].'

Another example is the Spanish verb *hervir* 'boil', which allows unaccusative/transitive alternations, whereas the Basque equivalent *irakin* 'boil' is only allowed in intransitive constructions, specifically in unergative constructions (32).

(32) a. Esneak   irakin du.
        Milk-DET-ERG boil   AUX-3sA-3sE
        'The milk boiled.'

    b. *Jonek   esnea   irakin du.
        Jon-ERG milk-DET(ABS) boil   AUX-3sA-3sE
        'Jon boiled the milk.'

Certain verbs of growth similar to *loratu* 'bloom' exhibit a peculiar alternation in Basque: when used as transitives they are causative agentive verbs, expressing removal of the thing grown (Gràcia et al. 2000, Etxepare 2002). For example the verb *kimatu* 'bud/trim'. In (33b) the subject is an agent and not a circumstantial cause as in (33c). The unaccusative verb (33a) allows a circumstantial cause as adjunct (33c) but not as subject, because the ergative subject must be an agent.

(33) a. Zuhaitza   kimatu da.
        tree-DET(ABS) bud   AUX-3sA
        'The tree budded.'

    b. Jonek   zuhaitza   kimatu du.
        Jon-ERG tree-DET(ABS) trim   AUX-3sA-3sE
        'Jon trimmed the tree.'

    c. Zuhaitza   kimatu da,   eguraldi onaren   kausaz.
        Tree-DET(ABS) bud   AUX-3sA, weather good-GEN because of
        'The tree budded because of the good weather.'

Internal cause verbs can also grammaticalize as unergatives (27b, 32a). In this case, the internal cause takes ergative, and no transitive counterpart is ever allowed. Circumstantial causes must always be expressed as adjuncts.

(34) a. Beirak   distiratu du,   eguzkiaren kausaz.
        glass-DET-ERG shine   AUX-3sA-3sE sun-GEN   because of
        'The glass shone because of the sun.'

    b. *Eguzkiak   beira   distiratu du.
        sun-DET-ERG glass-DET(ABS) shine   AUX-3sA-3sE
        'The sun made the glass shine/shone on the glass.'

Therefore we conclude that internal causes are arguments that self-initiate the event and are the only argument affected by this event. Internal causes include both controllable and uncontrollable causes. The former can take part in transitive constructions with agent subjects or circumstantial cause subjects. The latter take part only in intransitive constructions (unergatives or unaccusatives), or else in unaccusative constructions or transitive constructions with circumstantial cause subjects. But they avoid agent subjects, because they are uncontrollable.

Summarizing, an argument is an internal cause if it initiates the event itself and it is itself the only argument affected by this event. There are controllable and uncontrollable internal causes. Uncontrollable internal causes are incompatible with agents, but depending on the verb and on the language, they can take part in transitive constructions with circumstantial cause subjects. The subject of unergative constructions is always an uncontrollable internal cause

		Unergative constructions	Unaccusative constructions	Transitive constructions with agent subjects	Transitive constructions with circumstantial cause subjects
Internal causes +self-initiators	Controllable internal causes	–	+	+	+
+ self-affected	Uncontrollable internal causes	+	+	–	+

Natural processes are usually internal cause eventualities, which are grammaticalized as intransitive verbs. This is the case of the example in (6) repeated here as (35). The intrinsic property of genes is to bear information, and the eventuality expressed in (35) is an uncontrollable internal cause eventuality. Therefore it is not strange for this eventuality to have been grammaticalized as an unaccusative construction.

(35)   Hormona batek   agindua   ematen dienean,
       hormone   a-ERG order-DET(ABS) give   AUX-3sA-3pD-3sE-when,
       geneak   *adierazi* egiten dira
       gene-DETpl(ABS) express   do   AUX-3plA
       'When a hormone gives the order, gene expression takes place.'

4. Experiencer predicates

Psychological predicates can also be related to semantic features analyzed in previous sections. This kind of predicate is characterized by an experiencer argument. Following Belleti & Rizzi (1988), two major classes are distinguished: on the one hand we have verbs such as *temere,* in which the experiencer is the subject; on the other we have verbs such as *preoccupare* in which the experiencer is the object. Belleti & Rizzi (1988) and also Grimshaw (1990) attribute to both kinds of predicates an experiencer-theme argument structure. Belleti & Rizzi explained the striking behavior of the *preoccupare*-class verbs in respect to binding and control by claiming that the subject of these verbs is the internal argument (theme) of the verb. Pesetsky (1987, 1995) and Pustejovsky (1995), however, relate these experiencer predicates of the *preoccupare*-class with causative predicates such as *kill.*[7] The argument structure of these predicates should thus be cause-experiencer.

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[7]   Zabala (1993: 202-204) agrees with Pesetsky (1987) and attributes to the surface subject of Basque psych-verbs such as *beldurtu* 'frighten' the cause θ-role.

Predicates of the *preocupare* class such as Basque *kezkatu* 'worry', *beldurtu* 'frighten', *lotsatu* 'shame' often present inchoative/causative alternances and different types of subjects are allowed. The cause subject can be either animate (36a) or inanimate (36b, c). Furthermore, animate subjects allow either control or out of control readings (36a), while inanimate subjects allow either circumstantial causes (36b) or instruments (36c). Inchoative constructions are also found with this kind of verb (36d).

(36) a. Jonek   haurra   *beldurtu* du   nahita/   nahi gabe
         Jon-ERG child-DET(ABS) frighten AUX3sA-3sE voluntarily/involuntarily
         'Jon frightened the child voluntarily/involuntarily.'

    b. Ekaitzak   haurra   *beldurtu* du.
       storm-DET-ERG child-DET(ABS) frighten AUX3sA-3sE
       'The storm frightened the child.'

    c. Makilak   haurra   *beldurtu* du[8].
       stick-DET-ERG child-DET(ABS) frighten AUX3sA-3sE
       'The stick frightened the child.'

    d. Haurra   *beldurtu*   da   (berez).
       child-DET(ABS) get.frightened AUX-3sA (spontaneously)
       'The child got frightened (spontaneously)'.

    e. Haurra   *beldur* da.
       child-DET(ABS) fear   is
       'The child is frightened.'

Therefore in this kind of verb experiencers are internal arguments. When experiencers take part in a transitive construction they are affected objects: they suffer a change in their psychological state. Psychological state itself is expressed using the noun *beldur* 'fear' (36e) instead of the verb *beldurtu* 'frighten'. Furthermore, an experiencer can itself initate a change of psychological state and also be affected by this change (36d). Experiencers can thus be internal causes. Moreover, the experiencer role requires animacy (37a). Finally, experiencers are uncontrollable arguments (37b).

(37) a. *Atea   *beldurtu*   da.
         door-DET(ABS) get.frightened AUX-3sA
         'The door got frightened.'

    b. *Haurra   behartu dute [PRO   *beldurtzen*]
       child-DET(ABS) force   AUX-3sA-3sE getting.frightened
       'They forced the child to get frightened.'

Predicates of the *temere* class such as *maitatu* 'love', *miretsi* 'admire', *pairatu* 'suffer', *gustatu* 'like', *interesatu* 'interest', are always dyadic predicates. This is consistent with the

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[8] *Jonek haurra beldurtu du makilaren bidez* 'Jon frightened the child with the stick' is also possible. The subject in (36c) is thus an instrument.

experiencer-theme argument structure, since the theme is usually obligatory. Some verbs of this kind case-mark the experiencer ergative (38a) and some others dative (38b).

(38) a. Jonek   zure lana   *miresten* du.
           Jon-ERG your work-DET(ABS) admire   AUX-3sA-3sE
           'Jon admires your work.'

    b. Joni   zure lana   *gustatzen* zaio.
           Jon-DAT your work-DET(ABS) like   AUX-3sA-3sD
           'Jon likes your work.'

With this kind of verb, the experiencer also requires animacy and is uncontrollable. However, psychological verbs of this class always express psychological states and the absolutive theme is never affected.

Psych-verbs		Experiencer	External Cause	Theme
Preocupare-class *Beldurtu* 'frighten' *kezkatu* 'worry'	Transitives ERG-ABS	+ (ABS)	+ (ERG)	−
	Unaccusatives ABS	+(ABS) Internal Cause	−	−
Temere-class *miretsi* 'admire' *gustatu* 'like'	Dyadic ERG-ABS	+ (ERG)	−	+ (Non Affected)
	DYADIC DAT-ABS	+ (DAT)	−	+ (Non Affected)

5. Instruments as subjects and aspectual reading

In section 2 we argued that clauses with an instrument as subject bear an empty cause. This empty cause selects different types of predicates (states or events), but actions are avoided, since actions require agents as subjects. Belvin (1998) argues that predicates that select eventualities, such as causative predicates, "select for one of these three eventualities (states, events and actions) as their internal argument", and "there is a very close relation between event type and θ-role properties of a predicate".

This selection has syntactic consequences when instruments behave as subjects. The complement of the empty cause allows restricted kinds of interpretations: some constructions result in a reportive or in a futurate reading and some others have an ability reading. Giorgi & Pianesi (1997) call reportive reading the kind obtained in sentences of the type "In DP S" or narration of different kinds of events. Copley (2000) defines the futurate reading of a sentence as a future-oriented eventuality that is accept-

able with plannable eventualities, but is avoided with unplannable eventualities. We take these definitions from Alcázar (2002).[9]

Note that example (3) easily allows the "In DP S" construction (39a). Therefore a reportive reading is obtained. This reportive reading with instrumental subjects is characterized by aspectual restrictions: on the one hand, the perfective aspectual affix is avoided (39b); on the other, with the future aspectual affix (*-ko*), a futurate reading is obtained: the sentence instantiates the plan for arrows to be used as a symbol.

(39) a. Liburu honetan, *geziek*   jarioaren noranzkoa   adierazten   dute.
          Book this-in   arrow-ERGp. flow-GEN direction-DET(ABS) express-IMP AUX
          'In this book arrows indicate the direction of the flow.'

      b. *Geziek   jarioaren noranzkoa   adierazi   dute.
          arrow-ERGp. flow-GEN direction-DET(ABS) express-PERF AUX
          'Arrows indicated the direction of the flow.'

      c. (Liburu honetan) geziek   jarioaren noranzkoa   adieraziko   dute.
          (book this-in)   arrow-ERGp. flow-GEN direction-DET(ABS) express-FUT AUX
          'In this book arrows will indicate the direction of the flow.'

As for the ability reading, it is obtained with subject instruments such as *giltza* 'key'. All aspectual affixes are allowed, and the reading can be paraphrased as 'X serves to/for S' (X = instrument subject). With the future aspectual affix, the sentence expresses a prediction about the ability of the key to open a certain door.

(40) a. Giltza honek   atea   irekitzen   du.
          Key   this-ERG door-DET(ABS) open-IMPERF AUX
          'This key opens the door.' (This key serves to open the door)

      b. Giltza honek   atea   ireki   du.
          Key   this-ERG door-DET(ABS) open-PERF AUX
          'This key opened the door.' (This key has served to open the door)

      c. Giltza honek   atea   irekiko   du.
          Key   this-ERG door-DET(ABS) open-FUT AUX
          'This key will open the door.' (This key will serve to open the door)

With another type of instrument, and so with another kind of eventuality, different kinds of aspectual suffixes are allowed. For example with the instrument *giltza* 'key', the

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[9] Some Basque verbs bear synthetic and analytic forms, while others bear only analytic forms. Alcázar assigns to synthetic forms four available readings: progressive, reportive, habitual and futurate. Alcázar (2002) characterized aspectual interpretation of Basque verbs and claimed that the reportive and futurate are some of the interpretations of Basque synthetic forms of Basque trinko verbs: *Film honetan, espioiak eskaileretan gora doanean mikrofilmak ezkerreko poltsikoan dakartza* 'In that film, when the spy goes up the stairs, he brings the microfilms in his left pocket.'/*Mikel bihar dator* 'Mikel is coming tomorrow'.

eventuality *ireki* 'open' is an achievement, but the instrument *bolaluma* 'pen' in (41) is related to an activity *idatzi* 'write'. In this case, an ability reading is also obtained, but the perfective or future affixes are avoided, because the readings allowed by the empty cause are hard to obtain with an activity and those aspectual affixes.

(41) a. Bolaluma honek   idazten   du.
          pen   this-ERG write-IMPERF AUX-3sA-3sE
          'This pen writes.' (This pen serves for writing)

      b. Bolaluma honek   ez du   idazten.
          pen   this-ERG not AUX-3sA-3sE write-IMPERF
          'This pen does not write.' (This pen does not serve for writing)

      c. ?Bolaluma honek   idatzi   du.
          pen   this-ERG write-PERF AUX-3sA-3sE
          'This pen wrote.'

      d. ?Bolaluma honek   idatziko   du.
          pen   this-ERG write-FUT AUX-3sA-3sE
          'This pen will write.'

6. Argument structure, syntactic instantiation of the verb and control of the event

Authier and Reed (1991) define control as "the possibility of canceling what is denoted by the predicate if the subject of this predicate decides to stop doing it", Is control determined only by the intentionality of the subject? Syntactic instantiation of the verb affects 'control', which suggests that the subject is not the only element involved in control. In section 3 we extended the concept of control to the possibility of intentionally causing the event to start or to be culminated. The nature of the direct internal argument of a verb is also relevant for determining the aspectual nature of the event. In particular, affected objects, paths and goals have been generally described as arguments which affect the delimitedness of the event and so its aspectual interpretation (Tenny 1988, 1989, 1994). An affected argument is an internal argument that undergoes some change of location, possessor or state. A path is a distance traveled. And a goal expresses the endpoint of an event. We argue that syntactic instantiation of these arguments also affect the interpretation of the event as controlled/non controlled.

(42) a. Jonek   papera   eraman du.
          Jon-ERG paper-DET(ABS) carry   AUX-3sA-3sE
          'Jon carried the paper.'

      b. Jonek   papera   eraman du   etxean   zehar.
          Jon-ERG paper-DET(ABS) carry   AUX-3sA-3sE house-INES through
          'Jon carried the paper through the house.'

In (42) there is an agent and an affected object, since the paper changes location. In (42a) the event is delimited and the subject controls the action and the affecting of the

object. In (42b) there is a path and the subject must control the action along this path. The event is not delimited because there is not any information about the end of this action.

(43) a. Jonek   papera   eraman du   bulegoraino.
        Jon-ERG paper-DET(ABS) carry   AUX-3sA-3sE office-ALAT
        'Jon carried the paper to the office.'

   b. Jonek   papera   eraman dio   Mireni.
        Jon-ERG paper-DET(ABS) carry   AUX-3sA-3sD-3sE Miren-DAT
        'Jon carried the paper to Miren.'

In (43a) and (43b) a goal and a beneficiary argument have been added respectively. Both arguments express the end of the path entailed by the event. Both delimit the event but only the beneficiary (43b) requires control of the action by the subject. Note that we can substitute the animate subject Jon by an inanimate subject such as *haize* 'wind' (44). In such cases, however, the dative argument can not be interpreted as a beneficiary, but must necessarily be interpreted as the possessor of the paper and thus the starting point of the event.

(44) a. Haizeak papera eraman du.
        'The wind carried the paper.'

   b. Haizeak papera eraman du etxean zehar.
        'The wind carried the paper through the house.'

   c. Haizeak papera eraman du bulegoraino.
        'The wind carried the paper to the office.'

   f. Haizeak papera eraman dio Mireni.
        'The wind carried Miren's paper'
        # 'The wind carried the paper to Miren.'

Minkoff (1997) claims that the oblique object of a verb is a beneficiary 'only if the argument responsible for causing the activity denoted believes that this object could (be seen to) acquire some power over the theme by receiving it'. Note that the office in (43a) is a goal and does not acquire any power over the paper. The subject is required to have a purpose in order for the oblique object to be a beneficiary. The verb *eraman* 'carry' allows the out of control adverb *nahi gabe* 'involuntarily' (45). As can be expected, the dative oblique object can not be interpreted as a beneficiary with the out of control construction. It is interpreted as a possessor or as a goal but not as a beneficiary, since the argument responsible for causing the activity lacks any intention or belief concerning this argument.

(45) Jonek   papera   eraman dio   Mireni   nahi gabe.
      Jon-ERG paper-DET(ABS) carry   AUX-3sA-3sD-3sE Miren-DAT involuntarily
      'Jon carried Miren's paper involuntarily.'
      'Jon carried the paper to Mary involuntarily.' [goal]

With the verb *joan* 'go', a dative with the possesor interpetation (46b) makes the event denoted by the verb *joan* 'go' a non controlled action.

(46) a. Jonen   semea   Amerikara   joan da.
         Jon-GEN son-DET(ABS) America-ALAT do   AUX-3sA
         'Jon's son went to America.'

     b. Joni   semea   Amerikara   joan zaio.
         Jon-DAT son-DET(ABS) America-ALAT go   AUX-3sA-3sD
         '(It happened to Jon that) his son went to America.' 'Jon's son went to America.'

This fact appears clear when the sentence is inserted as the complement of a control verb.

(47) a. Jonen   semea   behartu dute [PRO   Amerikara   joaten]
         Jon-GEN son-DET(ABS) force   AUX-3sA-3pE America-ALAT going
         'Jon's son has been forced to go to America.'

     b. *(Jonen)   semea   behartu dute [PRO   Joni   Amerikara   joaten]
         (Jon-GEN) son-DET(ABS) force   AUX-3sA-3pE JON-DAT America-ALAT going
         '(Jon's) son has been forced to go to America (and this happened) to Jon.'

The subject has no control over the possession relation, and can not control the action denoted in (46b) and (47b). Nevertheless, there are verbs which affect just this possession relation and thus are able to control the event. In example (48a), the object is affected precisely because there is a change affecting the possessor:

(48) a. Jonek   papera   kendu   dio   Mireni.
         Jon-ERG paper-DET(ABS) take away AUX-3sA-3sD-3sE Miren-DAT
         'Jon took Miren's paper away from her.'

     b. Jon   behartu dute [PRO   Mireni   papera   kentzen.]
         Jon(ABS) force   AUX-3sA-3pE Miren-DAT paper-DET(ABS) taking away
         'Jon has been forced to take Miren's paper away from her.'

Natural self-initiated processes can not be controlled. This behavior can be tested with verbs such as *esleitu* 'assign' and *egotzi* 'attribute' mentioned for examples (4) an (5) in the introduction. Both verbs express voluntary actions and both require an animate subject. However *esleitu* 'assign' entails control over the oblique object, which becomes the beneficiary or possessor of the assigned object or characteristic, while the verb *egotzi* 'attribute' is an attitude verb which can not control the subject of a self-initiated process.

(49) a. Enpresari   eskolaren   zaharberritzea   esleitu diote.
         company-DET-DAT school-GEN remodeling-DET(ABS) assign AUX
         'The remodeling of the school has been assigned to the company.'

  b. Enpresari   X izena   esleitu diote.
     Company-DET-DAT X name-DET(ABS) assign   AUX
     'The company has been assigned the name X.'

In (49b) the company becomes the possessor of the name, but this assignation does not entail any kind of activity for the dative object. In (49a), however, the oblique argument acquires some power over the theme by receiving it. This argument is considered able to carry out the action of remodeling the school. The action assigned to the oblique object can not be a natural process, because the subjects of this kind of events can not be controlled.

  (50) a. Aurkitu duten   substantziari   X izena esleitu diote.
          find   AUX-REL substance-DET X name assign AUX-3sA-3sD-3pE
          'The substance found has been assigned the name X.'

       b. *Substantziari zahartzearen azkartzea   esleitu diote.
          Substance-DAT ageing-GEN acceleration-DET assign AUX-3sA-3sD-3pE
          'The substance has been assigned the acceleration of ageing.'

By contrast, the verb *egotzi* 'attribute' is perfectly allowable in a sentence parallel to (49b) (see 50a). The attribution of a property is a voluntary action, but this action does not affect the object, because *egotzi* 'attribute' is an attitude verb (51).

  (51) Substantziari   zahartzearen azkartzea   egotzi   diote.
       Substance-DAT ageing-GEN acceleration-DET attribute AUX-3sA-3sD-3pE
       'They attributed to the substance the acceleration of ageing.'

7. The semantics of causation and derivation of deverbal words

In this section we try to show that the semantic features characterized in previous sections of this paper are relevant in the speaker's competence when deverbal adjectives and nouns are derived. Derivative affixes appear to compete in order to attach to verbs expressing different kinds of events. They also seem to compete in generating different types of deverbal words.

We compare the behavior of the following suffixes: *-kor, -garri, -gailu, -gaitz* and *-tzaile*. First we will look at the grammatical category of the derived words. Our first examples, *-kor* and *-gaitz*, only produce adjectives. The affixes *-gailu* and *-tzaile* produce nouns, although deverbal nouns with *-tzaile* are easily used as predicates or modifiers of a noun. In some cases, dictionaries attribute to words derived with the affix *-tzaile* the category adjective and thus we will consider them adjectives. Finally, the suffix *-garri* generates both nouns and adjectives. Concerning the valency of the verbs selected by these morphemes, the affix *-kor* selects monadic verbs or monadic instantiations of verbs with different kinds of valency (Oyharçabal 2001). The suffix *-gaitz* allows both monadic and dyadic verb instantiations. Finally *-garri, -gailu* and *-tzaile* require dyadic verbs or dyadic instantiations of verbal entries with more than one possible valency. Triadic verb instantiations are avoided with all these morphemes.

Morpheme	Valency	Nouns	Adjectives
-kor	1	–	+ *hauskor* 'fragile'
-garri	2		+ *ulergarri* 'under-standable' *hausgarri* 'breaking'
	2	+ *lokarri* 'string, bond, cord'	
-gaitz	1/2	–	+ *ulergaitz* 'hard to understand'
-gailu	2	+ *lokailu* 'string, bond, cord'	–
-tzaile	2	+ *hiltzaile* 'killer'	+ *apurtzaile* 'breaking'

The affixes above seem to distinguish between different instantiations of verbs with different kinds of alternations (Oyharçabal 1996). Pustejovsky (1995) distinguishes two kinds of alternations: on the one hand, there are verbal alternations involving true arguments such as inchoative/causative alternations; on the other there are alternations involving an optional phrase (default arguments), such as material/product alternations, in which the expression of the material is optional.

With respect to inchoative/causative alternations, curiously enough the affix *-kor* necessarily gives us the inchoative interpretation, whereas any other affix in the list is necessarily related to the causative variant of the verb.

(52) a. Loreontzia   *hautsi* da.
         flower-vase-DET-AUX break AUX-3sA
         'The flower-vase broke.'

     b. Berriak   Jonen   bihotza   *hautsi* du.
         piece.of.news-DET-ERG Jon-GEN heart-DET(ABS) break AUX-3sA-3sE
         'The news broke Jon's heart.'

The examples in (52) show the inchoative/causative alternation of the verb *hautsi* 'break'. The affix *-kor* gives us the inchoative interpretation of the verb (53a), while with the affix *-garri*, the adjective seems to have been derived from the causative variant of the verb. Derived adjectives with the affix *-kor* have been traditionally paraphrased as 'that has the tendency to' (Azkue 1923-25, Villasante 1974). In this sense, *hauskor* 'fragile' is the property of something that has the tendency to break. By contrast, the adjective *hausgarri* 'breaking' means the property of being the cause for something to break.

(53) a. Loreontzia   *hauskorra* da.
       flower-vase-DET(ABS) fragile   is
       'The flower-vase is fragile.'

     b. Berri   hori   bihotz-*hausgarria* da
        piece of news that(ABS) heart-breaking   is
        'That is heart-breaking news.'

With psychological predicates of the *preocupare*-class we find the same causative alternances and the same distribution of suffixes (54): -*kor* goes with the unaccusative variant and -*garri* with the causative variant.

(54) a. Haurra   erraz beldurtzen   da.
        child-DET(ABS) easily get.frightened AUX-3sA
        'The child easily gets frightened.'

        → haur *beldurkorra*
          child fearful-DET
          'fearful child'

     b. Filmak   haurra   beldurtu du.
        movie-DET-ERG child-DET(ABS) frightened AUX-3sA-3sE
        'The movie frightened the child.'

        → film *beldurgarria*
          movie frightening-DET
          'frightening movie'

We also find the affix -*garri* with obligatory transitive verbs, but in this case, the adjective seems to absorb the theme argument (55). With psychological predicates of the *temere*-class such as *miretsi* 'admire', the affix -*garri* absorbs also the theme argument (55b).

(55) a. Ideia hau   erraz *uler*   daiteke.   → ideia *ulergarria*
        idea this (ABS) easily understand can   idea understandable-DET
        'This idea is easy to understand.'   'understandable idea'

     b. Jonek zure lana *miresten* du.   → lan *miresgarria*
        Jon   your work admire AUX-3sA-3sE   work admirable-DET
        'Jon admires your work.'   'admirable work'

The existence of two types of derived adjectives (54b/55b) with the affix -*garri* has usually been interpreted as the result of two -*garri* affixes: a passive -*garri* and an active -*garri* (see for example Azkarate 1990 and Azkarate & Gràcia 1995). Artiagoitia (1995), however, claims that there is a sole suffix -*garri*, which always externalizes an internal argument, and that consequently there is no active affix -*garri*. This Basque linguist, following Belleti & Rizzi (1988) relates the so called active -*garri* either with the theme argument of psych-predicates of the *preocupare*-class (*beldurgarri* 'frightening' in 54b) or with instrumentals (*apaingarri* 'decorative, ornamental'). As for instrumentals, Artiagoitia (1995) claims that they also should be internal subjects. This view is congruent with the analysis proposed for instrumentals in section 2 of this paper. Nevertheless, because

we accept the analysis of psych-predicates in section 4 of this paper, we agree with the traditional analysis, which maintains that there are two *-garri* affixes.

The affix *-kor* is incompatible with obligatory transitive verbs, but it is found with obligatory intransitives of either the unaccusative or the unergative class. We also find this affix with a small set of transitive verbs that allow for the object to be interpreted as generic. Finally we find the affix *-kor* with experiencers of the two classes of psych-predicates (56d, e).

(56) a. egoera   *egonkor* [*egon* 'be with stage level predicates' UNACCUSATIVE]
        situation stable
        'stable situation'

      b. beira *distirakor* [*distiratu* 'shine' UNERGATIVE]
        glass shiny '
        shiny glass'

      c. lur   *emankor* [*eman* 'give' TRANSITIVE]
        land productive
        'productive land'

      d. haur *beldurkor*   e. gizon *mireskor*
        child fearful   man full.of.admiration
        'fearful child'

When *-kor* is attached to a transitive verb, the affix absorbs the external argument, and the internal argument is blocked. Compare the synthetic compound in (53b) with the impossibility to generate synthetic compounds with the affix *-kor* (57b).

(57) a. Lur honek   patata onak   ematen ditu.
        land this-ERG potato good(ABSpl) give   AUX-3pA-3sE
        'This land produces good potatoes.'

      b. *lur patata-*emankor*
        land potato-productive

Our first conclusion is that the adjectival affix *-kor* only absorbs internal cause arguments. This is perfectly consequent with its semantics and with the fact that it only derives adjectives. Remember that for an argument to be an internal cause, the DP which saturates this cause must bear an intrinsic property that makes it able by itself to initiate the event denoted by the verb.

Turning to the suffix *-garri*, we agree with Azkarate (1990), Azkarate & Gràcia (1995) and Gràcia et al. (2000) in their distinguishing of two different suffixes. However, we do agree with Artiagoitia (1995) in one respect. The characterization of the affix *-garri* in (53b) as active is not the best choice, since the argument absorbed by this affix is always interpreted as a circumstantial cause or as an instrument. That is, non controller arguments are required, and animate entities are avoided as subjects of deverbal adjectives with *-garri* (Artiagoitia 1995). Note that the adjective *hilgarri* 'deadly' is incompatible with the human noun Jon, which requires the affix *-tzaile* (*hiltzaile* 'killer'). The label 'causative *-garri*' would be more appropriate for this suffix.

(58) a. Jonek/   substantzia horrek   norbait   *hil* du.
     Jon-ERG/substance   that-ERG someone kill AUX-3sA-3sE
     'Jon/that substance killed someone.'

   b. Jon *hiltzailea/* *hilgarria*   da.
      Jon killer-DET/*deadly-DET is
      'Jon is a killer.'

   e. Substantzia hori   *hiltzailea/ hilgarria* da.
      substance   that(ABS) *killer/*   *deadly*   is
      'That is a deadly substance.'

When the affix *-garri* is attached to a verb that necessarily expresses controlled events, the derived adjective or noun is interpreted as an instrument. What is more, derived nouns with *-garri* are always interpreted as instruments. Note that *soken bidez* 'with strings in (59a) is an optional phrase and so a default argument, following Pustejovsky (1995). The presence/absence of the instrument is not related to a causative/inchoative alternation. The instrument requires a causative construction with a controller subject. 'Instrumental *-garri*' would be an appropriate label for this *-garri*. Furthermore, this use of the affix *-garri* overlaps only with that of the suffix *-gailu*, and we often find synonymous derived nouns with both affixes (59b).

(59) a. Jonek   zapatak   *lotu* ditu   (soken bidez).
        Jon-ERG shoe(ABSpl) tie   AUX-3plA-3sE (string-GEN by.means.of)
        'Jon tied his shoes (with strings).'

   b. Zapaten   *lokarriak/ lokailuak*
      shoe-GENpl tying-DETpl
      'Laces'

As for adjectives derived with the affix *-gaitz*, we find antonyms of some adjectives derived with the affix *-kor* and some antonyms of adjectives with *-garri*. However, the affix *-gaitz* always absorbs either the θ-role of the internal argument of transitive verbs, or the only argument of unaccusative verbs. This affix is incompatible with unergatives and with absolute interpretations of transitive verbs.

(60) a. loreontzi   *hauskor/loreontzi*   *hauskaitz*
        flower-vase fragile/ flower-vase *unbreakable*

   b. ideia *ulergarri/*   ideia *ulergaitz*
      idea *understandable/*idea hard.to.understand

   c. substantzia *hilgarri/*substantzia **hilgaitz*
      substance   *deadly/* substance   **undeadly*

   f. egoera *egonkor/*begi *egongaitz*
      state   *stable/* eye   *restless*

   g. beira *distirakor/*beira **distiragaitz*   h. lur   *emankor/* lur **emangaitz*
      glass *shiny/*   glass **unshiny*   land *productive/*land unproductive

Finally, the suffix *-tzaile* is mostly attached to transitive verbs. Nevertheless, two exceptions are often mentioned in the literature (*egoile* 'inhabitant' and *joaile* 'emigrant').

In literary tradition, this affix appears mostly attached to verbs with human subjects, and the derived nouns often express types of trades (*idazle* 'writer', *epaile* 'judge', *aurkezle* 'presenter', *saltzaile* 'seller'). Other derived nouns express the subject of an event (*erosle* 'buyer', *igorle* 'sender', *hartzaile* 'receiver', *ikusle* 'viewer', *hiltzaile* 'killer', *jasale* 'sufferer, patient'). New derived words with *-tzaile* often refer to inanimate entities, and can often be paraphrased as 'something which intrinsically does ___'. Therefore this suffix always absorbs the external argument which must be human or something characterized by doing the action denoted by the verb

(61) a. elektroi-*hartzaile*   c. espezie *adierazle*
        electron-receptor   species indicator

     b. bizidun *fotosintetizatzaile* e. *disolbatzaile*   f. *kutsatzaile*
        organism photosynthesiser   'solvent'   'pollutant'

The following table summarizes the behavior of the suffixes described in this section.

Affix	Verb-class	Argument absorbed	Examples
-kor	UNACCUSATIVES PSYCH-UNACCUSAT. UNERGATIVES TRANSITIVES (the internal argument is blocked) PSYCH-TRANSIT.	INTERNAL CAUSE INTERNAL CAUSE (EXPERIENCER) INTERNAL CAUSE INTERNAL CAUSE INTERNAL CAUSE	*hauskor* 'fragile' *beldurkor* 'fearful' *distirakor* 'shiny' *emankor* 'productive' *mireskor* 'full.of.admiration'
-garri	TRANSITIVES PSYCH-TRANSIT. (EXP.-THEME) (passive *-garri*)	THEME THEME	*ulergarri* 'understandable' *miresgarri* 'admirable'
	TRANSITIVES PSYCH-TRANSIT. (CAUS.-THEME) (causative *-garri*)	CAUSE CAUSE	*hausgarri* 'breaking' *beldurgarri* 'frightening'
	TRANSITIVES with instrument subjects (instrumental *-garri*)	INSTRUMENT	*lokarri* 'string'
-gailu	TRANSITIVES with instrument subjects	INSTRUMENT	*lokailu* 'string'
-gaitz	UNACCUSATIVES TRANSITIVES	INTERNAL CAUSE THEME	*egongaitz* ' restless' *hauskaitz* 'unbreakable' *ulergaitz* 'hard to understand'
-tzaile	TRANSITIVES	HUMAN SUBJECTS INANIMATE SUBJECTS CHARACTERIZED BY DOING THE ACTION DENOTED BY THE VERB	*hiltzaile* 'killer' *disolbatzaile* 'solvent'

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