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Tesi di Dottorato

POLYSEMY IN WORD FORMATION: THE CASE OF DEVERBAL NOMINALS

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Abbreviations and Marking Conventions

AP	Adjectival Phrase	LCS	Lexical Conceptual
AS	Argument Structure		Structure
ASP$_Q$	quantity-Aspect	L-D	Lexical Domain
CP	Complementizer Phrase	Loc	Location
DP	Determiner Phrase	mat	material
D-Path	Directed Path	MP	Modifier Phrase
dyn	dynamic	NP	Noun Phrase
E	*Event (argument)*	P	Process
E	Event (nominal)	PP	Preposition Phrase
EI	Encyclopedic Item	*R*	*Referential (argument)*
EP	Event Phrase	R	Referential (nominal)
IEPS	Inferable Eventual Position	R-Path	Random Path
	or State	S	State
IP	Inflection Phrase	SE	Subject Experiencer
lcp	Lexical Conceptual	T	Transition
	Paradigm	VP	Verb Phrase

The following standard marking conventions are adopted:

?/??---   Single or double question mark indicates awkward, marked structures (phrases or sentences);

*---   an asterisk marks ungrammatical structures;

*(---)   an asterisk outside parentheses indicates that that the parenthetical material is necessary;

(*---)   an asterisk inside parentheses indicates that the parenthetical material cannot be included in the structure;

(---)   parentheses include optional material.

ABSTRACT

In questa tesi si analizza il significato lessicale delle nominalizzazioni deverbali tradizionalmente definite come *nomi d'azione*, vale a dire, quei nominali deverbali che conservano pressoché inalterato il significato della base verbale e che sono morfologicamente derivati per mezzo di suffissi che fungono da operatori della nominalizzazione (detti anche *trasposizionali*). E' tuttavia risaputo che questi nominali presentano fenomeni di ambiguità semantica: tra le diverse interpretazioni che essi possono esprimere, la distinzione fra lettura Evento (d'ora in avanti *E*) e lettura Risultato (*R*) è stata esplorata con particolare attenzione nella letteratura su questo tema, poiché essa rivela interessanti corollari morfo-sintattici. I nominali *E* conservano, infatti, non solo il significato del verbo, ma anche alcune proprietà verbali (in particolare, una struttura di argomenti sintattici) e rappresentano pertanto un caso di categoria mista Nome-Verbo, laddove i nominali *R* si comportano invece come nomi assoluti, non argomentali. Pertanto, insieme al significato eventivo o trasposizionale, si esplora il significato, o più precisamente, l'insieme delle interpretazioni espresse dai nominali *R*. Quest'ultima classe, in particolare, rappresenta l'oggetto privilegiato di indagine di questa dissertazione; poiché le interpretazioni dei nominali *R* sono state ampiamente trascurate nella letteratura sulla nominalizzazione, si sottolinea come tale designazione abbia acquisito un valore sintattico, anziché semantico, e si dimostra che in questa classe vengono raggruppati elementi anche lontani dal punto di vista del contenuto semantico lessicale. La dicitura di nominale "Risultato", difatti, è stata indistintamente utilizzata per designare quei nominali che non mostrano una struttura argomentale e le altre proprietà caratterizzanti dei nominali *E* (si veda Grimshaw, 1990). Pertanto si propone di sostituire la designazione "Risultato" con quella di "Referenziale"; tuttavia, all'interno di questa classe eterogenea, si individua un nucleo di tratti semantici caratterizzanti e comuni ad un gruppo di nominali R, sui quali in particolare si concentra l'analisi teorica e la relativa modelizzazione formale.

La ricerca affronta il problema dell'ambiguità interpretativa delle parole complesse in una prospettiva di analisi morfologica. Per spiegare l'ambiguità interpretativa *E* / *R* si ricorre ad una analisi semantica di tipo composizionale; vale a dire, si tenta di identificare il significato dei singoli elementi che compongono il derivato, la base verbale e l'affisso, e di derivare il significato del lessema complesso attraverso una

composizione degli stessi. Più precisamente, si propone una duplice rappresentazione della semantica lessicale degli affissi che sono le teste di queste forme morfologicamente complesse. Pertanto l'ambiguità lessicale « *E / R* » viene spiegata ad un livello di rappresentazione lessicale, mentre la disambiguazione del senso avviene chiaramente ad un livello più alto di composizione sintattico-semantica.

Attraverso un'analisi basata su un confronto con i lessemi non derivati, si dimostra che l'ambiguità lessicale *E / R* è un caso di polisemia logica o inerente, che pervade sia il lessico semplice sia quello derivato e che dipende dalla polisemia dei suffissi conosciuti come trasposizionali. Il nominale derivato che esprime i due sensi è considerato come un *dot object*, ovvero come un *type* complesso che unisce in sé e "reifica" la relazione fra i due *types* (per l'analisi di queste forme di polisemia logica o inerente ci si rifà a Pustejovsky, 1995 e 2001).

Per la rappresentazione semantico-lessicale di lessemi e affissi si adottano gli strumenti formali forniti dal recente modello teorico di Lieber (2004), che propone un sistema di rappresentazione semantico-lessicale dei processi di formazione di parola. A tale modello, tuttavia, si propongono importanti variazioni e implementazioni teoriche, atte a dar conto dei dati presi in esame: le modifiche al modello di Lieber proposte in questo lavoro di tesi fanno riferimento ai presupposti del Lessico Generativo di Pustejovsky (1995), in particolare alla sua trattazione dei casi di polisemia logica e alla rappresentazione della *Qualia Structure*, da una parte, e ai lavori di Dowty (1979, 1991) e Levin e Rappaport Hovav (1995, 1998), per quanto concerne la rappresentazione del significato dei verbi, dall'altra. Inoltre, una fondamentale implementazione al modello di Lieber è l'incorporazione nel suo sistema di funzioni e variabili (strutturato sulla falsariga dell'apparato di Jackendoff, 1990) della variabile Evento. L'introduzione di questo argomento non tematico si rivela strumento essenziale per distinguere le proprietà denotative dei nominali *E* da quelle dei nominali *R* e anche per spiegarne il diverso comportamento in sintassi.

Un importante risultato di questo lavoro di tesi è la dimostrazione che le possibili interpretazioni che un nominale può assumere sono fortemente influenzate dalla semantica del predicato di base. Si propone, infatti, che siano le differenze nella natura semantica dei predicati, unite alle proprietà dei suffissi, ad essere responsabili delle differenze nel numero e nella natura delle interpretazioni delle nominalizzazioni. L'attenta disamina delle classi di predicati su un piano sia aspettuale o di *Aktionsart* sia su un piano che investe la natura semantica profonda e idiosincratica dei predicati, permette infatti di operare una distinzione tra verbi che formano nominali ambigui tra lettura *E* e lettura *R* e verbi che invece possono esclusivamente formare nominali *E* (e che quindi non sono *dot object*). In particolare, si propone che la formazione di un

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nominale *R* dipenda da una serie di specifiche restrizioni che il suffisso *R* impone sull'argomento rilevante della base verbale che seleziona, e che quindi, la base verbale e l'affisso debbano entrambi presentare tratti semantici compatibili affinché si ottenga l'interpretazione *R*. Al contrario, l'interpretazione *E* è sempre disponibile perché il suffisso che forma nomi *E* non impone restrizioni sull'argomento *E* della base che seleziona e questo dà conto del fatto che l'interpretazione *E* (il significato trasposizionale) è sempre disponibile.

L'indagine svolta nella presente ricerca mette in luce il ruolo preponderante che la semantica lessicale, solitamente negletta negli studi di Morfologia Lessicale di stampo generativista, riveste nei processi di formazione di parola. Infine, questo lavoro di tesi rappresenta solo il primo passo di una ricerca sul significato delle parole morfologicamente complesse che, sebbene sia qui limitato alla nominalizzazione deverbale in Italiano, ci si propone di estendere ad altri processi morfologici e, soprattutto, ad altre lingue.

(T)he lexicon is the information storage of everything needed for speakers to actually use language to describe the world. In some sense, everything comes from the lexicon. This view entails also that lexicon information is largely universal (except, of course, for the sound coding), has minimum idiosyncrasy, and is governed by generalizations that are relevant also for the computational system. […] the question that arises now is how to deal with exceptions, within this view. It is often the case that any theory must leave large parts as exceptions, listed individually in the lexicon of a specific language. Others may be instances where we are not able yet to define the governing generalization. Decisions in this area (as in any other area of science) must rest on comparing available competing theories. A theory that provides a generalization for large parts of the facts and leaves other large parts as exceptions is superior to a theory that leaves everything as just lists. But this is only as long as there is no other theory that reduces substantially the number of exceptions.

Tanya Reinhart (2002: 282)

1   Aims and Orientation

1.1   Introduction

In this research, I survey a significant pattern of deverbal word-formation in Italian, and integrate the data analysis into a recently developed theoretical model of derivational semantics. In particular, the main goal of this study is to analyze the range of semantic interpretations and the corresponding morpho-syntactic behavior displayed by the class of deverbal nouns usually acknowledged as "action nominals".

While Chapter 2 contains an overview of the relevant literature on the subject in the generative tradition, the body of the dissertation is composed of Chapters 3 to 5, where I work out a theoretical proposal aimed at accounting for the lexical meaning of a range of deverbal nominals in a framework of decompositional lexical semantics. Specifically, this research, which is placed against the theoretical background of generative morphology, rests on groundwork laid in recent years by Lieber and Baayen (1997; 1999) and Lieber (2003), and in the more elaborated version of Lieber (2004).

The present chapter introduces the reader to the phenomenon of nominalization, offers an overview of the subject to be discussed and of the theoretical background, and finally sketches out the thesis outline.

1.2   Stating the problem

1.2.1 Action / State Nominals

Nominalizations are nominal structures that are derived from other syntactic categories, especially from verbs. Several types of deverbal nominals have been distinguished and explored in the linguistic literature: for instance, "agent" and "instrument" nouns (e.g. En. *worker, printer*), "patient" nouns (e.g. *employee*), etc. Among them, however, action nominals (e.g. *election, refusal,* etc.) represent the most representative and challenging pattern of nominal structure. Like the abovementioned

deverbal nouns, these are morphologically complex lexemes obtained by merging a nominalizing affix with a base verb. Specifically, action nominals are headed by suffixes conventionally named as "transpositional" in the linguistic literature (cf. Beard, 1995 for such definition), because they simply transpose the verbal meaning into a semantically equivalent lexeme of category N. In effect, according to Comrie (1976-b: 178), action nominals are « nouns derived from verbs (verbal nouns) with the general meaning of an action or process ». However, it is worth noting that this definition is too narrow, since the same transpositional affixes employed to derive action nominals are commonly combined with state verbs and accordingly form state nominals (as shown in (2) below).

Examples (1) and (2) highlight the semantic relation between the sentential construction in (a) and the corresponding derived nominal construction in (b). Independently on the actional or stative characterization of the base verb, the derived nominals appear to be related to a correspondent verbal complex headed by the base verb.

(1)   a.   At noon, the authorities suddenly suspended the celebrations.
        b.   The sudden <u>suspension</u> of the celebrations by the authorities

(2)   a.   John admires Lucy.
        b.   John's <u>admiration</u> for Lucy

In (1), the actional verb *to suspend* and the noun *suspension* bear the same semantic relation to their syntactic satellites *(of) the celebrations* and *(by) the authorities*. Similar remarks hold for the state verb *to admire* and for its derived nominal *admiration* in (2) (cf. Rozwadowska, 1991 and 1997 for a study on state and, specifically, psychological nominals[1]). Other peculiar morpho-syntactic properties of these nominals will be presented throughout Chapter 2.

Generally speaking, action nominals have been widely explored in linguistic theory from very different perspectives. Especially in the domain of theoretical studies, morpho-syntactic and semantic aspects of such morphologically complex words have represented the main issues of a prominent debate that began in the 1950's within the framework of generative-transformational grammar (cf. Chomsky, 1957 and Lees, 1960), and has not reached a conclusive solution so far. Because they are especially challenging in the generative frame, nominalizations have formed the basis for the development of influential theories (cf. in particular the Lexicalist Hypothesis formulated in Chomsky, 1970).

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[1] Psychological nominals are derived from verbs indicating a psychological state (or change of state), such as *detestation, preoccupation*.

In this research, however, I mainly concentrate on the semantic ambiguity typically displayed by these derived lexemes, which parallels a significant difference in their morpho-syntactic behavior.

1.2.2 Semantic ambiguity: E and R nominals

It is commonly acknowledged that action nominals are semantically ambiguous because they often display a cluster of (more or less) related senses.

Among the many interpretations they can display, the semantic distinction between the Action[2] or *Event* and the so-called *Result* readings has been particularly emphasized because of its interesting syntactic corollaries.[3]

As shown in (1) and (2), Event nominals (henceforth E) can denote both *stricto sensu* events (in the sense of actions, or dynamic situations) and states. Therefore, I emphasize that, in the present work, the "E" (=Event) label is attributed to the whole class of situation-denoting nominals.

Deverbal E nominals are peculiar within the Noun class because they appear to retain some verbal properties (for instance, the verbal meaning and the thematic relations). They are therefore interpreted as a case of mixed (N-V) rather than independent category and, as such, they represent a serious challenge to the generative theory of grammar because of its general conception of syntactic categories as discrete elements. The mixed properties of Event nominalizations are especially problematic in view of the generally endocentric phrasal pattern of X-bar theory, where the *Nominal* external distribution and the *Verbal* internal properties of these lexemes have represented an intriguing puzzle.

Let us consider again the case of an E nominal: as noted with the nominals in (1)-(2)b., in (3)b. *cancellation* appears to inherit the thematic relations, and, more precisely, the argument structure from the corresponding predicate *to cancel*, although only the internal argument (*of all his appointments*) is projected obligatorily and has the argument status. The by-phrase corresponding to the external argument (*by the secretary*) is instead optional and can be omitted without affecting the grammaticality of (3)b. Furthermore, the presence of the aspectual modifier *in a few minutes* proves that the aspectual properties of the base verb are also preserved in E nominals (cf. Chapter 2 for further discussion on this point).

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[2] "Action Nominals" is the label commonly adopted in typological studies on nominalization (Comrie, 1976-b; Koptjevskaja-Tamm, 1993). An alternative name for the class is that of *process* (Pustejovsky, 1995; Alexiadou, 2001) or *complex event* nominals (Grimshaw, 1990).
[3] Among the first studies on this issue, cf., in particular, Anderson (1984), Grimshaw (1986), Lebeaux (1986), Malicka-Kleparska (1988), Roeper (1987), Walińska (1984), and Zubizarreta (1987).

(3)   a.   The secretary cancelled all his appointments in a few minutes.

           b.   The <u>cancellation</u> *(of all his appointments) by the secretary in a few minutes

On the contrary, Result nominals normally exhibit the behavior of absolute (non relational) nouns, although they can take optional complements, corresponding to the Lexical Conceptual Structure (LCS) participants in the state or event described by their base verbs (cf. (4)b.):

(4)   a.   The microscope was a revolutionary <u>invention</u>.

           b.   John's <u>interpretation</u> of your words is completely erroneous.

Regarding their semantics, E nominals are mere transpositions of the corresponding base verbs. They are therefore abstract nouns which give a "name" to the situations (i.e. events or states) expressed by their corresponding predicates. Result nominals, instead, typically refer to the outcome of the event described by the base verb; hence, they denote referential entities (cf. (4)a-b).

In general, however, the issue of Result nominals' semantics has stayed on the back burner in the literature on nominalizations, because the focus of most analyses (especially those formulated in the spirit of Government and Binding theory) has been on the morpho-syntactic features, rather than on the semantic interpretation of deverbal nominals (among many others, cf. Picallo, 1991; Borer, 1993; Alexiadou, 2001). In those studies, "Result nominal" should only be considered as a cover-term indicating the absence of argument structure; it follows that elements that are heterogeneous from a semantic viewpoint are usually grouped together in this class.

1.2.3 Result or Referential nominals?

As explained in the previous section, the definition "Result" attributed to non-argumental nominals is due to their common semantic interpretation; when non-transpositional in meaning, these nominals typically name the product or result of the event described by the verbal base.[4]

However, there exist many cases of non-eventive interpretation that do not exactly fit this restrictive definition. While, for instance, the deverbal nouns *creation* and *construction* typically name the product of the action, *administration* as the organization

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[4] Therefore, the base verb should at least describe a dynamic situation in order for the nominal to obtain such interpretation, because states do not have associated results. This means that the meaning of the base verb influences the meaning of its derived R nominal.

or group of people performing an administrative activity clearly does not. A similar observation can be extended to *obstruction*, in the sense of an obstacle or impediment, which looks more like the causer/means rather than the by-product of an action. Berman (1976) observes that such nominals can also refer to the concrete object of an action. In Hebrew, for instance, *štiya* can refer to the act or drinking but also to the object of it, i.e. the drink itself (in Italian and English, the equivalent nominal is obtained through conversion of the infinitive: (*il*) *bere,* a mass noun in Italian, or (*a*) *drink*, a countable noun in English).[5]

These few examples of non-E nominals are sufficient to point out that "Result" is unsuitable as a cover term for a class of nouns that are semantically heterogeneous. Consequently, the notion "Result nominal", as traditionally adopted in the literature, seems to need a somewhat looser interpretation, and could be replaced by the more neutral definition of "Referential" (henceforth, R) nominal (cf. Borer 1999; 2003). I believe that this term is sufficiently generic to identify a class of nominals whose denotative properties are particularly varied, as I will show in detail in Chapter 3. I will therefore employ the "R" (=referential) label to define the entire class of those deverbal nominals which are non-eventive and, accordingly, do not have an associated argument structure.[6]

In particular, I will identify and explain the semantic (and morpho-syntactic) patterns of the following subsets of R nominals:

PRODUCT (=RESULT): *costruzione* 'construction', alterazione 'alteration'
MEANS: *argentatura* 'silver-coat', *collegamento* 'link/connection'
PSYCH STIMULUS: *attrazione* 'attraction', *intrattenimento* 'entertainment'
PATH: *prolungamento* 'continuation', *salita* 'ascent/slope'
AGENTIVE-COLLECTIVE: *amministrazione* 'administration', *direzione* 'management'
LOCATIVE: *entrata* 'entrance', *direzione* 'management (place/office)'

Other interpretations that are not strictly eventive, but that cannot be properly defined as "referential", arise in the syntactic context as the consequence of the lexical vagueness or underdetermination of the E nominals, or are the output of a lexicalization process (cf. in Chapter 3 the Manner and Temporal readings of nouns such as *camminata* 'walk' and *fioritura* 'bloom', respectively).

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[5] Cf. Chapter 3 for a complete overview of the range of interpretations displayed by E/R nominals.
[6] In this class, however, Borer includes "simple event nouns": cf. Zucchi (1989) and Grimshaw (1990) for a discussion of this group of nominals. In the present account, instead, simple event nouns are morphologically simplex E nouns.

1.2.4 General questions

From the preliminary data discussed thus far, we have seen that E nominals describe the same event or state of the base verb and usually preserve its argument structure. R nominals instead have a multiplicity of meanings and are non-argumental, even though they can take optional syntactic satellites.

Notwithstanding the different interpretations of these nominals, many languages – among them Italian, the focus of this study – lack specific morphological means for distinguishing between E and R nominals. In Chapter 2, I will show that this ambiguity has lead many scholars to formulate different solutions, for the most part focused on the formal properties and on the puzzling nature of the derivational process underlying these complex forms.

However, the present research mainly concerns the lexical semantics of E/R nominals, and, especially, the class of R nominals, whose varied semantics has been largely neglected. In particular, I will try to provide answers to the following questions:

- Why does Italian, like many other Indo-European languages, have a single paradigmatic class of derivational affixes for the expression of E and R multiple meanings?
- What is the range of meanings that R nominals can display in a language (viz. Italian)?
- What is the nature of the ambiguity of E/R nominals: is it a case of polysemy or homonymy?[7] Alternatively, should the non-eventive interpretations be merely accounted for as lexicalizations, outcomes of unpredictable semantic drift?
- Independent on how this ambiguity is characterized, why do deverbal nominals typically exhibit it?
- How can we account for action nominals' ambiguity in a frame of decompositional lexical semantics? In other words, if the meaning of a nominal can be decomposed into smaller subparts of meanings, what semantic representation could be proposed for the nominal affix and for the base, in order to account for multiple interpretations of the complex lexeme?
- Why is the E interpretation the default interpretation of a derived nominal while the R interpretation appears not always available?

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[7] I adopt here the traditional terminology of lexical semantics studies, according to which lexical items having multiple related meanings are called *polysemous* (e.g. *apple*, as the tree and the fruit), and those accidentally carrying several distinct and unrelated meanings are termed *homonymous* (e.g. *bank* means 'financial institution', but also 'river side'). Establishing the nature of semantic ambiguity in action nominals is not a trivial matter, and a discussion on the subject will be developed throughout Chapter 3.

- Why do E nominals require the projection of the internal argument, whereas R nominals differ in allowing or blocking the projection of their syntactic satellites? Is it possible to account for this distinction in lexical-semantic terms?

Other more specific questions will be raised at the end of Chapter 2, once I have explained in detail the syntactic-semantic properties of E/R nominals and the theoretical issues they have raised in the linguistic literature.

1.3 Theoretical background

1.3.1 Lexical meaning is not only a pragmatic matter

The variety of semantic interpretations associated with action nominals has lead many scholars to maintain that the non-transpositional readings they display are the outcome of unpredictable semantic drift. Because they are lexicalized items, a comprehensive and unitary analysis of their semantic interpretation would not be viable. In particular, it has been observed that the range of meanings action nominals can convey is too broad and too various to be associated within a unitary morpho-semantic template.

A similar approach to nominalizations is taken by Bauer (1983), for instance, who lists twelve meanings commonly expressed by English deverbal nominals which are derived with the suffix *-(at)ion* (cf. Bauer, 1983: 185). The heterogeneous semantics of *-(at)ion* nominals leads Bauer to leave aside the semantic aspect of the morphological rule; hence, he states (1983: 188):

> (T)he basic meaning of a nominalization is inherent in the term 'nominalization' itself: a change of form class from a verb to a noun. Nominalization suffixes are formal markers of this changed status. The range of interpretations possible for any given nominalization – just like the range possible for any other noun – should be seen not as a matter of grammar, but as a pragmatic matter, dependent on the linguistic and non-linguistic context in which the nominalization occurs.[8]

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[8] For a similar position about the semantics of (certain) word-formation phenomena, cf. Aronoff (1984); regarding denominal verb-formation, he concludes that « On closer inspection, these types evaporate into the pragmatic air and the semantics of the entire diverse set can be reduced to a simple statement: the derived meaning is that of a verb which has something to do with the base noun » (Aronoff, 1984: 46).

This perspective is based on the (mis)conception that derivational semantics is basically opaque and that the interpretation of lexemes is a matter of pragmatics or context. Although it is undeniable that pragmatic knowledge can influence the interpretation of nominals and, in general, of both simple and derived lexemes, I contest that the semantic interpretation of ambiguous E/R nominalizations can be reduced to an extra-linguistic or pragmatic phenomenon. This standpoint will be clearly rejected in the present analysis, which seeks instead to find a relation between the structure and the meaning of deverbal nouns, or more precisely, of the head and nonhead morphemes building up these complex forms.

First, I think that invoking context to explain the different readings of these nominals overshadows the fact that regular semantic patterns can be detected in the formation of E/R nominals. What is more, while the syntactic context, like the presence of argument structure, can help to disambiguate the meaning of the nominal, I argue in this research that it is the lexical meaning of an item that drives its syntactic projection (although the projection of arguments might be conditioned by pragmatic factors, cf. Koptjevskaja-Tamm, 1993: 14-16, on the reduction of action nominals' arguments owing to the communicative goals of the sentence).

Further, following Bauer's approach to the derivational semantics of action nominals, we expect that pragmatics or linguistic context allow each deverbal noun to have both E and one (or more) of the different R readings. However, there are nominals that do not have other readings but the E one; others, instead, are very likely to have an R interpretation, besides the primary E one. An explanation only based on factors that are external to the grammar cannot account for these cross-linguistic tendencies. On the contrary, I point out in this work the role played by the lexical semantics of the base, jointly with the semantic import of the affix, in determining the range and type of interpretations of the derived nominal.

Finally, according to Bauer's approach to derivational semantics, the nominalizing affixes of action nominals should not have any semantic effect on the base verbs. This is also a standpoint that is rejected in this study because I assume (with Lieber, 2004) that all affixes, even the transpositional ones, contribute a bit of semantic content to their base.

1.3.2 Towards a lexical-semantic theory of word formation

The main goal of this study is to determine the precise semantic contribution of the minimal constituents of action nominals, offer a formal representation of their content, and derive the meaning of the complex word through the semantic composition of their component-morphemes. Obviously, such an analysis is only possible within a

framework of lexical semantic representation which assumes a relation between form and meaning, and which is capable of isolating the semantics of affixes, along with the meaning of simple lexemes.

In brief, what we need, to the aims of this research, is a descriptive framework and a formal apparatus for derivational semantics. Until a few years ago, however, we crucially lacked such a framework. In effect, morphological studies have seriously neglected the semantics of word formation, and the many attempts to establish a typology of semantic processes for derivational or compositional patterns have generally failed, especially within the frame of generative morphology. The interest in the semantics of word formation has occasionally reappeared, in particular since mid-nineties; Mayo et al. (1995), Plag (1999), and several works by Lieber (1998; 2003) and Lieber and Baayen (1997; 1999) have represented important developments in this domain of research.

The present study on deverbal nominals acknowledges the basic tenet of this line of research, and thus is based on the assumption that « finding a relation between structure and meaning is by no means so hopeless » (Mayo et al., 1995: 884). Specifically, to the aims of this study, I will adopt the theoretical apparatus developed in recent years throughout Lieber and Baayen's and Lieber's contributions. Lieber (2004), in particular, presents the first theoretical model which captures and formally implements the semantics of (English) word-formation; this system of lexical semantic representation will be slightly modified in this work to account for the Italian data under analysis.

Let me briefly outline the basic principles of Lieber's model, which are assumed as the fundamentals which lead the spirit of this research on deverbal nominals (a more detailed presentation of Lieber's framework is to be found in Chapter 3).

• With Lieber, I assume a system of lexical-semantic representation that is decompositional and allows for a small number of primitives or atoms of meaning. These primitives qualify as the minimal elements of the semantics of morphologically simplex or complex words.

• The semantic representation of a lexical item is bipartite: it is composed of a semantic-grammatical *skeleton* and a semantic-pragmatic *body*. The former is the decompositional and hierarchically arranged component, and only contains semantic properties which have consequences for the morpho-syntax of the item. The latter, instead, is the encyclopedic part, because it expresses the cultural and conceptual knowledge associated with the item. According to Lieber, the body is only partially formalizable.

• The meaning of a complex item is compositional: as long as morphemes are associated with meaning (although the relationship form-meaning is not always exactly

one-to-one), the meaning of a complex item can be derived through the composition of the meaning of its minimal constituents.[9]

• Another crucial standpoint of Lieber's framework derives from the assumption that, if non-inflectional word-formation extends the simple lexicon creating new lexemes by derivation, compounding and conversion, « the meanings it expresses ought to reflect the semantic distinctions that are salient in the simplex lexicon » (Lieber, 2004: 9). Therefore, this implies that the same primitives that define words (or lexical items/roots) should also define the semantic import of the affixes that are employed to derive new, complex words. In Lieber's model, it is shown that all affixes have a semantic skeleton and, hence, even transpositional affixes have one.

• The multiplicity of meanings expressed by complex lexemes should reproduce the polysemy of simplex words, or, quoting Lieber (2004: 11), « the sort of polysemy we find in the simplex lexicon should also be found in derived words ». This idea rests on a non-recent standpoint on lexical polysemy in word formation. For instance, Apresjan, (1974: 17-18) explicitly states:

> Polysemy which arises as a result of various word formation processes is a by product of these processes [*metonymical transfer and semantic analogy*] and as a secondary phenomenon does not need an independent characterization […] the basic semantic relationships which are expressed by word-formation types are characteristic of regular polysemy as well, and *vice-versa*. Regular polysemy is similar to word formation also in the sense that many of its types are productive.

This position can lead to two different solutions in Lieber's framework: 1) each affix has a single skeleton, with a very broad and abstract meaning, and different meanings arise from the composition with different bases (cf. Lieber's analysis of English –*er* affix, for instance); or 2) affixes are themselves polysemous and take multiple skeletons (this solution will be adopted for the E/R nominals' polysemy).

• With Lieber (and Pustejovsky, 1995), I assume that polysemy can be of different types: it can be logical / inherent (as in the case of Pustejovsky's 1995 *dot objects*), it might arise as the consequence of paradigmatic sense extension, or it can be the result of a metonymic transfer. Other meanings can also come up as a consequence of the vagueness (or underspecification) of a simplex or complex lexical item, which assumes different nuances of meaning when inserted in a syntactic context.

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[9] Nonetheless, it is acknowledged that the lexicon, as a repository of old and new formations, usually contains semantic lexicalizations, viz. items whose meaning is completely opaque and no longer compositional. Cf. the next section on this point.

• Finally, I assume with Lieber (2004) and Booij and Lieber (2004) that affixes are organized in paradigmatic classes that cover the same semantic spaces of the simplex lexicon. The semantic import of the affixes in a paradigmatic cell being fundamentally the same, the merger of a base with one of the affixes in the cell can be determined by morpho-phonological factors, might be influenced by stylistic preferences, or can instead be completely idiosyncratic.

1.4   Data and scope of the research

This research has theoretical rather than empirical or comparative goals; the range of data under analysis is in fact restricted to a single language, i.e. Italian. Because of the subtlety of meanings E/R nominals typically display, I have chosen to focus on a language in which, as a native speaker, I have reliable semantic intuitions. I hope, however, to be able to extend the analysis to nominals of other languages, especially, in view of the fact that most Slavic and German languages, for instance, seem to exhibit similar, but not entirely matching patterns of polysemy in the nominal domain.

The data taken into account only concern nominals with phonologically realized affixes; in particular, *-mento*, *-zione*, *-tura*, *-an/enza*, etc. (cf. Chapter 3 for a detailed presentation of Italian nominalizing affixes). Nominals obtained by conversion (or zero suffixation), such as *arrivo* 'arrival', *parcheggio* 'parking', and feminine deverbal nominals formed in particular by truncation of the suffix (e.g. *modifica* 'modification', *rettifica* 'rectification', etc.) are left for future research.

It should be noticed that, given the compositionality of meaning assumed by the framework, semantic lexicalizations, i.e. lexical items that have undergone semantic drift and are no longer compositional, ought to be excluded from an account of word formation in a synchronic perspective.

However, because of the widespread and abused tendency of defining R nouns as lexicalized, idiosyncratic items, a crucial issue is that of delimiting the phenomenon of polysemy with respect to the phenomenon of semantic lexicalization. Following a previous approach to the intricate matter of lexicalization (cf. Gaeta, 2002), I will consider as fully lexicalized those nominalizations whose transpositional meaning is no longer accessible.

In fact, it is worth observing that there are different extents of lexicalization among semantically opaque items. A pattern of complete lexicalization, for instance, is that of *appartamento* 'apartment' from *appartare/si* 'to withdraw/stand aloof'; for this nominal the transpositional meaning is no longer available, while the locative meaning is only opaquely bound to the base verb's semantics. A slightly different case is *calzatura* 'shoe',

which does not express a situational meaning, but preserves the semantic relation with the verbal meaning (i.e. *calzare* 'put on (shoes)'). (A comparable case in English is *equipment*). A*bitazione* from *abitare* 'to live', primarily denotes the place where one lives, i.e. a house, an apartment, etc. Still, it can be used to denote the state of living, but only in fixed/idiomatic expressions (e.g. *luogo adibito ad abitazione* 'place for living').[10] All these nominals, however, are no longer eventive (nor stative); hence, they are excluded from the range of data considered in this investigation.

Excluding these items, it will be shown that the widespread semantic ambiguity in nominals can only be partially explained as the result of a diachronic process of lexicalization.[11] Conversely, a principled explanation will be proposed in order to account for the polysemy characterizing E and R nominals in the synchronic perspective.

To conclude, some words on the empirical data collected and examined in this work. The corpus of the present research has mainly been collected from the DISC (Dizionario Italiano Sabatini Coletti), an Italian dictionary available in electronic format, while a minority of data has been taken from the quoted literature.

1.5   Outline

The thesis is organized as follows. Chapter 2 contains an overview of some influential theories on nominalization. In particular, it compares lexicalist and syntactic approaches to the derivation of nominals developed within the generative tradition. Further, it presents an alternative approach to the subject, which tries to capture and explain the complexity of the semantic variation exhibited by deverbal nominals.

Chapter 3 – which partially overlaps with Melloni (2006) and Melloni (forthcoming) – presents the range of Italian data and, in particular, the paradigmatic class of nominal affixes which are the heads of these complex forms. In the first part, I also outline the tenets of the lexical-semantic framework, i.e. Lieber's (2004). Moreover, the chapter is devoted to an in depth exploration of the semantic interpretations of E and R nominalizations; here, I especially focus on the semantic options of the latter class, which has been given less coverage in the literature on nominalizations. This analysis is aimed at capturing the formal representation of the semantic-grammatical skeleton of nominal affixes. The chapter also introduces the reader to the Co-indexation Principle, and addresses the question of the semantic relationship between E and R nominals.

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[10] However, *abitazione* cannot be used to denote a single instance of the event of *abitare* 'to live'.
(i)   *L'abitazione in questa casa di Lucia è durata 5 anni.
            lit. Lucy's living in this house lasted five years
[11] On the other hand, lexicalization often causes a strong specialization of the meaning of a complex item, but preserves its semantic compositionality / transparency.

Following previous analyses (cf. Pustejovsky, 1995 and Jacquey, 2001), I propose that the semantic interpretation of the nominals under discussion represent a case of logical/inherent polysemy, where E and R senses are two types clustered in a "dot object" deverbal noun (i.e. a complex type).

Chapter 4 extends the research began in Bisetto and Melloni (forthcoming) and Melloni and Bisetto (forthcoming). The whole chapter pursues the insight that the semantics of the base verb influences the meaning and the morpho-syntactic behavior of the derived E and R nominals. In particular, the analysis of several verb classes reveals that the formation of an R nominal is constrained by three semantic requirements that one among the arguments of the base verb must satisfy entirely or partially in order to obtain one of the R interpretations.

Chapter 5 contains the formal implementation of the derivation process of E/R nominals. In particular, I formalize the lexical semantic *skeleton* of many among the verb classes presented in Chapter 4, and implement the co-indexation process which accounts for the derivational semantics of E/R nominals.

2 GENERATIVE APPROACHES TO NOMINALIZATION

2.1 Introduction

Nominalizations have been a matter of debate since the late 1950s, in particular within the syntactic framework of transformational-generative grammar (cf. Chomsky, 1957, and Lees, 1960).

The focus of such theoretical studies has been on the morphosyntactic properties of nominalizations. Since they exhibit a hybrid nature from the categorial viewpoint, many researchers have been especially interested in capturing those properties of nominals that are shared by their underlying verbs and in accounting for these common features along the lines of contrasting and complementary analyses.

Only a short overview of selected and representative works will be presented in this chapter. In particular, Grimshaw's and Borer's proposals will be outlined in detail. Grimshaw's approach is crucial for its individuation of distinctive properties of E (corresponding to her *complex event*) nominals; further, some elements of her lexicalist solution will be useful for the present discussion of nominals. Borer's analysis, framed in a syntactic approach to word formation, is also significant, for it captures the verbal properties of nominals attributing to the base verb the source of eventivity and, thus, of argument structure. This is also an insight that drives the spirit of the proposal to be illustrated in the present study.

However, because the goal of this investigation is mainly to specify the lexical semantic properties of nominalizations, I shall outline some selected theoretical accounts of nominalizations that focus on the interpretation of nominalizations and take the presence of syntactic satellites as a correlate of nominals' semantics. In particular, Bierwisch's, Pustejovsky's and Asher's solutions have been chosen among others because they all shed light on the multiplicity of meanings associated with nominals by hinting at the significance of verbal semantics for determining the ambiguity of a derived nominal.

2.2   On the derivation of nominals

2.2.1 Transformationalist vs. lexicalist debate

Theoretical approaches to the nominalization process within the generative tradition have been fundamentally characterized by two contrasting viewpoints. In particular, the solutions offered can be associated with either the mainstream transformational approach or the lexicalist approach. This division, of course, simplifies the complex ramification of the theoretical analyses proposed over the last forty years; it is however useful in order to capture the basics of such proposals because, on the whole, it directly associates the debate on nominals with two opposite theoretical perspectives on the lexical semantics – syntax interface.

Since the very beginnings of the theoretical research on nominals, the main problem has been how to account in a principled way for the relation between a verbal complex, like the one in (1)a., and its corresponding derived nominal construction, like that in (1)b.

(1)   a.   The enemy destroyed the city.
        b.   The enemy's destruction of the city

Apart from the apparent semantic relation and shared argument structure, other elements of parallelism can be found between verbal and nominal constructions, which allow the same range of complements (cf. Grimshaw 1990: 47):

(2)   a. CP complement
            The physicists claimed that the earth is round.
            The physicists' claim that the earth is round
        b. Infinitival complement
            They attempted to leave.
            The attempt to leave
        c. Locative PP complement
            The train arrived at the station.
            The train's arrival at the station

Contrary to verbs, instead, nouns cannot take bare NP arguments; in other words, they do not assign accusative case to their internal argument.[1] Still, the range of elements common to verbs and their derived nominalizations is so wide as to raise important questions about the noun-verb relation. In particular, researchers have been puzzled by the apparent sharing of verbal argument structure by the nominal, the modality by which this sort of 'inheritance' takes place, and the different case assignment properties of verbs and nouns. As a result, they have offered different solutions to this challenging subject

Developed at the early stages of transformational-generative grammar (cf. Chomsky, 1957 and Lees, 1960), the transformationalist approach theorizes that the relation between a nominalization and its corresponding underlying sentence can be expressed by means of a transformation operation, which takes place in the syntax and turns a verbal construction into a nominal construction.

The lexicalist approach, which originated with Chomsky's (1970) influential *Remarks on Nominalizations*, claims instead that nominalization is a lexical operation, which therefore takes place in the lexicon. In his seminal work of 1970, Chomsky shows in fact that a syntactic operation could not account for the derivation of nominals, since the latter exhibit the following problematic aspects[2]:

i) The productivity of derived nominals is restricted. The following examples (cf. Chomsky, 1970: 188-189) show that the nominal constructions in (4) cannot replace the underlying clauses in (3).

(3)   a.   John is easy (difficult) to please

       b.   John is certain (likely) to win the prize

       c.   John amused (interested) the children with his stories

(4)   a.   *John's easiness (difficulty) to please

       b.   *John's certainty (likelihood) to win the prize

       c.   *John's amusement (interest) of the children with his stories

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[1] This state of affairs holds for English and Italian derived nominals. Gerundive English nominals and Italian *Infinito Sostantivato* do instead take bare NPs:
(i)   John's kissing Lucy lasted for minutes.
(ii)   L'aver baciato Maria mi ha reso felice.
         lit. 'the having kissed Maria made me happy'
Moreover, there are languages, like Tamil, that also allow derived nominals to assign accusative to their internal bare argument or that, like Greek, permit adverbial modification inside the nominal construction.
[2] Specifically, Chomsky contrasts the behavior of derived nominals with that of gerundive nominals: only do the former exhibit the features of lexical derivations, while the latter can be accounted for in the terms of a transformationalist hypothesis.

ii) The semantic relations between the derived nominal and its associated clause are quite varied and idiosyncratic. Let us compare two nominals derived by means of the same English suffix *-(at)ion* of Latinate origin: *construction* vs. *information*.

Construction denotes an action and the entity resulting from it.

(5)   a.   The construction of that bridge was completed two years ago.
          b.   There are a couple of new constructions on the right side of the street.

Information, instead, can only denote an (abstract) entity, but cannot be used with the transpositional meaning:

(6)   a.   The teacher informed the students that the school will be closed tomorrow.
          b.   *The information of the students (by the teacher) that the school will be closed tomorrow.

iii) Derived nominals have the internal structure of Determiner Phrases (henceforth, DPs), while gerundive nominals do not.

(7)   a.   John's unmotivated criticism of the book
          b.   *John's unmotivated criticizing the book

iv) Transformations that easily apply to sentences (such as raising to subject, raising to object or dative shift) are instead excluded by derived nominalizations.

(8)   a.   John appears to be sad
          b. *John's appearance to be sad

Therefore, Chomsky reacts to the transformationalist account suggesting that verb and derived nominal represent a single lexical entry with the same selectional requirements, and that such entry is categorially neutral. This position, known as the Lexicalist Hypothesis, has given birth to lexicalism and has paved the way for generative morphology since it indirectly argues for a separate component of grammar in which word formation takes place.

The lexicalist approach has been the dominant view among the studies on nominalizations. However, crucial differences have characterized the lexicalist proposals, especially concerning the accounts of the different distribution of arguments in verbs and nominals. The Configurational Hypothesis proposed by Giorgi and

Longobardi (1991), for instance, assumes that nouns and verbs share thematic structures and all the grammatical processes. There is no lexical semantic information playing a role in this account, where the mapping of arguments is determined according to the syntactic template of the DP. There are, however, other lexicalist analyses which argue for a *thematic* explanation of the distribution of arguments (Hoekstra, 1986 and Rozwadowska, 1988, among others). In particular, according to such proposals it is the thematic grid of the verb – and not the syntactic template – which is inherited by the derived nominal, while the rules determining the distribution of arguments differ in nouns and verbs and must be accounted for separately.

The most influential among the lexicalist studies has been Grimshaw (1990), which can also be described as one of the first attempts to incorporate aspect and theory of event structure into an account of nominalization. According to her analysis, the distribution of arguments in nominals can be explained appealing to rules of mapping which connect lexical conceptual structure (LCS) to syntax through an intermediate level called argument structure. This distinct lexical level is derived from LCS, via both a thematic and aspectual hierarchy. Further, Grimshaw's account is of particular interest for the present work because it makes crucial use of the distinction between argument supporting (our E nominals) and non argument-supporting (R) nominals. Therefore, in the next section, I shall illustrate Grimshaw's proposal in some detail.

2.2.1.1 Grimshaw's analysis and diagnostics

Before outlining Grimshaw's account of nominalizations, I will clarify some of the theoretical assumptions that characterize her approach as lexicalist.

Grimshaw's theory assumes that the lexical entry is the locus for argument structure specification and that syntactic realization of arguments depends on its mediation. Recalling a recent schematization put forward by Borer (2003), (9) offers a representation of the relation between lexical elements and their syntactic projection, as normally understood by such lexicalist approaches which Grimshaw (1990) falls within.

(9)   Lexical Semantics of Lexical Item → Argument Structure → Lexical/Syntactic structure

As Borer puts it (2003: 33), such an approach takes

a view of the human linguistic capacity fundamentally anchored in our demonstrable ability to acquire an intricate lexicon, based, at least in part, on a complex conceptual system. Within such a view, formal properties

are deterministically projected from a listed item with fully-articulated lexico-semantics, syntactic and morphological properties.

Further, Grimshaw follows Jackendoff (1990) and assumes that lexical elements are characterized by an LCS, which includes the participants in the situations described by verbs or nouns.[3] However, she makes a crucial distinction between grammatical arguments and semantic participants. Only some of the participants in the LCS are realized as true grammatical arguments (hence, they are obligatory) while others can be projected in the syntax like optional syntactic satellites, without being mediated by argument structure specification.

Focused on the properties of nominals, Grimshaw's seminal investigation highlights a syntactic peculiarity of derived nominals which parallels the syntactic behavior of verbs; if nouns are usually characterized by optional arguments, derived nominals can take obligatory syntactic arguments. However, also among these nominalizations are differences concerning their argument-taking capacity.

Grimshaw in particular associates the syntactic behavior of nominalizations with their internal aspectual analysis and semantic interpretation. Following previous works on this subject,[4] and focusing on the distinction between argument taking and non-argument taking nominals, Grimshaw connects this syntactic distinction with the interpretations a nominal can assume in different syntactic environments. In particular, nominals with event or process interpretation are typically argumental, whereas nominals denoting (abstract or concrete) entities are non argument-taking.[5]

Grimshaw defines the former type as *complex event nominals* and the latter as *simple event* and *result nominals*. As the labels themselves suggest, the author observes that the denotation of a nominal is not sufficient to capture the differences concerning the presence of obligatory vs. optional arguments. Simple event nominals are in fact those nominals which, although denoting events, do not take obligatory arguments. Nouns like these are underived nouns such as *race, trip, event* but also derived nominals such as *celebration, competition, meeting* which might be accompanied by syntactic satellites corresponding to LCS participants. Grimshaw's explanation appeals to the notion of event structure (in the sense of Pustejovsky, 1989). Simple event nouns do not have an associated event structure; therefore, they are like result nouns, as far as argument taking capacity is concerned.

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[3] However, Jackendoff (1990), *contra* Grimshaw (as well as many other theorists), denies the need for argument structure to be understood as a separate level of representation or as an interface between the lexical semantic and morphosyntactic levels.

[4] Cf., in particular, Anderson (1984), Grimshaw (1986), Lebeaux (1986), Malicka-Kleparska (1988), Roeper (1987), Walińska, and Zubizarreta (1987).

[5] A deverbal nominal with event reading behaves as a verb with respect to its argument-taking properties, but only the internal argument is obligatory.

The "complex event" definition, used to name only those nominals with obligatory arguments, refers to the fact that they are derived from verbs whose event structure is composed of different aspectual subparts (cf. section 4.2.1). Complex event nominals preserve this complex structure; in other words, in these nominals an internal semantic analysis of the event (provided by the event structure) can be detected. Since argument structure is obtained from both the aspectual and the thematic analyses of a predicate, only (derived) nominals having both of them are argument taking.

Besides the process interpretation, Grimshaw points out the possibility for a nominal to convey a more concrete interpretation, denoting the outcome or result of an event. According to her analysis, a noun such as *examination,* for example, is ambiguous between a process reading and a concrete (result) one (a list of questions on a piece of paper):[6] such an ambiguity correlates with the one that can be observed in the associated phrase in construction with the nominal.

(10)   a.   John's examination was long.

       b.   John's examination of the patient took a long time.

In (10)a. the genitive phrase *John's* can be interpreted as the possessor, the author or the taker of the exam(ination), but also the agent of an action, as in (10)b.: in the latter case, instead, the genitive possessor can only be agent oriented.

In order to disambiguate these nominals, Grimshaw introduces several diagnostics, which are listed in Table (1).[7, 8]

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[6] According to Pustejovsky (1995: endnote 7, pg. 257-8), *examination* does not express the result interpretation, that is, the abstract meaning of (load of) questions, tasks, etc. which can acquire a concrete manifestation. In fact, the following sentence is not acceptable according to Pustejovsky's judgement:
(i)   *Some examinations are on the table.
Examination can be, at most, interpreted as a simple event nominal, because it preserves an event denotation. The noun *exam*, instead, can refer both to an event and to the (load of) questions interpretations.
(ii)   a. The exam lasted for several hours.
           b. Bill was confused by the exam.
Pustejovsky (1995:174) also adds that « questions, like any information objects, can also have physical manifestation, but need not (e.g., an oral exam). The logical polysemy arises from the combination of the inherent polysemy possible in the type of information object of *question*, and the *event* of the examination itself. »
[7] In the course of this research, I will adopt some of the diagnostics Grimshaw (1990) posited for distinguishing her complex event from result nominals. However, there are some of these tests which have been extensively discussed and criticized in the literature. For instance, it seems that pluralization is possible also for complex event nominals, and, in particular, the Romance data disconfirm Grimshaw's assumption in this respect.
[8] As stressed by Grimshaw, the properties of simple event nouns match completely those of result nominals (except for the denotation); therefore, their properties are listed together.

Table (1)   *Grimshaw's (1990) diagnostics*

COMPLEX EVENT NOMINALS	RESULT NOMINALS
have event reading can be located in time	have referential reading denote (concrete) entities
assign theta-roles have obligatory (internal) arguments	do not assign theta-roles do not have obligatory arguments
allow modifiers as *frequent, constant*	allow modifiers as *frequent, constant* only when plural
only take the determiner *the* or none	determiners as *this, that, the, one, a*, etc.
are mass nouns do not pluralize	are count nouns pluralize
take agent-oriented modifiers (e.g., *intentional*)	do not take agent-oriented modifiers
admit only subject-like possessives	admit non-thematic possessives
admit aspectual modifiers	do not admit aspectual modifiers
by-phrases denote arguments (adjuncts)	by-phrases are non argumental
allow implicit argument control	do not allow implicit argument control
cannot occur predicatively	can occur predicatively (or with the equational *be*)
take an external *Ev* argument	take an external *R* argument

Grimshaw's texts can be extended rather successfully to other languages, as the vast amount of studies on this topic demonstrates. In the discussion of some the properties listed above, I shall use Italian data in order to show whether Grimshaw's most salient diagnostics also accommodates Italian data.

Complex event nominals denote events (and have an associated internal aspectual analysis), and as such they can be located in time, while result nominals only denote entities. Besides, only complex event nominals take obligatory arguments (the internal one), while result nouns always take optional arguments (or modifiers).

(11)   a.   La costruzione della casa (da parte dell'impresa) è stata terminata in due anni.
             'The (company's) construction of the house was completed in two years'

       b.   Quella costruzione è stata demolita due anni fa.
             'That construction was demolished two years ago'

Modifiers like *frequent* or *constant* (*frequente* e *costante* in Italian) might appear with singular complex event and plural result nominals, but they can never modify singular result nouns.

(12) a. La frequente costruzione di ampie strade (da parte dell'impresa)
          'The frequent construction of wide roads (by the company)'
      b. Le frequenti costruzioni a cupola del Salento
          'The frequent dome-constructions of Salento'
      c. *La frequente costruzione a cupola del Salento
          'The frequent dome-construction of Salento'

While result nouns can accept both definite and indefinite determiner, only definite determiners can appear with complex event nouns:

(13) a. La costruzione di ampie strade (da parte dell'impresa)
          'The construction of wide roads (by the company)'
      b. La/Una costruzione moderna
          'The/A modern construction'
      c. *Una costruzione di ampie strade (da parte dell'impresa)
          'A construction of wide roads (by the company)'

Pluralization options of nominalizations probably represent the most controversial issue among Grimshaw's diagnostics; Grimshaw argues in fact that complex event nouns cannot pluralize, while results normally can. However, Italian and, in general, Romance data seem to disconfirm her blanket statement:

(14) Le successive traduzioni dell'Iliade (da parte di numerosi traduttori)
      'Successive translations of Iliad (by various translators)'

Besides, counterexamples in Germanic languages can be found as well (cf. the following example, adapted from Bierwisch 1990/1991:58):

(15)   a.   Each of the three destructions of Charthage (began with a siege)[9]

        b.   Die Umdispositionen des Dirigenten zogen sich über Tagen hin.

            'The rearrangements of the conductor went on for days'

It could be maintained that *destructions* is a simple event noun in this case, and that *of Chartage* is not an argument, but a complement of the head noun; however, this account would make the whole argumentation circular. It seems more plausible to maintain that complex event nouns can also undergo pluralization, at least to a certain extent, and that this capacity is more or less marked cross-linguistically (cf. Roodenburg, 2006).

Further, complex event nominals may take agent-oriented modifiers (*intentional*/*deliberate*), while result nominals can never do.

(16)   a.   Il deliberato cambiamento di rotta (da parte del capitano della nave)

            'The deliberate change of route (by the captain of the ship)'

        b.   *Il deliberato cambiamento riscontrato nel tuo testo è inesatto.

            'The deliberate change found in your text is incorrect'

Result nominals can occur as nominal predicates; complex event nominals cannot:

(17)   a.   *Questa è la costruzione della casa (da parte dell'impresa)

            'This is the construction (by the company)'

        b.   Questa è la costruzione di cui ti ho parlato.

            'This is the construction I told you about'

The properties listed in the last row and cell of Table (1) do not represent a diagnostic in a proper sense, but coincide with the proposal put forward by the author in order to explain nominals' ambiguity. The Grimshaw solution is lexicalist because it holds that nominals' ambiguity depends on the lexical ambiguity of nominalizing suffixes, and in particular, on the operations on verbal argument structure brought about by such lexical elements.

Grimshaw explains that when nominalizations are of the result or simple event type, they lack a thematic structure, i.e. an argument structure projection onto their LCS participants, and this is what distinguishes them from complex event nominals. Still, she also argues that nouns always have an open argument. This implies that all nouns (even result and simple event nominals) have an argument structure: although they have no other arguments, they have *R* as external argument. Nominal lexemes like *dog*, *race* and

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[9] The same clause is perfectly acceptable in Italian as well:

(i)   Ognuna delle tre distruzioni di Cartagine.

construction (as building or edifice) all take an external *R* argument. Following Williams (1981), Grimshaw maintains that this argument is a non-thematic one; it does not appear as a complement to the head, nor is it the realization of a participant in the LCS of the word. To put it differently, *R* is not a theme or agent of the base predicate. But, importantly, *R* can be identified with (i.e., bound to) an LCS argument of the head. In particular, this identification results from the application of the function expressed by the nominalizing suffix, which must specify which verbal argument it binds. Further, *R* represents an open position which can be satisfied by predication or reference (see Higginbotham, 1985 for a significant theory of linking). In other words, the selection of this argument correlates with the referential properties of the nominal.

Complex event nominals, like results, must have an external argument distinct from their thematic arguments, which Grimshaw names *Ev*, and corresponds to the E (=Event) argument discussed in semantic literature (cf. Davidson, 1967 and Parsons, 1990). The external argument of a complex event nominal never binds a LCS participant because these nominals always denote events. The selection of *Ev* leads to an event reading, and it is allowed only if the nominal is associated with an event structure. According to Grimshaw, it is the selection of *R* or *Ev* by the nominalizing suffixes that determines the selection, by the corresponding nominals, of appropriate modifiers, determiners and the inventory of properties listed in Table (1).

Along the lines of a strongly lexicalist approach, the homophony of nominals with double interpretation (e.g., *construction* or *examination*) is then attributed to the systematic ambiguity of the nominalizing affixes, which can select either *R* or *Ev*. As for English, Grimshaw points out the ambiguity of the suffixes *-ation*, *-ment*, which can select either *Ev* or *R*. Conversely, *-ing* (cf. gerundive nominals) introduces systematically an *Ev* argument, while zero derivation only selects *R*.

Grimshaw's proposal can be represented as follows:

(18)   *construct* V , (x (y))

    -ion N , (Ev/R)

        CEN→ *construction* N, (Ev (x (y))

    a.   The construction of the house (by the company)

        R → *construction* (R=x) such that y *constructs* x

    b.   That construction (*of the house) is huge.

A verb such as *construct* can have two types of nominals depending on the kind of deverbalizing suffix that it is merged with. When the *Ev* suffix is added, the operation involves the formation of a complex event nominal and the concomitant suppression of the external argument, which becomes an adjunct (hence, its optionality follows, cf.

(18)a.). When the *R* suffix is merged with the base verb, one of the arguments of the base verb (something like a Theme, according to Grimshaw's analysis) is bound (cf. (18)b.).

2.2.1.2   Criticism of Grimshaw's analysis

Grimshaw's (1990) investigation represents a starting point for any adequate theoretical study on nominalization. Her work addresses significant issues and suggests remarkable solutions: the notion of argument structure as a separate level connecting the syntactic and the semantic modules, the (morpho-)syntactic distinctions among three classes of nominals (complex event, simple event and result nouns), the role of LCS, mediated by argument structure, in determining the projection of syntactic satellites (cf., concerning these latter, Grimshaw's definition of arguments, adjuncts, and modifiers). Strictly concerning nominals, the most relevant aspect of Grimshaw's analysis has been her systematic account of the distribution of arguments in nominal constructions in terms of the opposition of complex event vs. simple event and result nominals.

Nevertheless, Grimshaw's work has encountered much criticism; in particular, there has been much discussion on the matter of the necessary presence of the internal argument with complex event nominals and on the possibility of expressing the phrase corresponding to the internal argument with result nominals (cf. Picallo, 1991). Much debate has ensued concerning the syntactic account of the adjunct by-phrase, which receives a vague explanation in Grimshaw's analysis, and on the claim that intransitive nominals cannot be complex events (cf. Rozwadowska, 2000). I shall now review some of the most salient points of such criticisms.

To begin with, Grimshaw does not convincingly account for the status of the external argument of complex event nominals; such an argument, which can be expressed with a *by*-phrase or a possessive prenominal genitive in English, has an intermediate status between argument proper (they bear the same thematic relation to both the nominal and verbal heads: specifically, they are *Agents*) and modifier, because it is always optional (i.e., it does not fill a position in argument structure). To explain the behavior and status of nominals' external argument, Grimshaw introduces the separate role of *argument-adjunct*, justifying her position with a theory which sounds rather stipulative.[10]

Further, much discussion has concerned the obligatoriness of internal argument with complex event nominals; Zubizarreta (1987:73) observes that there are nominals which, although event-denoting, may appear without arguments.

(19)   The assassination happened yesterday.

(20)   The execution was filmed by the TV-stations.

A possible account for them would be to interpret those data as simple event nouns: they are in fact event-denoting but do not obligatorily take arguments. However, I think this move is rather uneconomical and counter-intuitive: in order to pursue this hypothesis, nouns such as *execution* should be considered as systematically ambiguous between a complex event interpretation, arising in presence of argument structure, and a simple event one, in absence of arguments, in a way similar to the ambiguity between complex event and result nominals. Still, the proposal of lexical ambiguity is much less tenable for such data because there is no difference, from the interpretative viewpoint, between the argument-taking *execution* and the non-argument taking one.

Consequently, I suggest that the blanket statement that complex event nominals always take obligatory internal arguments should be challenged: in fact, it seems that there are many pragmatic or discourse factors which can influence argument realization in nominal constructions and that are completely ignored in Grimshaw's account. Therefore, absence or presence of argument structure at the syntactic level does not always represent a useful empirical means to correctly identify the type of nominal at issue.[11]

Another problem, pointed out by Zubizarreta (1987) and Picallo (1991), is represented by the type of syntactic satellites taken by result nominals. According to Grimshaw, only modifiers can appear with results. However, there are some data which contradict her analysis: the nominal in (21) is a complex event one, as indicated by the presence of the internal argument together with the event denotation, while the nominal in (22) is a result, since only an entity (the outcome or product of the event), and not the event itself, can be published (the Catalan data below are from Picallo, 1991).

(21)   La discussió de les dades va durar tot el dia.
        'The discussion of the data lasted all day'

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[10] This issue has been extensively discussed in the literature: to account for the optionality of the external argument vs. the obligatoriness of internal one, Lebeaux (1986), for instance, proposes that the nominalization process only includes the projection of a V^I, instead of a full verbal complex.

[11] In her study of German nominalizations, Ehrich (2002) argues that whether a nominal must be complemented by the internal argument counterpart of the corresponding base verb is not a matter of the distinction between event and non-event nominals, but is determined partly by conceptual, partly by contextual parameters. According to this author, the matter of complementation is thus pragmatic, rather than syntactic-semantic in nature.

(22)   La discussió de les dades es va a publicar a la revista
        'The discussion of the data was published in the journal'

The crucial issue at stake here is that in both cases the PP *de les dades* (and note, from the glosses, the similar behavior of English, in this respect) bears the same thematic relations to the head noun: in Grimshaw's terms, the PP should be considered as a proper argument in (21) and as a complement in (22). In fact, this genitive can never be interpreted as a modifier, since modifiers are not assigned thematic roles by the head noun. Other Romance languages like French, Spanish and, ultimately, Italian confirm the existence of such peculiar result nominals.[12]

(23)   a. La présentation de livres de ce journaliste est toujours raffinée.
            'The presentation of books of this journalist is always refined'
        b. *La présentation fréquente de livres de ce journaliste est toujours raffinée.
            'The frequent presentation of books of this journalist is always refined'

(24)   a. La demostración de Juan del teorema de Pitágora es insostenible.
            'Juan's demonstration of Pythagoras's theorem is untenable'
        b. *La demostración voluntaria de Juan del teorema de Pitágora es insostenible.
            'Juan's demonstration of Pythagoras's theorem is untenable'

The ungrammaticality resulting from the adjunction of an aspectual (*fréquente*) and an agent-oriented adjective (*voluntaria*) in the b. examples shows that the nominals are result ones. Another peculiarity of such nominals is that the argument corresponding to the Agent is expressed in the form of a genitive PP, instead of the by-phrase. Further discussion about this class of data will be deferred to the analysis of Italian nominals.

Moreover, a considerable drawback of Grimshaw's proposal is the lack of attention to nominals denoting states and, in particular, to de-adjectival and intransitive nominals. In point of fact, it is worthwhile underlining that Grimshaw's diagnostics cannot be used to identify all types of nominalizations: deadjectival and deverbal state nominals, for instance, are not accommodated by all of the diagnostics in Table (1). Like nominals from transitive action verbs, in fact, nominal denoting states are also thematic assignors and have obligatory arguments. In particular, their (Experiencer) subjects are arguments (or adjuncts, in Grimshaw's terms), in the sense that they satisfy argument position in the predicate argument structure (or PAS) of the verb and are projected onto the syntactic

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[12] The French data are from Siloni (1997:98), while the Spanish data are from García García-Serrano (1998-2000).

structure of the derived nominal. Ultimately, they also allow *constant* without plural (since they typically are mass nouns).

On the other hand, they do not take agent-oriented modifiers; they do not allow implicit argument control nor take aspectual modifiers.

(25)   *The *intentional* fascination with Lucy
         *John's fascination with Lucy *in order to forget Lucy*

Further, by-phrases – which typically individuate Agents and are therefore related with dynamic situations – are not possible with statives nominals, which only allow genitives to express their Experiencer arguments.[13]

(26)   *The preoccupation (with John) by Lucy

Likewise, nominals derived from both unergative and unaccusative (intransitive) predicates rule out the by-phrase. In general, such nominals only allow their subject to appear in the form of a genitive PP:

(27)   *The jump / fell by Lucy

Therefore, Grimshaw's account of nominalizations completely disregards a large class of nominalizations.

Finally, limited to the account of English nominalizations, Grimshaw's lexicalist proposal as well as Chomsky's (1970) original account appear less tenable when they are proposed to account for nominalizations of languages in which the characteristic morpho-syntactic features of the action nominal constructions are particularly close to those of VPs. For instance, Tamil, a Dravidian language spoken in southern India and Northern Śri Lanka, has action nominals that take object in the accusative case and subject in the nominative one (displaying properties analogous to those of English gerundive or Italian *Infinito Sostantivato*).[14, 15] Classical Arabic and Turkish are characterized by nominal constructions with the object in the accusative case (like in verbal constructions) but the subject in the form of a genitive PP.

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[13] Italian data exhibit the same behavior in this respect.
[14] Cf. Comrie (1976-b) for a typological overview of these languages.
[15] Koptjevskaja-Tamm (1993), delineating a typology of action nominal constructions, defines as belonging to the *Sentential Type* the action nominal construction whose entire argument structure preserves the same syntactical relations of the underlying clause. Alongside Tamil, Basque also exhibits this type of nominal construction.

The existence of languages presenting such nominal constructions has favored the proliferation of studies developing and implementing the original transformational hypothesis.[16]

2.2.2 Neo-transformational approaches to nominalizations

After the earliest attempts by Chomsky (1957) and Lees (1960), syntactic approaches to the derivation of nominals have been newly proposed by those researchers who, following Baker's (1988) and Pollock's (1989) seminal works, posit a syntactic approach to word formation. These studies have only preserved the basics of the transformational analysis of nominals proposed within the early generative tradition, and have obviously refined those crucial ideas by means of more sophisticated solutions capable of overcoming the shortcomings pointed out by Chomsky (1970) characterizing the previous accounts.

These solutions can be defined as neo-transformational[17] because the derivation of nominalizations and their different morpho-syntactic properties are accounted for in terms of the presence (or absence) of a verbal complex in their (syntactic) derivation. Interpretative ambiguity of derived nominals thus follows from different types of derivation and corresponding syntactic projections.

As mentioned in the previous section, evidence in favor of such solutions is offered by the presence, in nominal constructions, of elements which basically characterize verbal projections; in particular, adverbial modifications and assignment of accusative case to the internal argument (and, in some cases, nominative to the external one). These properties do not appear in derived nominals of Germanic and Romance languages: nonetheless, there are numerous languages characterized by such properties. Along with Tamil, Classical Arabic and Turkish, for instance, Hebrew and Greek also display verbal properties because they permit adverbial modification with action nominals, and disallow it with result ones (cf. Comrie, 1976, and in particular Koptjevskaja-Tamm, 1993 for a comprehensive typological overview of the syntactic properties of seventy languages). In general, data vary crosslinguistically according to which and how many of the verbal properties are retained in the corresponding nominal constructions: neo-

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[16] This is not to say that the debate on the nature of the process leading to the formation of nominals is closed or simply in favour of a syntactic approach to this word formation process. For instance, concerning Hebrew, Siloni (1997) criticizes the syntactic approach taken by Hazout (1995), maintaining the embedding of a VP under an NP, and shows that nominalization in Hebrew exhibits idiosyncratic restrictions that makes it resemble a lexical process.

[17] Borer (2003) defines some of these neo-transformational approaches as neo-constructionist: in particular, Borer considers as neo-constructionist those approaches assuming that meaning is not a property associated with lexical items but is determined by the syntactic structure.

transformational approaches suggest that this variation is explicable in terms of the different number and type of verbal heads that are projected in the nominal construction.

2.2.2.1   The VP analysis: Borer's account of nominalizations

Within the neo-transformational trend, Borer's analysis (1993-2003) can be defined as the most influential. Her approach, first expressed within the frame of Parallel Morphology (1993), then in a minimalist fashion (2003), has been adopted and implemented by Fu (1994) for Chinese, Hazout (1994, 1995) for Hebrew and Arabic and further supported by Schoorlemmer (1995) for Russian.[18] Other influential works that share aspects of Borer's rationale are Picallo (1991) (similar in many respects to Borer, 1993), and Alexiadou (2001), which, like Picallo, consider roots as category-less elements.[19]

There is however a crucial difference between Borer - Picallo's proposals, on one side, and Alexiadou's account, on the other: the distinction lies in the fact that Borer and Picallo argue that nominals' ambiguity is motivated by the different nature of the process leading to the formation of E vs. R nominals; specifically, a syntactic process in the former case vs. a lexical one in the latter. Alexiadou, instead, claims that both E and R nominalizations are the outcome of syntactic operations. Their ambiguity crucially depends on the height to which the suffixal element is merged with an element of the syntactic projection of the base verb (via movement or copy).

In the next two sections, I shall outline and compare the two solutions offered by Borer (1993 and 2003) to account for nominals' ambiguity: although the proposal of 2003 is clearly evocative of the first one, there are important differences between the assumptions of her two investigations. Specifically, while her first solution is framed within the Parallel Morphology model, which assumes that lexical elements are endowed with category information, her latest account takes items lacking syntactic category, along the lines of Picallo (1991) and of the recent Distributed Morphology model.[20] However, both her proposals (explicitly the first, implicitly the second one) assume two levels for word formation.

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[18] Similar analyses have been proposed by Valois (1991) for French and, more recently, by Fu, Roeper and Borer (2001) for English.

[19] In recent years, the source of the idea that roots lack syntactic category specification has been found in Chomsky (1970) and Jackendoff (1976). Cf. Lieber (forthcoming) for an interesting discussion on this issue.

[20] One of the most important assumptions of DM is that roots (or encyclopaedic items) are categoryless items: their categorization is not lexical, but structural, and occurs in virtue of a functional element which c-commands a non-categorized lexical element (among the major proponents of such theory, cf. Halle and Marantz 1993, Marantz 1997, Harley and Noyer 1999).

2.2.2.1.1 *Parallel Morphology…*

Initially, Borer's solution has been expressed with the tools and framed within the model of Parallel Morphology: according to this model, morphology is nothing but a set of rules which are not constrained to an independent module (the lexicon) but can apply freely both at the pre-syntactic and at the syntactic levels. Put differently, a morphological word can be derived either in the lexicon before insertion at D-structure (= lexical derivation), or after D-structure, that is, in the syntax at S-structure (= syntactic derivation). Borer's model predicts that, in the case of lexical derivations, the characterizing properties of the non-head are opaque: that is to say, the non-head might lose some of its original properties. On the contrary, the characterizing properties of the root are transparent in the case of syntactic derivation, the explanation for this different status lying in the fact that such elements originate in a syntactic head position and are raised (via head-to-head movement) to join the head-affix. A word derived in this fashion is both a morphological word and an X^0 with a complex syntactic structure. This implies that semantic drift is ruled out in this case, thought still possible for the outputs of lexical derivations.

The Parallel Morphology model, introduced by Borer (1991) to account for the causative-inchoative alternation in Hebrew, has been extended to the account of derived nominals in English and Hebrew. In particular, Borer (1993) suggests that the same morphological rule is applied to derive (homophonous) result and process nominals,[21] the difference being at the level to which the rule has access. The level is pre-syntactic (D-structure) in the case of result nominals, in which a head-adjoined structure is composed at morphological form, but it is syntactic in the case of process nominals. Therefore, a result nominal is inserted at D-structure like absolute nouns, projecting an NP like other ordinary nouns:

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[21] *Process* nominal is the label Borer (1993) applies to Grimshaw's complex event nominals. They therefore correspond to E nominals in the present investigation.

(28)   (an) examin-ation

```
                    NP
                   /  \
              Spec      Nᴵ
               |         |
              (an)      N⁰
                       /  \
                      V      N
                  examine   -ation
```

.
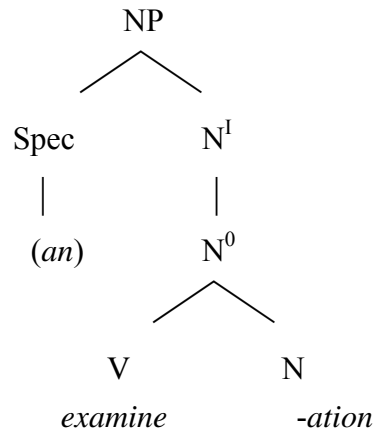
In (28) the head suffix is joined directly with the verbal root. Because of the lack of verbal projection, the syntactic properties of the verbal non-head are inert.

A process nominal is instead inserted at S-structure, where the morphological rule applies through the raising of the verbal root to the nominalizing head suffix (which, categorially, is a nominal element).

(29)   the examination of the patient by John

```
                 NP
                /  \
           Spec     Nᴵ
                   /  \
                 N⁰    VP
                  |    /  \
       examineᵢ-ation Spec   Vᴵ
                       |    /  \
                      NP   V⁰   NP
                       |    |    |
                     John  tᵢ  the patient
```
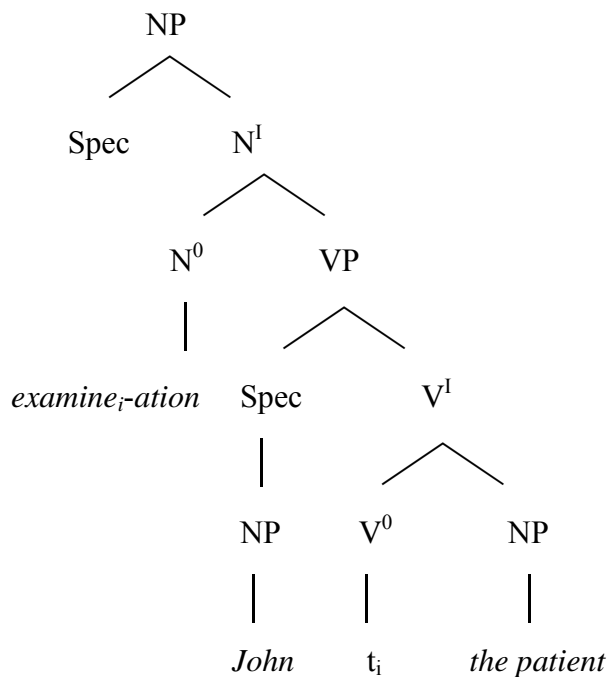
In this account, the presence of argument structure in process nominals is directly accounted for by the presence of an entire VP in the syntactic derivation and it is the

head of such VP that assigns thematic roles to its arguments; the absence of obligatory arguments in result nominals is the consequence of the absence of a VP structure in lexical derivations.

2.2.2.1.2 …and Exo-skeletal explanations

Borer has recently reformulated her original idea according to a different model of grammar, of which I shall briefly illustrate the assumptions:

a. Borer (2003) is in favor of a strong computational approach that assumes

a linguistic ability which is fundamentally computational, with a small as possible repository of syntactic information appended to it, by means of a lexicon beyond the clearly arbitrary pairing of sound and meaning.

(Borer, 2003: 33)

In this view, it is the syntactic structure, and not the lexical element, that gives rise to templates which, in turn, coerce arguments' interpretation. Borer's model can be labeled as neo-constructionist because, like other models,[22] is associated with the framework of Construction Grammar. The picture put forth within such models can be schematically summarized as follows:

(30)   syntactic structure $\rightarrow$ event structure $\rightarrow$ interpretation of arguments

In this exo-skeletal system, as Borer herself defines it, syntactic properties, like argument structure and categorial information, are properties of structures, instead of being associated with lexical items.[23]

b. The lexicon is extremely impoverished and exploded into an encyclopedia, containing nothing more than sound-meaning pairs (encyclopedic items = EIs), on one side, and a range of functional elements (including morpho-syntactic features and functional heads, such as determiners), on the other.

c. Similar to the model of Distributed Morphology, EIs are category-less and argument-less concepts, which undergo insertion into an unmarked lexical phrasal domain (L-D): therefore, the syntactic category of an item follows from

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[22] Cf., among others, Fillmore and Kay (1997), Goldberg (1995), van Hout (1991, 1996), Kratzer (1994), (1996), Marantz (1996).

[23] If the lexicalist approach considers the lexical item as the skeleton around which the structure is built, the exo-skeletal approach points out that « the structure, rather than the listed item, determines not only grammatical properties, but also the ultimate fine-grained meaning of lexical items themselves […] » (Borer, 2003: 33).

the type of functional item they are merged with (e.g. D determines N categorization).

d. Derivational morphemes are part of the functional vocabulary: thus, they are specified for category and have a phonological realization.[24] They possess what looks like sub-categorization frames; therefore, they determine the category of the EIs they are merged with.

Endowed with this machinery, partially related to the DM model, Borer formulates a proposal concerning both deverbal and deadjectival nominalizations which is reminiscent of her first solution expressed in the frame of Parallel Morphology. It could be seen as incorrect to state that Borer's solution appeals directly to the distinction between process and result nouns: in this paper, she argues for a partition between argument taking nouns, she calls Argument Structure (AS) nominals, and non argument taking one, defined as Referential (R) nouns. Borer, in fact, does not take into account the interpretation of nominals other than as a corollary of the structure which embeds them, and claims instead that the presence of argument structure is the only relevant factor for the individuation of the type of nominal under discussion.

In particular, Borer argues that the presence of argument structure in AS nominals depends on an argument structure event complex including either a VP or an AP alongside functional structure. What this means is that only nouns which are derived from verbs and adjectives, through a merge with an overt suffix, can be AS nouns.[25] This is the crucial point of Borer's analysis, which rejects Grimshaw's view that the source of eventivity of her *complex event nominals* is the derivational suffix itself: in Borer's view only the verb (or the adjective) is the source of the event (or state) interpretation.

Let us see the details of the morpho-syntactic structure of an AS nominal:

(31) [$_N$ -(a)tion/-ing [$_{EP/ASPQ}$ [$_{L-D}$ …L …]]]
   a. Kim's breaking/destruction of the vase
   b. [$_{NP}$ -(a)tion/-ing [$_{EP}$ Kim [$_{ASPQ}$ the vase [$_{L-D}$ break/destroy]]]
       (LD → VP)

---

[24] Borer assumes that both derivational affixes (functional items) and roots must be associated with some phonological content. In this respect, Borer's model departs from the assumptions of DM, which assumes Late Insertion (of phonological content) for functional elements.
[25] That the suffix must be overt (in the sense that it must be phonologically realized) is an important aspect of Borer's solution. She in fact claims that zero derived nominals are instances of V/N alternations; specifically, they represent categorially neutral EIs inserted in different syntactic contexts. The general lack of argument structure displayed by these nominals seems to confirm her proposal, although there is a minor number of counterexamples which weaken this hypothesis (cf. Borer, 2003: footnote 13).

In (31) EP (= Event Phrase) and ASP$_Q$ (= Quantity-Aspect) are argument licensing heads that coerce L-D in a VP. In turn, L, that is a V in (31), merges with the functional suffix *-ation/-ing* (via head-to-head movement or copy) and is assigned morpho-phonological structure. In short, this means that the EI that ultimately has argument structure first becomes a verb, and then it is coerced into a nominal. Crucially, for Borer it is in the verbalizing environment that the projection of arguments takes place, while this projection is excluded in nominalizing domains.

R nominals are instead derived from the presence of a nominal structure which directly dominates the EI.

(32) a. [$_{L-D}$ *form*]

b. [$_{L-D}$ N   ]

form   *-ation*
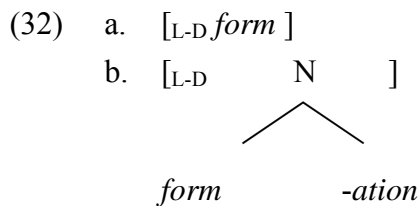
In (32) a category neutral EI (*form*) is merged directly with a functional nominalizing element (*-ation*), to give rise to an N. According to Borer's theory, the cause of the lack of argument structure is straightforward: the merger with the suffix is too *low* to allow the projection of elements incompatible with a head noun. Borer does not state it explicitly, but this means that the morphological rule applies in absence of syntactic structure (the syntactic configuration will be projected after the rule, since the existence of N will enable the projection of nominalizing functional structure like DP or NumP).

As stated above, Borer's last solution shares many aspects with her previous one outlined within the Parallel Morphology framework: in her last account, like in the previous one, Borer argues that a morphological operation can be active on syntactic projection (in the case of AS nominals) or directly on a EI (in the case of R nouns). In other words, her system is evocative of Parallel Morphology in enabling derivation to occur at two different levels.

2.2.2.2   Criticism of Borer's accounts

There are several drawbacks with both Borer's accounts of nominalizations. I shall go over the most challenging points of Borer's analysis; while her view is opposed to Grimshaw's solution, it is worth noticing that the problems of Borer's rationale recall the shortcomings characterizing Grimshaw's account.

To start with, Borer does not even touch upon the status of the external argument in derived nominals. Contrary to Grimshaw, who assigns to it the status of argument-adjunct, Borer considers the external argument of derived nominals to be a proper

syntactic argument and does not mention the fact that it is optional in derived AS nominals, while its presence is obligatory in gerundive nominal constructions.

(33) a. John's/*the constructing the house

     b. (John's)/the construction of the house was completed last year.

More generally, and contrary to what is traditionally maintained in the literature, Borer does not make a distinction between gerundive nominals and derived nominals at all. In her account, they are expected to exhibit the same behavior.[26]

In my view, though, the major drawback of Borer's analysis lies in the ground rules of the strong computational approach she takes; specifically, according to her, it is the structure that determines the fine-grained lexical semantics of a lexical item and the interpretation of it and of its (eventual) arguments. This position leads the author to maintain that all nominals lacking argument structures (also derived event-denoting nominals, i.e., Grimshaw's simple event nominals) are R nominals, and are therefore homonymous of their corresponding AS nominals, if any. Let us consider the following examples, adapted from Borer (2003), where the predicative contexts (*last for hours*, *be over*, etc.) would suggest a situational interpretation of the nominals *destruction* and *examination*, in both a. and b. contexts:

(34) a. The destruction lasted for hours / was devastating.

     b. The destruction of the city lasted for hours / was devastating.

(35) a. The examination lasted for hours / is over.

     b. The examination of the students lasted for hours / is over.

However, contrary to the nominals in b., the nominals in a. do not take arguments, and are interpreted as R nominals in Borer's view. If I understand her point correctly, Borer assumes in fact a lexical derivation for the non argument-supporting *destruction* or *examination* (=R nominal) and a syntactic one for the argument-taking *destruction* / *examination* (=AS nominal). In my view, however, the proposal of a double derivation for nominals which display the same denotation is unnecessary as much as it is pointless to assume two lexical entries for the transitive and intransitive use of a verb (cf. *eat*, which can appear both with or without internal argument). In other words, what I put forth here is that (even internal) arguments in event-denoting nominals can be omitted,

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[26] For instance, Chomsky (1970) assumes that gerundive nominals are the output of a syntactic operation, while Grimshaw claims that the *-ing* suffix can only select *Ev*.

because implied or non-focused, and that the status of such implicit arguments recalls the status of optional, implicit arguments of verbs.

With respect to Borer (2003), the details of how rules of word formation apply to an unordered set of encyclopedic category-less elements would require further explanation. In particular, it is not clear in her recent proposal why the morpheme *-ation* does not felicitously merge with lexical categoryless elements like *happy* to yield an R noun or to *happy*, c-commanded by EP/ASP$_Q$ (roughly identifying a VP), to form an AS noun. In other words, her theory would require a range of (categorial or semantic) restrictions capable to account for the functioning of word formation.

Furthermore, Borer's disregard for the denotations of nominalizations clearly has repercussions on her account of the heterogeneous class of those nominals she defines as Referential ones. Being focused on the details of the derivation of nominals, Borer indeed omits to explain what the basic meaning of an R nominal is, and gives only a syntactic account of it, assuming it is non argument taking. In her account, an R nominal can be event denoting, can express the result of an action, and/or it typically undergoes semantic drift.

Ultimately, Borer does not make it explicit how to characterize the ambiguity that comes about in nominals: I assume that, according to her account, ambiguity in nominals could be interpreted as a case of homonymy resulting from a morphological rule applying in two different places of the grammar. However – and the same observation is also valid for Grimshaw's account – this solution fails to account for the evident semantic relation between the interpretation of a nominalization as a situation and as the product or *effect* of the same situation.

Overall, the solution of a double derivation does not give any intuitive hints on the interpretative value of derived nominals: Borer's partition between AS and R nominals merely stands for the argument taking vs. non argument taking capacity of the derived word. In particular, if the merger of nominalizing affixes with base adjectives or verbs typically produces nominals with situational interpretation and argument structure (AS), the Borer proposal does not explain what the constraints are, if any, regulating the lexical formation of the homonymous R nominal.

2.2.3 Preliminary remarks and questions

The majority of works within the generative frame have explored the class of so-called action nominals mainly from a syntactic point of view; arguments' distribution, case assignment properties and other (verbal and nominal) features exhibited in particular by E nominals represent the focal points of such investigations.

The interpretations of nominals and, in particular, the issue of the composite semantics of the R class have therefore been generally disregarded, at least in these accounts. R nominalizations possess in fact the syntactic properties of underived, absolute nouns; thus, they have been considered less appealing from a syntactic viewpoint, in other words, a less important correlate of argument supporting nominals.

Nonetheless, there are important differences within this class as well, both from a syntactic viewpoint and from a semantic one. For instance, I have already presented data (cf. (23) and (24), in particular) that show that R nominals can also take complements; conversely, this option is ruled out by a nominal like *construction* (as an R noun) which blocks the projection of the internal argument in the syntax. Semantically, the heterogeneous nature of this class has been already pointed out in Chapter 1 and plainly symbolized by the label chosen for this class. R, referential, means nothing more than taking an R argument and having the denotation of an entity.

On the whole, none of these studies are really able to account for such syntactic and semantic varieties, which seem related to the semantic type of predicates, as I will show in the course of this research.

Moreover, these investigations often fail to account for the correlation between E and R nominals: in particular, the data show that the formation of R nominals is much more constrained with respect to E nominals. Not only is the interpretation of R nominals varied and hardly predictable, but also their own formation is not always realized given the existence of the corresponding E nominals. Specifically, given an E nominal with its default situational interpretation and corresponding argument taking capacity, the homonymous R one is not always realized.[27] On the contrary, the situation in which a nominal has only an R value, but lacks the situational interpretation is very marginal (see cases of lexicalization, such as the Italian *calzatura* 'shoe' or the English *equipment*, which do not display event reading).

A first question, thus, naturally arises: why is this the case? In other words, why is the default denotation of a nominal (and its corresponding syntactic behavior) the situational one? On the other hand, one might wonder whether the R interpretation is solely accounted for in terms of unpredictable, semantic drift or it is instead possible to offer a principled explanation for such ambiguity.

A very important task is therefore to specify the conditions by which an R nominal can be formed. In other words, if ambiguity in nominals were the consequence of the ambiguity of nominalizing suffixes, as Grimshaw suggests, we would need a theory capable of explaining why the correspondence between E and R nominals is not systematic.

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[27] The R characterization for a nominal does not only imply its non-argument-supporting syntactic specification but also an entity denotation.

Another issue to determine concerns the type of ambiguity such nominals display. Both Grimshaw and Borer (the former explicitly, the latter implicitly) assume that the event (E) – result (R) ambiguity is a case of homophony. Other approaches, instead, claim that such words are instances of polysemy, and, in particular, of logical or inherent polysemy (cf. the next section 2.3.2 below).

In the next sections, however, I shall outline some influential explorations that address the problem of semantic ambiguity of nominalizations from a lexical semantic perspective; the interpretation of nominals is the issue at stake in these accounts, while their syntactic properties follow from their lexical semantic features. In general, in fact, such research falls within the trend of the lexicalist approach.

Throughout the second part of this overview, a more defined picture of the E / R ambiguity will emerge, which suggests interesting answers to some of the questions raised above.

2.3   Lexical semantics and nominalizations

In the first part of this chapter, I have offered an overview of investigations focussed on morpho-syntactic features of nominals, where their interpretative ambiguity is considered as following from different structural projections or from a fundamental affixal ambiguity.

A different and complementary perspective on nominals' ambiguity is offered by those investigations, like Bierwisch (1990/1991), Pustejovsky (1995) or Asher (1993), whose goals are to offer a rationale for the semantic variation exhibited by action nominals: because the interpretation of the derived nouns is, in such accounts, the issue at stake, their syntactic properties are considered as a correlate of their semantic features.

In what follows I shall briefly introduce Bierwisch's, Pustejovsky's and Asher's proposals; their analyses will prove extremely useful for the present account of nominalizations because all of them shed insight on the difficult problem of polysemy and, in general, on the intricacies in nominals' interpretation.

2.3.1 Bierwisch's semantic templates

Among the generative studies of lexical semantics, Bierwisch's (1990/1991) proposal represents one of the first attempts to account in a principled way for the ambiguous interpretation of (both deverbal and de-adjectival) nominalizations.

To begin with, Bierwisch adopts a lexicalist approach to nominalization: in his view, this process, like other cases of derivational morphology, can be defined as an « intralexical morphological operation which determines the morphological, syntactic and

semantic properties of the derived noun » (Bierwisch, 1990/1991:18). However, according to Bierwisch, such complex lexical entries can undergo semantic drift; in particular, he assumes that semantic drift or variation is possible for every type of nominals. Therefore, *contra* Borer, he does not distinguish between process nominals with transparent semantics and R nominals subject to semantic drift. Both types of nominals can undergo semantic drift, and therefore they are likely to lose the transparency which is typical of compositional semantics, causing idiosyncrasy, as much as any other type of lexical process.

However, Bierwisch goes further into his account of the idiosyncratic semantics of nominalizations: if idiosyncrasy takes an unpredictable character from the point of view of the Lexical System (a computational system that determines the structure of the possible lexical entries, and that is a subpart of linguistic knowledge), it is instead constrained according to the principles of the Conceptual System and conditions imposed by the Mental Lexicon, giving rise to a situation of semi-predictability in the semantic variation of nominals. But let us look at the details of his solution, starting from cases of semantic variation of result nominals.

Bierwisch's result nominals can be of two different types: the result emerging from an event can in fact vary between a resulting state (cf. the b. example in (36)), thus corresponding to another situation, and a resulting (physical or abstract) object (cf. the b. example in (37)). The following German examples (Bierwisch, 1990/1991: 52) display this relevant distinction.

(36)   a.   Die Ordnung der Bücher kostete ihn drei Tage.
            'The arrangement of the books took him three days'
       b.   Die Ordnung der Bücher war schwer wiederherzustellen.
            'The arrangement of the books was difficult to restore'[28]

(37)   a.   Seine Rekonstruktion des Vorgangs wurde rasch abgeschlossen.
            'His reconstruction of the event was quickly finished'
       b.   Seine Rekonstruktion des Vorgangs war irreführend.
            'His reconstruction of the event was misleading'

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[28] According to Bierwisch, *Ordnung* 'arrangement' denotes both an event and a resulting state. However, it could also be maintained that the non-eventive (non-processual) sense of *Ordnung* refers to an abstract entity, corresponding to a complex of rules or a system obtained from an arrangement event. Observe, in fact, that the predicative context of (i) also accommodates the abstract entity denotation of translation in (ii):
(i)   The arrangement of the book is misleading.
(ii)   The translation of this book is misleading.

Bierwisch points out that the choice of an Event or Result interpretation seems to depend on contextual setting, that is to say, the encyclopedic or conceptual knowledge that is relevant to the context; but he also adds that « the character of the result is determined by the conceptual knowledge related to the type of event » (*ibid.*: 53). For instance, nominalizations derived from verbs like *jump*, *ride*, *recite* cannot denote resulting entities or states, because the actions expressed by these predicates do not lead to the formation of results. The absence of result meaning of their corresponding nominals logically follows.

Bierwisch's explanation, however, reveals a contradiction: whereas, on the one hand, Bierwisch explains that contextual information allows for the disambiguation of nominals, on the other hand, he seems to imply that there are lexical semantic constraints 'internal', so to speak, to the nominalization itself because depending on the base verb semantics. However, Bierwisch does not pursue this important insight to its decisive conclusion, i.e. that the semantics of the base predicate seems to play a relevant role in determining or constraining the (possible) polysemy of the nominals.

In his view, the ambiguity exhibited by derived nominals reflects the type of polysemy which pervades the simplex lexicon, and it is not a specific property of the event nominalization or of the type of derivational morphology involved in this operation.[29] Bierwisch therefore rejects Grimshaw's solution of homophonous affixal entries for explaining the E /R opposition; and, specifically, he defines the semantic variation of action nominals as following from conceptual shift, which « does not fix alternative interpretations in LE, but it allows possible options to be represented in terms of SF » (*ibid.*: 62).[30]

In order to account for semantic variation of nominalizations, Bierwisch suggests the existence in the Lexical System of semantic templates that « provide the systematic patterns channelling the flexibility of conceptual interpretation » (*ibid.*: 62). Such templates (cf. (38)b.) account for the chance of semantic variation which a single lexical entry can display.

(38)   a.   *Ordnung*: x y z [z INST [y ARRANGE x]]]
       b.   *Ordnung*: x y z [[z RES e]] : [e INST [y ARRANGE x]]]

In a. the semantic operator INST retains the basic meaning of the situation denoted by the base verb (whose arguments are the external argument *y* and the internal *x*); the

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[29] It is worth pointing out here that Bierwisch's analysis is completely compatible with the standpoints of both Pustejovsky's Generative Lexicon (cf. below, in section 2.3.2.) and Lieber's system (2004). Lieber, for instance, assumes in her model that the polysemy arising in the derived lexicon is the same kind of polysemy which also characterizes the simplex lexicon.
[30] LE and SF stand for Lexical Entry and Semantic Form respectively.

transpositional value of the nominal (*Ordnung*) arises in virtue of this operator that expresses the "INSTantiation" of an arrangement event.[31] In b. the proposition [z RES e] applies to the semantic form of the event nominal and can derive a fairly wide range of interpretations; *z* might denote in fact the entity or situation (a state in this case) resulting from the accomplishment of the event *e*. In other words, the semantic template [z RES e] can derive any appropriate type of object that comes into existence through *e*.[32]

Bierwisch observes that there are other conceptual shifts displayed by nominalizations; in particular, the "Means" interpretation represents a slightly more restricted semantic paradigm, which nonetheless deserves explaining.

(39) a. Die Isolation des Kabels war defekt.
          'The insulation of the cable was defective'
      b. Die Polsterung des Sessels ist aus reiner Wolle.
          'The upholstery of the armchair is all woollen'

Similar cases are vastly attested cross-linguistically; Italian, English and French nominalizations, for instance, show the same type of interpretation. Again, Bierwisch accounts for the Means conceptual shift by means of a semantic template:

(40) *Polsterung*:   v x [[x MEANS-OF e] : [[v x] e]]

The template in (40) shifts the basic event reference of nominal to the materials or means used to accomplish the event itself.

Such semantic templates are associated with nominalizing affixes, but do not carry any grammatical information (i.e., morpho-phonological form or syntactic information): what they induce on nominalization is « a purely semantic change constrained by the structure of the expression to be interpreted. With necessary precaution, one might think of this operation as a kind of invisible, purely semantic affixation » (*ibid.*: 61). Semantic templates are present in the lexical semantic system of a language and apply both to derived and to simple lexical entries.

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[31] Actually, the formula in (38)a. does not represent a template of semantic variation, but corresponds to the "transposition" that the –*ung* affix normally operates over its bases: z, corresponding to the external argument of the affix, realizes or instantiates the verb's event position. However, this affix has categorial (and gender) information associated with it:
(i)   -*ung*/,[-V, +N, +Fem]; y, x, z
Because this affix induces a categorial shift over the bases it selects, it also transforms the verbal thematic grid: all verbal arguments become optional, as it normally happens with nouns.

Bierwisch's templates prove useful to offer a principled explanation of the type of polysemy that pervades the whole lexicon, but there are elements of his explanation that are neither entirely convincing nor easily understandable. In particular, what remains vague is how these templates come about and apply to simplex or complex lexical entries: they in fact belong to the grammar because they are specified at Semantic Form in the Lexical System, but they seem to be generated in accordance with the principles of the Conceptual System. More specifically, such templates satisfy conceptual requirements which remain completely obscure in Bierwisch's account.

Further, Bierwisch mentions in passing that there are constraints that the base verb seems to impose on the possible semantic variation of its corresponding nominals. Nonetheless, he does not specify what the specific constraints are that allow for semantic variation of nominals (i.e. result or means), and how they could guide such conceptual shifts.

However, Bierwisch (1990/1991) has paved the way towards a better understanding of the semantic variation crosslinguistically displayed by derived nominals. In Bierwisch's account, crucial ideas are pursued that guide the present investigation as well:

a) there are systematic patterns for explaining polysemy;

b) this polysemy characterizes at the same time both the simple and the derived lexicon.

2.3.2 Dot-object nominals: Pustejovsky's (1995)

Pustejovsky's account of the process/result ambiguity is framed within its model of Generative Lexicon, where there is no clear-cut distinction between complex and simplex lexical elements. Therefore, along the lines of Bierwisch (1990/1991), Pustejovsky (1995) considers ambiguity of derived nominals on a par with that of simple words. Further, *contra* Grimshaw, he does not take into account the alternative solution of homonymy for such nominals, pointing out that nominalizations display instead polysemy, especially of the logical type.

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[32] Bierwisch explains that the RES(ult) operator (but, cf. also MEANS-OF below) is a constant of UG. Concerning the z argument of the result template, it is not clear whether it actually corresponds to an argument position of the verbal thematic grid or whether it introduces a new argument place.

Following Weinreich (1964), Pustejovsky distinguishes in fact between contrastive ambiguity (i.e., homonymy) and complementary polysemy, where senses are related. In the following examples (Pustejovsky, 1995: 27), *bank* represents a case of contrastive ambiguity: in this case, the lexical item have different unrelated meanings, which are therefore listed as separate entries.

(41)   a.   Mary walked along the bank of the river.
       b.   HarborBank is the richest bank in the city.

Complementary polysemy is instead the capacity of clustering different related and overlapping meanings into one single lexical entry; complementarity of senses can be category changing as in (42) or category preserving as in (43). In the latter case the lexical entry (*window*) displays *logical* polysemy: the two senses of this word (i.e. aperture and physical object) are respectively focused in the different contexts of a. and b. without being mutually exclusive. One sense is simply focused in one context and shadowed in the other one.

(42)   a.   The <u>farm</u> will fail unless we receive the subsidy promised.   → N
       b.   To <u>farm</u> this land would be foolish and without reward.   → V

(43)   a.   John crawled through the <u>window</u>.   →   aperture
       b.   The <u>window</u> is closed.   →   physical object

According to Pustejovsky's proposal, derived nominals are likely to display complementary polysemy, i.e. logical polysemy, just as simple underived nouns. In particular, he claims that lexical items of a natural language can be *complex type*, or *dot objects*: these lexemes qualify as single lexical entries that cluster different, but related senses. This ability is defined as Lexical Conceptual Paradigm (lcp) and is instantiated by simple underived nouns as well as derived ones. Like *window* in (43), other simple nouns such as *book* or *newspaper* are typical instances of semantically complex types: *book*, for instance is ambiguous between a sense of *information object*, corresponding to its abstract content, and the concrete manifestation of this abstract content (*physical object*). *Newspaper* instead gathers three different senses: information object, concrete object, institution.

(44)   a.   Lucy doesn't understand this book.   →   information object
       b.   John threw his book against the wall.   →   physical object

(45)   a.   I don't enjoy this newspaper.   →   information object
       b.   Lucy threw the newspaper against the wall.   →   physical object
       c.   The newspaper changed its editor.   →   institution

The notion of a complex type proves useful for explaining the polysemy associated with nominalizations such as *construction* and *examination* (cf. Grimshaw, 1990); Pustejovsky's analysis is in fact restricted to nominals derived from accomplishment verbs (*left-headed transitions*, in his terms), but it nonetheless highlights very important aspects of the ambiguity characterizing nominals in a general sense. Specifically, Pustejovsky maintains that the nominalization process lexicalizes in a unique lexical entry the two senses corresponding to the two sub-events composing the event structure of an accomplishment verb (cf. (50) below, and section 4.2.1 for an analysis of Pustejovsky's event structure). Therefore, the nominalization produces a complex type clustering the dot elements *event* and *state*, building up an accomplishment event (cf. (46) below). However, as the following examples show, there are specific contexts that focus on just one of the senses clustered by the dot object (cf., in particular, (47) and (48)).

(46)   a.   John's construction of the roof frame for the house was done yesterday.
       b.   John *constructed* the roof frame yesterday. (= *simple construction*)

(47)   a.   John fell from the ladder during the construction of the roof frame.
       b.   John *was constructing* the roof frame when he fell from the ladder.
            (=*imperfective construction*)

(48)   a.   With the construction of the roof frame complete, John can start shingling.
       b.   Now that John *has constructed* the roof frame, he can start shingling.
            (= *perfect construction*)

With these examples Pustejovsky (1995: 170-171) intends to show that there exists a regular parallelism between the way in which the nominal construction is logically polysemous and the range of senses conveyed by the corresponding verbal construction, modified by the aspectual system operating over it. Actually, the nominal constructions, endowed with their structure of complements and aspectual features (examples in a.), appear semantically equivalent to the corresponding verbal constructions, provided with different temporal and aspectual characteristics (examples in b.). In particular, the simple past verbal construction in (46) corresponds to the dot-object nominal phrase, since it

expresses both the process and the result(ing state) interpretation; analogously, the imperfective construction is equivalent to the process reading of the nominal in (47) while the perfect construction parallels the result reading of the nominalization in (48). Therefore, he explains that the dot-types composing the complex type *construction* (or the quasi analogous *examination*) corresponds to the sub-events of an accomplishment (*transition*) event: a process and a resulting state. However, he also adds that, contrary to nominals like *examination*, nominals derived from verbs of creation (like *construction* or *development*) can denote both the resulting state and the individual (*artifact*)[33] that comes into existence as a result of the initial process.[34] The following examples clearly show the senses of the noun *construction* (cf. Pustejovsky, 1998: 334):

(49)   a.   The house's construction was finished in two months.
       b.   The construction was arduous and tedious.
       c.   The construction is standing on the next street.

Construction, as a dot object, allows us to capture three senses: a process interpretation (b.), a result interpretation (c.), and a third one covering both the process and result senses together (a.). The polysemy of this nominal parallels the complex event structure of the corresponding accomplishment verb:

(50)

$$e^{(T)}{}_{<\,\alpha}$$

$$e^{P\,*} \qquad\qquad e^{S}$$

process of construction of x   state of existence of the constructed x
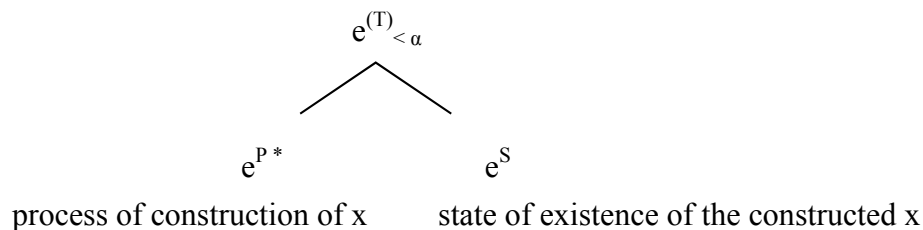
In particular, the schema in (50) explains that an accomplishment, that is to say, a transition event (T) is composed of two sub-events: a process (P) and a resulting state (T), with the former standing in a relation of temporal precedence ($<\alpha$) with respect to the latter. Verbs of creation are left-headed (*) transitions that express the coming into existence of an object in the final resulting state: the nominal lexicalizes both the resulting state and the entity in that state.

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[33] The *artifact* typing of the (result) nominal is due to the fact that the resulting entity of a creation event is a product, commonly, an object created / put into existence by a human Agent.
[34] Specifically, Pustejovsky (1995: 172) explains that « for nominalizations such as *construction* and *development*, which are derived from verbs of creation, the result interpretation corresponds either to the individual which is created as a result of the initial process, or to the state itself ». Cf. discussion below.

Pustejovsky adds that the resulting entity denotation seems to be excluded from verbs of destruction where the resulting state of the event is not associated with the creation of an individual but with its elimination. Therefore, along the same lines of Bierwisch (1990/1991), Pustejovsky hints at the crucial contribution of verbal semantics for determining the interpretation of derived nominals.

Nonetheless, I would like to call attention to Pustejovsky's conclusions on his own examples (49) a. and c.: first, according to my interpretation, *the house's construction* in a. expresses a (completed) accomplishment event, but it excludes an interpretation expressing the resulting entity. Thus, there is no clear way to individuate the ambiguity of the dot-object in a. Furthermore, it is very difficult to find predicative contexts eliciting the resulting state reading for such nominals. In general, these nominals just refer to the event (on-going and completed) and to the resulting entity, but are not capable of isolating the resulting state of the event.[35] This holds not only for nominals from verbs of creation, but also for other nominals (like *examination*) which only convey an event reading.

Interestingly, Pustejovsky (1998:335) also speculates on the effect or import of the nominalizing suffix -*ment* and -*ion* onto the verbal base; these are the affixal elements of English that, along with -*al*, are typically employed to create process·state dot objects.

> Application of the -*ion* nominalizer produces a dot object nominal, with a polysemy reflecting the types of the subevents from the verb's event structure. Hence, from the left-headed transition verb *examine*, the nominalization *examination* denotes a dot object with process and state dot elements.

However, from what maintained in the above passage, it remains obscure what the exact semantic import of such nominalizing suffixes is, if any. In particular, Pustejovsky assumes a single lexical entry for the affixal element, whose semantic effect on the base is simply to group together, in a single nominal element, the two sub-events characterizing the event structure of the base verb. Therefore, the effect of the suffix on the base is to pattern or mould the multiple senses already inherent in the lexical semantics of the base verb, but, as far as its own inherent semantic content is concerned, the affix appears as empty or highly underspecified.

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[35] Cf. Mani (1997) for similar remarks on this point.

2.3.2.1 Observations on Pustejovsky's account

To conclude the brief overview of Pustejovsky's proposal outlined in the preceding section, I would like to consider his understanding remarks on nominals, while also pointing out the inadequacy of his explanation to account for the complex bundle of semantic and syntactic features of the data.

Pustejovsky correctly points out that the aspectual characterization of a verb (accomplishment) and its "deep" semantic value (for example, creation vs. destruction) are both relevant for the interpretation of a corresponding derived nominal. This is an important observation that will play a relevant role in the present account of derived nominals. However, there are flaws and gaps in Pustejovsky's proposal which deserves discussion.

First of all, the resulting state reading, which according to Pustejovsky is one of the dot elements of the logical type under discussion, is not available to all kinds of nominals derived from accomplishments. Let us take into account *examination* or *explanation*: it is impossible to construct acceptable contexts that only elicit a result state reading of these nominals (the state of being examined and the state of being explained, respectively). However, other nominalizations derived by means of the same suffix can be found that instead do allow this semantic option. Consider the example below:

(51)   John's isolation went on several years.

In (51) *isolation* can be paraphrased as the state of being isolated, and it therefore describes a state of John (i.e. the *Experiencer* participating in this state), which lasts over a certain time span. Other verbs, like psychological predicates, can be found which produce nominals with state interpretation:

(52)   John's preoccupation with his sons

Nevertheless, it is worthwhile pointing out that verbs like *isolate* or *preoccupy*, from the situation type viewpoint, are not true accomplishments such as *eat* or *build*, but can be aspectually defined as causatives/inchoatives.

The data show in fact that nominals from accomplishment verbs can be found for which a result state interpretation is ruled out; these nominals can typically be coerced by the syntactic-semantic context into the on-going process reading or the completed event reading (cf. (49)a. vs. b.). This state of affairs is reminiscent of the peculiar aspectual status of accomplishment verbs (from which they are derived), that can be considered as atelic unbounded activities or as telic, completed event depending on the

quantization or non-quantization of the internal object (cf. Krifka, 1992 and Verkuyl, 1993). This specification, however, takes place in the syntax and is not expressed at the lexical level. For derived nominals the situation is essentially the same: it is the syntactic-semantic context that specifies the *telicity* of the event denotation of the nominal. However, more interestingly, this kind of polysemy, which should be better described as vagueness (*on going process* vs. *completed event* reading), has no syntactic effects: that is to say, in both cases the nominal typically projects argument structure. (The same situation holds for the resulting state interpretation in (51)).

Another controversial point concerns the interpretation of Pustejovsky's examples (46) and (48): in his view, the simple and perfect constructions (*the construction of the roof frame*) can convey a result reading, because the predicative contexts highlight the resulting-state sense of the nominal. Nonetheless, it remains unexplained in Pustejovsky's analysis why this nominal, which is derived from a creation verb, cannot also have the resulting entity or artifact interpretation in (46)-(48), which arises instead in (49)c. In point of fact, the existence of an artifact (=roof frame) resulting from the completion of the event can be just inferred in (46)-(48), but *the construction of the roof frame* basically conveys a situational or event interpretation (i.e. a completed event inclusive of the final state). This fact seems to depend on the syntactic structure accompanying the nominal; specifically, the presence of the internal argument of the nominal triggers its event interpretation, while its absence favors the result one.[36] Put differently, *the construction of the roof frame* can refer to either an on-going or a completed event, but every time *construction* is accompanied by its internal argument it is the event denotation, and not the artifact one, which is elicited.[37]

So, what about the result/artifact interpretation? For the actual case of *event·result* (i.e., *event·artifact*) polysemy the situation is different because, in the case of nominals obtained from creation verbs, the presence of the internal argument only characterizes the event interpretation of the nominal and rules out the result/artifact reading. This does not imply that the dot objects clustering the *event* and *result* types are not truly polysemous, but this ambiguity only arises in contexts where the internal argument of the E noun is implicit, as shown in the example below:

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[36] In general, the presence of the internal argument of creation verbs seems to rule out the result interpretation of the corresponding nominals. Therefore, in Pustejovsky's examples, the expression *the construction of the roof frame* is not equivalent to the DP *the roof frame*. This non-equivalence holds for nominals of creation in Italian, but cf. also Jacquey (2001) and García García Serrano (2000-2002) for similar analysis in French and Spanish, respectively. For instance, Jacquey (2001) states: « En français l'interprétation résultative de un déverbal de création passe par l'omission de son patient ».

[37] Therefore, the logical polysemy *event·state* that Pustejovsky outlines for all accomplishment verbs has no syntactic consequences: both a completed or on-going process denotation usually requires the projection of syntactic arguments.

(53)   The architect planned a new construction …

> …which will start the next year. $\rightarrow$ event (E)
> …which will be completed the next year. $\rightarrow$ artifact (R)

In (53), *a new construction* can be ambiguous between a reading as an event (whose internal object is left implicit) and another one as synonymous of *edifice* or *building*, or *house*, etc. However, further predicative context can disambiguate the lexeme and trigger a single sense of the polysemous word.

Other problems concern the prediction the author makes concerning verb semantics and the interpretation of derived nominals. According to Pustejovsky, in fact, verbs of creation involve creation of an object (from some material) with that object existing in the resulting state; verbs of destruction do not result in any such object being created. A first issue arises when taking into account an example like (54): the construction might not have been completed (the accomplishment may not have culminated), still the nominal might refer to it.[38]

(54)   The house's construction stayed upright for less than a minute because the front wall wasn't quite ready.

This is a problem that follows from Pustejovsky's event structure representation of accomplishments: that is, the existence of a resulting state (e^S) which is temporally subsequent to the process predicts that an artifact will come into existence only when the final state is achieved. However, as it will be shown in Chapter 5, this problem can be solved assuming a different lexical semantic representation for the aspectual class of verbs characterized by incremental Themes.

The second problem concerns the prediction that nominals obtained from verbs of destruction cannot form result nominals. But consider the following couple of examples:

(55)   a.   The army's destruction of the city was bloody.
        b.   The destruction remained for all to see.

Contra Pustejovsky, in fact, Asher (1993: 150) expresses a different judgment of the meaning of *destruction*. This author in fact maintains that in a. the eventive denotation is triggered by argument structure and by the predicative context eliciting the *manner* sense of the event. In b., instead, *destruction* can only refer to the object(s) resulting from the destroying action, that is, debris, ruins, etc. Asher (*ibid*.) explains that « if results states,

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[38] The example in (54) is from Mani (1997).

like other states, exist only if their actors exist then one might think that *the destruction of the city* fails to denote anything at all if it must denote a state. After all, the city exists no longer. ».

I bring forward here that a possible answer to this problem is more complex than the former and requires an implementation of the representation of verbal semantics (in particular, in terms of "skeleton" and "body", in Lieber's model, or "argument structure" and "qualia structure" in Pustejovsky's Generative Lexicon). Further considerations about the nature of such peculiar dot objects will be explored in Chapter 3, throughout the analysis of Italian data.

2.3.3 Asher (1993): Argument-transforming vs. argument-preserving nominals

The proposal that concludes this short overview of semantic investigations on nominalization is Asher (1993). While developing a semantic theory of abstract entities (framed within the framework of Discourse Representation Theory, henceforth DRT), Asher also discusses the semantic ambiguity of *sentential derived nominals*[39] between the process and result interpretation.[40]

Following Chomsky's (1970) Lexicalist Hypothesis, Asher assumes that derived nominals are obtained by means of lexical rules merging affixal lexical entries, like *-ment, -ing* and *-ion* with verbal stems. Asher points out that the distinction between his process (=our E) and result (=R) derived nominals is basically semantic, but that this difference is reflected in the features which are relevant to argument structure. Along with Roeper (1988, 1989), this scholar in fact maintains that there are affixes which preserve verb argument structure and others that do not. Therefore, he suggests that lexical nominalizing affixes that form process nominals are indeed argument preserving (+A), in that they do not change the status of the arguments of the verbs they merge with. On the contrary, affixes involved in the formation of result nouns turns obligatory (verbal) arguments into optional ones (-A). However, concerning the homonymy-polysemy dispute, Asher does not explain whether the (+A) or (-A) specification of the affix implies that this element is actually split into two different lexical entries and, in that case, what the nature of the relation between these entries is.

Therefore, the syntactic projections of process and result nominals are rather similar, as shown in (56)-(57) (cf. Asher, 1993: 151). Consider again the sentences in (55): the

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[39] According to Asher (1993: 138), sentential nominals include « all those constructions which have an intuitive semantic connection to an associated sentence ». Therefore, English derived nominals pertain to this class along with *that*-clauses, gerund-phrases, *for* and naked infinitive phrases.
[40] Asher also accounts for the event / fact ambiguity, but I will not deal with this matter here.

only difference is in the feature marker (±A) which characterizes the argument preserving or transforming quality of the nominal and which is 'inherited' all through the merger of the base (i.e. *destroy*, or more precisely its allomorph *destruct*) with the corresponding (±A) suffix (i.e. *-ion*).[41] The (±A) specification is percolated up the tree to the upper node.

(56)

```
                          IP
                    ╱           ╲
              DP (+A)            Iᴵ
            ╱        ╲           △
     the army's    Dᴵ (+A)    was bloody
                  ╱      ╲
                 D       NP (+A)
                        ╱      ╲
                     MP⁴²      Nᴵ (+A)
                             ╱        ╲
                        Nᴵ (+A)        PP
                          |            △
                        N (+A)      of the city
                          |
                    destruction (+A)
```

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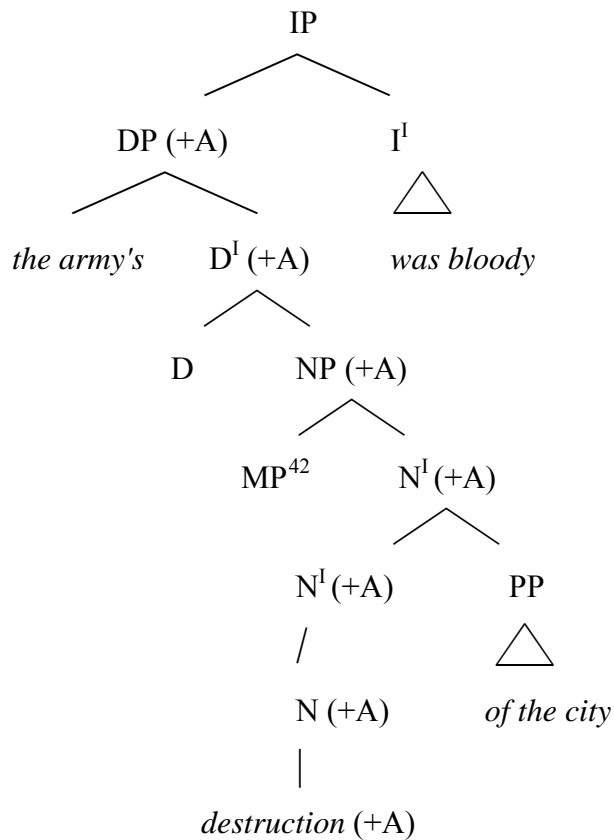
[41] With respect to this clear-cut distinction between argument-taking and non argument-taking nominals, Asher's proposal is reminiscent of Borer's partition between AS and R nominals. However, whereas Borer's solution is strongly constructionist, Asher's approach is lexicalist.
[42] MP stands for Modifier Phrase.

(57)

```
                        IP
                   ╱         ╲
            DP (-A)            I^I
               │              ╱△╲
            D^I (-A)      remained for all to see
            ╱      ╲
          D         NP (-A)
          │        ╱      ╲
         the      MP     N^I (-A)
                             │
                          N (-A)
                             │
                      destruction (-A)
```
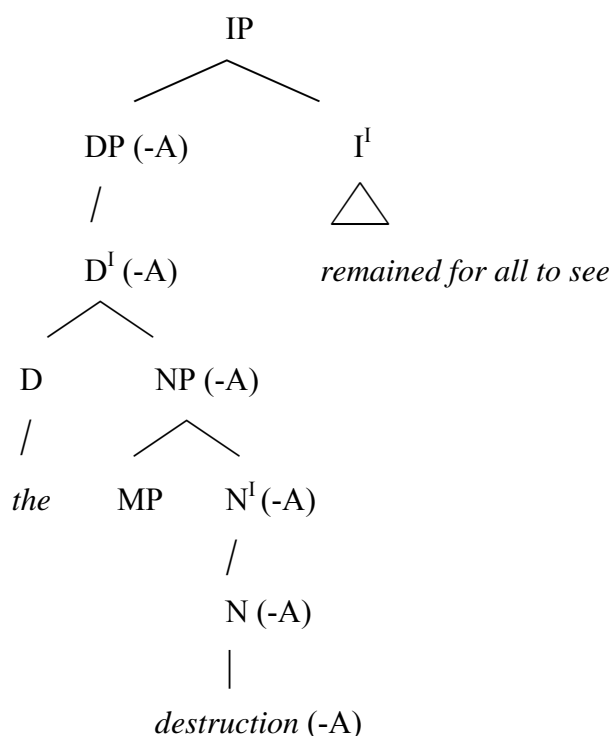
Contrary to what maintained in neo-transformational proposals, the absence of a V (either in the form of a V^I, a full VP or *v*) explains for the lack of adverbial modification and the possibility, instead, of adjectival modification inside the DP projected by such nominals.

Thus far, Asher's proposal is not particularly original and appears instead reminiscent of Grimshaw's solution, the difference being in the different labels associated with the affixes of process and result nominals. *Ev* and *R* of Grimshaw's account parallel the +A (argument-preserving) vs. -A (argument-transforming) specification of Asher's proposal. On the contrary, his account seems based in this respect on a rather stipulative specification of lexical entries concerning syntactic features which seems unmotivated from a semantic viewpoint.

Where Asher's observations become very interesting for the present account of nominalizations is in the exploration of the class of R nominals. Discussing argument-transforming affixes, he observes that the transformation of argument structure causes the semantic drift of the nominal. This semantic drift is quite varied but it can be noted that most result nominals indeed denote *effects*, that is to say, « things that result from an event that is a change of state » (1993: 150).[43] Therefore, according to Asher, this semantic drift is determined by two factors:

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[43] Along with the effect reading of a nominal like *destruction* (cf. below), Asher mentions other cases of nominals with do not denote situations but objects (1993: 150):

- The eventuality type introduced by the underlying verbal complex. Results as effects are typically obtained by verbs that imply a change of state (aspectually, they are accomplishments and achievements, like *destroy* or *construct* or *invent*). In this case, a result nominal denotes the effect that such change of state has brought about. On the contrary, verbs denoting states or activities are not likely to produce nominals with effect reading (e.g., *John's love for Lucy*, *Lucy's swimming*).

- The predicative context of occurrence of the nominal. For example, in the following sentence it is the predicate *remained for all to see* that triggers the effect denotation:

(58)   The army's destruction of the city remained for all to see.[44]

While the first factor is along the same lines with Bierwisch's and Pustejovsky's observations about the import of verbal semantics in determining the denotation of a nominal, I will comment on Asher's second point as follows: if the predicative context obviously helps to disambiguate the reading of a nominal (where the possible projection of argument structure has not already done this work), I propose that the interpretation of a nominal is not determined by the context, but is inherent in the nominal itself. In other words, the context cannot really turn or coerce the denotative properties of a nominal onto something else; on the contrary, the interpretation of a nominal is a lexical matter. Therefore, the lexical meaning of a nominal drives argument projection and requires a compatible predicative context. Following Pustejovsky's explanation, I would prefer saying that context can select one of the senses of a polysemous nominal, or, in case one assumes contrastive ambiguity (homonymy), context can highlight which one of the homonymous lexical entries is at stake. But predicative contexts do not in themselves determine the semantic interpretation, or the array of semantic values of nominals, and of lexemes in general.

(i)   Franklin's favourite invention was the printing press.
(ii)   Fitzgerald's translation of the Iliad was a masterpiece.
If the example in (i) *invention* is the effect of an inventing event, Asher suggests that *translation* (as a collection of sentences or as its concrete manifestation) cannot be defined as an effect. This observation is not clear to me, since in my view *translation* actually expresses the causal by-product of a translating event as well as *invention* might denote the by-product of an inventing event.

[44] It is worth highlighting that Italian and Romance languages in general do not allow a result reading for a nominal like that in (58): such nominals are in fact passive nominals, in the sense that they do not allow a double genitive construction, but only can the by-phrase express the Subject-Agent argument place. What's more, the by-phrase obligatorily indicates the E type of a nominal.
However, also in Italian *distruzione* can be used to denote debris/ruins, especially when in the plural and without arguments.

In addition, Asher implements his logical-semantic account of nominalizations with a solution reminiscent of Bierwisch's proposal. In particular, framed in DRT (whose details are omitted here), Asher suggests that the head determiner of a process nominal (assuming that every noun is embedded under a DP) fills the event argument place of the base predicate. Semantically, this solution is able to account for the event denotation of a nominal and the preservation of argument structure.

Asher also speculates on the import of result affixes: again his solution recalls Bierwisch's one in this respect. He in fact maintains that « for result nominals the deverbalizing affix is a function (in the lexicon) from property of expressions to property expressions that takes a verb whose translation is an event-type to a noun whose translation could be a state type or some complex causal properties. » (1993:158). This implies that the result affix is a function that transforms the ontological denotation together with the argument structure of the verb it applies to.

Therefore, if (59) is the logical representation of the destroying event…

(59) $\lambda x \lambda e \lambda y$ (e- destroy (y, x))

…(60) represents a translation operation where the introduction of an extra argument, corresponding to the 'effect' argument place (a semantic, but not syntactic argument) of the base predicate, is attributed to the affix.

(60) $\tau($ $\lambda x \lambda e \lambda y$ e-destroy (y, x)) = $\lambda x \lambda e \lambda z \lambda y$ (e-destroy (y, x) & effect (e, y))

Asher observes that result nominals, as effect-denoting nouns, do not fill an argument position but add instead an argument place to the base verb, because they denote the causal by-product of the events that satisfy the event argument place of the verb.[45] Thus, in the case of a result nominal, it is the head determiner which supplies the argument to this new argument place.

This observation captures an undeniable fact: that most R nominals do not actually correspond to syntactic argument positions of the underlying verb. On the other hand, this state of affairs does not always hold as the cases of *invention* or *construction* R nominals show. Nevertheless, Asher's solution does not offer any systematic means of understanding when this argument adjunction takes place and when instead it does not. Put it differently, Asher does not specify why certain verbs like *invent* or *construct* have corresponding R nominals that bind their internal argument (« something like a theme »

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[45] Again, from Asher (1993:158): « Whenever the translation of a nominal introduces an argument place over and above those found in the verb, it is this argument place to which the head determiner must supply an argument. »

has been Grimshaw's proposal) and why others like *destroy* actually bind or "incorporate" something else.

2.4   Concluding remarks and questions

In this chapter, I have presented a selection of investigations exploring the morpho-syntactic aspects and semantic interpretations of deverbal nominalizations. In doing so, I have of course only scratched the surface of the complex issue of the derivation and semantic interpretation of nominals: I hope to have shown, however, that their challenging nature emerges at every level of analysis. Nominalizations represent categorial hybrids, from a syntactic viewpoint, and complex logical constructions from an interpretative one.

To conclude this overview, I would like to draw attention to some common aspects of the investigations presented throughout this chapter. On the whole, I maintain that these works are not capable of accounting for the complex range of data, and there are many questions which remain unanswered. Nonetheless, such researches bring to light some insights that are also crucial for the theoretical analysis to be presented in the next chapters.

To start with, all these works more or less directly hint at the important contribution of the base predicate to determine nominals' features both from a syntactic and semantic viewpoint; the base verb of a nominalization is the source of its event and argument structure, according to Borer, and it determines the basic semantic interpretation of the derived nominal, according to Pustejovsky and Asher. Bierwisch is more cautious in this respect because he explains the polysemy arising in these nominals as following from the application of templates of semantic variation; nonetheless, he also indirectly concedes that the nature of the base verb is able to constrain the application of such semantic templates. However, it is worthwhile underlining that an investigation of derived nominals is still lacking that explores the denotation of nominals from the perspective of the semantics of the verbal base.

Furthermore, in the investigations focused on the (lexical vs. syntactic) derivation of action nominals, their lexical semantics is completely overshadowed, while their syntactic behavior is explained according to lexical rules or syntactic operations. The theoretical accounts presented in section 2.3 offer a more varied picture of nominals interpretation. Nevertheless, none of the works presented thus far – even those focused on the denotative properties of nominals – are really able to account for the complexity of the data; as I have shown in the first chapter, action nominals allow for a complex range of interpretations that cannot be reduced to the Event vs. Result distinction.

Bierwisch's investigation is probably the one that approaches the data more closely than the others, since it introduces two different semantic templates for the Result (including the resulting state) and Means interpretations of the nominal. But the collective and locative senses (e.g. *administration*) which might be displayed by these nominals remain unaccounted for even in Bierwisch's proposal.

Therefore, if within one current of studies the lack of attention to the interpretation of nominals is attributable to the focus being on morpho-syntactic rather than semantic properties of deverbal nouns, lexical-semantic studies also fail to offer systematic patterns capable of channeling and explaining the complex range of interpretations displayed by these logical constructions.

On the whole, despite of the extensiveness of the literature on nominals, we are left with a very fuzzy concept of what an R nominal is: under this label, which can be considered as a syntactic cover term indicating the absence of argument structure relating to the nominal, semantically heterogeneous lexemes are grouped together. In general, several questions naturally arise:

- What are the semantic features defining R nominals as a homogeneous category, if any? That is to say, do common semantic properties exist that characterize R nominals, along with their (non-uniform) syntactic behavior?
- Why do many Indo-European languages tend to show the same type of semantic ambiguity, E vs. R, within the action nominal system?
- What about Grimshaw's simple event nouns, in particular, those derived nominals which behave syntactically like absolute (i.e. non-relational) nouns? Why do they resemble E nominals, semantically, but behave like R nominals, syntactically?

Another issue to determine concerns the source of ambiguity of deverbal nominals. Both Grimshaw and Borer (the former explicitly, the second implicitly) assume that the event-result ambiguity is a case of homonymy, or more precisely of affixal homonymy. Pustejovsky, instead, claims that such words display polysemy; specifically, they exhibit a particular type of polysemy, which he defines logical/inherent polysemy. Therefore, concentrating on the semantic contribution of the nominal affixes which are the head of these complex forms, we should be able to answer the following question:

- What is the lexical semantic import of the affixes forming action nominals?
- Is it possible to account for the semantic ambiguity of action nominals simply assuming affixal ambiguity? And, in this case, would E/R affixes be an instance of polysemous or homonymous lexical entry?

Furthermore, we have seen that, from the syntactic viewpoint, the properties of E/R nominals are very different, but that even within the R class there are differences in argument-taking capacity (cf. section 2.2.1.2). Therefore:

- How could we explain the morpho-syntactic variation of R nominals?

Concerning this point, in particular, I here advance that even syntactic variation can be explained exploring the base verb semantics (this point will be discussed in Chapter 4, and formally implemented in Chapter 5).

Overall, the main goal of this research is to develop a mechanism of word formation able to account for both the syntactic and the semantic properties of action (E/R) nominalizations. What is more, this theory should be able to specify the conditions by which R nominals can be formed. More specifically, this theory should address and answer the following question:

- Provided that the correlation between E and R nominals is not systematic, is it possible to find constraints limiting and guiding the formation of the latter class and accounting for the semantic variation characterizing deverbal nominals?

In the next chapters, I will try to suggest possible answers to all these questions developing a theoretical account of the derivation of E nominals, on one hand, and of the composite class of R nominals, on the other.

3 SUFFIXES AND CO-INDEXATION

3.1 Introduction

From this chapter on, I will start to outline a theoretical proposal capable of accounting for the derivation and compositional semantics of nominalizations by addressing a single, specific aspect of this intricate issue. Namely, since the present research is focused on the minimal morpho-semantic components of derived nominals, I will try to determine the precise semantic contribution of the heads of these complex forms and offer a formal representation of their content. The formal apparatus provided by Lieber's (2004) lexical semantic model of word formation will be adopted for representational purposes, although it will be slightly modified to account for the data under analysis.

In the course of this chapter, I will explore in detail the interpretations of E and R nominalizations in order to capture the meaning of their suffixes. In particular, focusing on the semantic options of the latter class, which have been given less coverage in the literature on nominalizations, I will try to understand how and to what extent the derivational suffixes are able to modify or leave practically unaltered the lexical semantics of the base verbs. Specifically, I will suggest that a different lexical semantic characterization and a corresponding distinct formal representation should be assumed for suffixes involved in the formation of R nominals with respect to those ones forming E nominals (the mere transpositional ones). Therefore, I partially follow Grimshaw (1990) in assuming that nominalizing suffixes should have a double representation: from a semantic viewpoint, the semantic import of transpositional suffixes of E nominals and that of suffixes involved in the formation of R nominals is somewhat different. However, the solution suggested in the present research rejects Grimshaw's account of homophonous affixes, and supports, instead, Pustejovsky's explanation of nominals' ambiguity as a case of logically/inherently polysemous nouns (but see sections 3.4.2 and 3.5.2 for fuller discussion).

Starting from the E class, which expresses the default transpositional value of action nominals, the common assumption is that the suffix does not change the basic interpretation of a verb. The change is, in fact, merely categorial. The first question to

answer is how to deal with transpositional suffixes in a system such as Lieber (2004) which assumes that any affix bears a semantic value and that information associated with both lexemes and affixes could be non categorial/syntactic but entirely semantic (cf. also Lieber, forthcoming for this position). The second issue is represented by the semantic heterogeneity of R nominals; since their range of possible denotations is very broad, to detect a unitary lexical semantic value for R suffixes (i.e. suffixes forming R nominals) is not a trivial matter, as it will be shown in section 3.4 and related subsections.

Finally, in basing the analysis of complex nominals on a comparison with underived nouns representing their semantic counterpart, I will indirectly address the question of the semantic relationship between E and R nominals. Following previous analyses (cf. Pustejovsky, 1995 and Jacquey, 2001), I will propose, in fact, that the nominal interpretations under discussion represent a case of logical/inherent polysemy, where *E* and *R* senses are two types clustered in a logically polysemous deverbal noun (i.e. a complex type or *dot object*), and that this polysemy pervades both the morphologically simple and complex lexicon.[1]

Because an investigation of nominals' semantics entails a deep knowledge of the subtle and fine-grained nuances of their meanings, I shall concentrate on Italian data; nevertheless, on the basis of the data collected in other investigations, I suggest that my arguments could hold for other Romance languages, and might also be extended to Germanic and Slavic languages.[2]

3.2   Italian nominalizing suffixes: formal and semantic properties

Since the semantic and syntactic heads of our E/R nominals are the suffixes, I will start the present analysis by introducing the most productive Italian nominalizing suffixes and, in particular, I will present a short summary of their formal properties. Therefore, in the next sections, their overall preferences of selection (i.e., the formal properties of the verbal bases they select) will be sketched together with their stylistic characterization. In what follows, the discussion will be focused on the most productive Italian nominalizers, but other suffixes will also be taken into account.

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[1] Pustejovsky (1995) calls the polysemy exhibited by dot objects as *logical*, why Pustejovsky (2005) defines it *inherent*: in the present dissertation, both terms are used to indicate this type of polysemy.
[2] Cf. García García Serrano (1998-2000) for Spanish; Zwanenburg (1991) for French, English and Dutch; Fabb (1984) and Walińska (1984), among many others, for English; Schoorlemmer (1995-1998), Sadler, Spencer, Zaretskaya (1996) for Russian; and Rozwadowska (1997) for Polish.

Formally, the distinction between E and R nominals plays no role in determining the preferences of selection of these suffixes. As explained in Chapter 1, derived nominals always have a default situational interpretation and can express other semantic values, grouped in the generic R class. This implies that suffixes exclusively involved in the formation of R nominals are not expected to be found, and that E and R derived nouns are formally represented by the same lexeme;[3] consequently, from the formal viewpoint, E and R suffixes show the same behavior.

Semantically, instead, the distinction between E and R nominals is crucial, and I will try to explain how they can be grouped together into corresponding distinct paradigmatic classes (cf. Lieber, 2004 and Booij and Lieber, 2004, for this notion). So-called transpositional suffixes are very likely to express both E and R semantic values, but there are differences in the likeliness each suffix exhibits to convey ambiguous nominals.

3.2.1 Formal and stylistic preferences of selection

Table (2), from Gaeta (2004: 322), offers a general picture of the situation of Italian deverbalizing transpositional suffixes from the point of view of their corresponding numerical 'weight/quantity' and productivity. In particular, the quantitative data in the second and third column refer to the total number of derived nominals obtained by means of the corresponding suffix (these data are collected from an electronic dictionary, DISC). Besides, these data are compared with the data collected from the journal "La Stampa" all through 1996 (with the exception of *-ata* and *-ío* for which numerical data are missing).

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[3] As brought forward in Chapter 2, the formal equivalence of E/R nominals can be explained as a case of polysemous or homophonous affixal entries. However, if the homophony solution was taken, this would imply that to any of the nominalizers in Table (2) would actually correspond two separated lexical entries, one involved in the formation of E and the other in the formation of R nominals. On the contrary, assuming the polysemy solution, there is no need to postulate two separated lexical entries for every nominalizer.

Table (2)   *Italian nominalizing suffixes*

Suffixes	DISC	DISC (1990-1997)	La Stampa (1996)
-zione	2449	931	1880
-mento	2159	429	1042
-tura	1362	412	368
-aggio	153	111	83
-ata	585	141	–
-za	250	52	182
-ío	214	48	–

Overall, the data in this table show that the most productive nominalizing suffixes are -*mento* and -*zione* (the latter is characterized by many allomorphs).[4] Also -*tura* is numerically relevant and productive, as demonstrated by the high number of neologisms in the third column.[5] However, the data from "La Stampa" show that -*tura* is not largely used in everyday language; this suffix is in fact mainly adopted in specialist, technical idiolects, and it is thus less frequent in everyday language.

The main characteristic of the transpositional suffixes of action nominals is that they share the verbal bases to which they can be attached. With the exception of -*ata* and -*za*,[6] in fact, these nominals primarily subcategorize for verbs, and only episodically form nominals from base nouns (cf. neologisms such as *bigliettazione* 'ticket+ing', *dossieraggio* 'dossier+ing'). This is not, however, a real case of selection since the choice of verbs each suffix makes can only be viewed as a 'preference', not as a true strong criterion.

Limiting the analysis to the most productive suffixes, from a strictly formal viewpoint -*mento*, for instance, prefers:

a) polysyllabic verbs (i.e. *addestramento* 'training')
b) verbs having a non-learned prefix, i.e. of vulgar Latin tradition (*ad-*, *in-* and *s-*) − as in parasynthetic verbs (i.e. *incenerimento* 'incineration') − or suffix (i.e. *gareggiamento* 'competition')
c) simplex (underived) verbs.

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[4] In particular: -*ione* (e.g. *ribell+ione* 'rebellion'), -*sione* (e.g. *esten+sione* 'exten+sion'), -*gione* (*impicca+gione lit.* 'hang+ion').
[5] Consider that also -*tura*, like -*zione*, is characterized by many allomorphs, which are not included in the numerical data in Table (2).
[6] -*ata* subcategorizes for verbs and nouns, while -*za* selects both verbs and adjectives (in -*ante/ente*).

-*zione*, in turn, attaches to:

   d) verbs that can be monosyllabic (i.e. *stazione* 'station')

   e) verbs containing learned prefixes (i.e. *esacerbazione lit.* 'exacerbate+ion' or *decomposizione* 'decomposition') or suffixes (i.e. *craxizzazione lit.* 'craxi+ize+ion', un*ificazione* 'unification')

   f) complex verbs

   g) verbs formed by conversion (i.e. *progettazione* 'projecting')

Finally, the suffix -*tura* prefers:

   h) polysyllabic verbs (i.e. *mietitura* 'reaping'),

   i) verbs containing non-learned prefixes (i.e. *abbronzatura* 'bronzing')

   j) verbs derived with suffixes (i.e. *scopiazzatura* 'copying', *simboleggiatura lit.* 'symbolize+tura').[7]

On the whole, while -*tura* resembles -*mento* in its preferences of selection from the formal viewpoint, it is more similar to -*zione* as far as register/style is concerned: whereas -*tura* and -*zione* are more frequent in technological/scientific and other specialized fields, -*mento* is largely adopted in words of colloquial style.

Among the other suffixes in Table (2), -*aggio* is rather peculiar because it is especially employed to nominalize stems of foreign origin, both verbs and nouns: examples are *dopaggio* 'dope+aggio / doping' and *dossieraggio* 'dossier+aggio / dossier+ing'. Specifically, it seems that this nominalizer is systematically preferred for translating into Italian the English -*ing* nominalizing suffix, as shown by examples such as *dribble+ing – dribl+aggio* and *monitor+ring – monitor+aggio*.[8]

Thus far, I have simply listed the morphologically and stylistically based preferences exhibited by the most productive Italian transpositional suffixes. What is worthwhile highlighting is that these suffixes are "rivals/competitors", because they cover (roughly) the same semantic space and have the same effect on their bases when they act as nominalizing operators. In other words, these suffixes constitute a single paradigmatic cell of semantic derivation (cf. Booji and Lieber, 2004), and are therefore semantically interchangeable. In Lieber's terms, this implies that they share the features of the outermost layer of their skeletons (as I will show in section 3.3.2), although they can differ as to preferences of selection and further specifications concerning their intrinsic

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[7] Cf. Gaeta (2004: 328-332; 334-336) for a detailed presentation of the formal properties of these suffixes.

[8] However, there are also *Aktionsart* preferences; that is to say, that certain suffixes predominantly select base predicates that belong to specific actional classes. -*Aggio* and -*ata* prefers atelic verbs (activities or process); -(*an*)/(*en*)-*za* suffix prefers state verbs; -*ìo* prefers semelfactive base verbs. -*Zione*, -*mento* and -*tura* prefer accomplishments as base verbs. Cf. section 3.4.1.1 for the analysis of the *Aktionsart* or actional properties of the verbs.

Aktionsart or quantitative meanings. However, not every suffix is involved in nominals' ambiguity at the same degree, as I will explain in the following section.

3.2.2 Semantic ambiguity and competition among suffixes

As far as E/R ambiguity is concerned, the most productive nominalizing suffixes can all be employed to form nominals with ambiguous interpretations, but to a different extent.[9] Gaeta (2002: 219-221), for instance, compares the behavior of *-mento* and *-zione* with reference to the polysemy their corresponding nominals can display. His analysis, based on a polysemy involving six different senses, shows that *-mento* and *-zione* allow the same number and type of meanings, but to different extents. *-mento* is in fact less likely to convey polysemy with respect to *-zione*. Therefore, the majority of nominals in *-mento* only convey the default E meaning.

This is shown by cases of doublets like *divaricamento – divaricazione*, where only the latter displays a resulting state reading besides the basic actional one (cf. Gaeta 2004:318):

(1) a.   Il sindacato combatte contro la divaricazione dei salari tra le classi sociali
          stabilita due anni fa dal governo.
          'The trade union fights against the differentiat+ion of salaries among social
          classes established two years ago by the government'
      b.   *Il sindacato combatte contro il divaricamento dei salari tra le classi sociali
          stabilita due anni fa dal governo.
          'The trade union fights against the differentiat+ment of salaries among
          social classes established two years ago by the government'

A comparable but different case is *trattazione / trattamento* 'investigation / treatment'. Each member of this doublet has been lexicalized with distinct senses dependent on the selection of a specific meaning of the verbal base. In fact, *trattare* conveys the meaning

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[9] Nominals formed by means of the least productive nominalizers listed in Table (2) can also display E/R ambiguity. Nominals in *-za*, for instance, often convey non-situational readings; many of them, however, are fully lexicalized and do not express the default situational reading. Derived nominals in *-ata* also express non-situational (=R) readings, especially when the suffix acts as a true competitor of transpositional nominalizers and do not modify the *Aktionsart* characterization of its base verb. With respect to *-io*, it should be noted that this suffix shows a marked preference for verbs of sound emission. Nominals in *-io*, therefore, indicate the sound-emission event, but also the emitted sound. *-Aggio* cannot practically form nominals identifying the product or outcome of an action. However, nominalizations in *-aggio* might express collective and locative senses, like in *bendaggio* 'bandage' and *ancoraggio* 'deck'. In this study, however, the data analysis is focused on the most common nominalizers: *-mento, -zione, -tura*. I will leave instead a more detailed investigation of *-ata* and other Italian nominalizers to further research.

of 'investigate/analyze' but can also stand for 'heal/treat'. The derived nominals express the corresponding transpositional senses together with other R semantic values.[10]

Moreover, there are also cases where more than two morphological means are employed to form different nominals from a single base. A significant (but exceptional) example is offered by the verb *tirare* 'pull' for which five distinct nominals are formed, *tiramento* 'pulling' / *tiratura* 'drawing/impression'/ *tiraggio* 'draught' / *tirata* 'pull' / *tiro* 'draught/shot'. The derived nouns coexist in the Italian lexicon because they are lexicalized with separate senses, which are distinct also on a stylistic basis.[11]

However, these distinctions are not always detectable and the semantic closeness of these suffixes, in particular, *-mento*, *-zione* and *-tura*, is proved by the existence of doublets such as *accelerazione / acceleramento* 'acceleration', *congelamento / congelazione* 'freezing' and *asciugatura / asciugamento* 'drying', for which a distinction comparable to that of *divaricamento / divaricazione* or *trattazione / trattamento* cannot be found.

Further, it is worthwhile noting that these suffixes can sometimes be used to differentiate nominals' interpretation where attached to the same verbal stem. For instance, with the verb *cancellare* the nominal in *-zione* (*cancellazione* 'cancellation') can only convey the event reading, whereas the one in *-tura* (*cancellatura* 'erasure') expresses exclusively a concrete interpretation: according to the DISC, *cancellatura* only denotes 'l'insieme di tratti con cui si copre qualcosa di scritto; traccia lasciata cancellando qualcosa con gomme o altro',[12] and cannot be used with E reading. Interestingly, the latter case can be considered, again, as a lexicalized form: attested for the first time in the XV Century, it is nowadays only used to convey a concrete (R) reading, which could be expressed in principle by the form in *-zione*. Another case is that of *composizione / componimento*: *composizione* is used to indicate the event and the resulting object (= any of the internal objects of *comporre* 'compose'), while *componimento* typically refers to a written development/dissertation and it only occasionally expresses the transpositional value. This is evidence that *componimento* is partially lexicalized. Cases like this are not sporadic because the lexicon is a repository of both new and old formations; the latter, throughout a long permanence in the lexicon, tend to lose their compositional semantic content and acquire very specialized meanings.

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[10] This is not the default case: a nominal like *lettura* for instance does not formally distinguish between the two senses of the base verb *leggere*, i.e. 'read' and 'interpret'. Therefore such derived nominal (or derived nominals, if one assumes that the base verb corresponds to two distinct lexical entries) expresses both the E meanings of 'reading' and 'interpretation' and the associated R senses.

[11] Lieber (2004) observes that English nominalizers display an analogous behavior in this respect: she in fact brings as example the triplet of nominals *committal / commitment / commission*, where *-al*, *-ment* and *-ion* lexicalize different meanings associated with the verbal base. I expect cases like this to be numerous, especially in a language like English, which is characterized by the co-presence of both Germanic and Latin suffixes in its morpho-lexical system.

[12] tr. 'marks that cover writings; traces left from erasure with rubber or other tools'.

Nevertheless, apart from lexicalizations, the formation of nominals obtained from the same base through different suffixes is not a strong tendency, and could be accounted for as a consequence of a (weak) specialization of suffixes. For example, *-zione* and *-tura*, employed in technical fields and used to nominalize verbs of change of state (which favors R interpretations, as I will show in the next chapter), has more chances to form nominals conveying a concrete semantic flavor with respect to *-mento*, whose range of bases is broader because of its stylistically neutral characterization. However, these are only tendencies which emerge, in particular, when suffixes are in competition with respect to the same base; and, it is worth reminding the reader that all these suffixes have the chance to form nominals with ambiguous interpretation (i.e. both E and R).

In sections 3.4.2 and 3.5.2 a semantic characterization for these suffixes is tentatively proposed, which will allow distinguishing between the semantic contribution of transpositional suffixes involved in the formation of E nominals and those suffixes forming R nominals by means of the representational tools offered by Lieber's (2004) framework.

3.3   The theoretical framework

In Chapter 2, I have shown that some scholars have tried to determine the semantic import or effect of transpositional suffixes over their bases. Works such as Asher (1993), Bierwisch (1990/1991), and Pustejovsky (1995) seek to offer a rationale for the semantic variation exhibited by most deverbal nominals. Because in such accounts the interpretation of derived nouns is the issue at stake, their syntactic properties are considered as a correlate of their semantic features (this same approach to the lexical ambiguity in the complex nominals' domain is the one taken in the present investigation). However, not being strongly morphology-oriented, a precise understanding of what the semantic import of these suffixes is, if any, and whether, from the semantic point of view, there actually exists a distinction between affixes involved in the formation of E vs. R nominals, are both missing in those works.[13]

Obviously, such an analysis can be realized within a theoretical framework of lexical semantic representation capable of isolating the semantics of affixes, along with the meaning of simple lexemes. In effect, I have explained in Chapter 1 that such a framework has been developed in recent years throughout several works of Lieber and

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[13] Actually, Bierwisch (1990/1991) isolates the semantic representation of *E* suffixes, but explains the semantic variation in these nominals as following from the existence of semantic templates in the lexical system of a language (cf. Bierwisch, 1990/1991: 50-67). He therefore does not produce a semantic representation for the R affix.

Baayen (1997; 1999) and Lieber (2003), and in the more elaborated version of Lieber (2004). In that chapter, I have briefly outlined the assumptions of Lieber's framework, which also leads the spirit of the present research on deverbal nouns.

I thus devote section 3.3.1 to a more detailed explanation of the fundamentals of Lieber's (2004) lexical semantics model of word formation, which is adopted and adapted in this study to account for the Italian data under discussion. Further, section 3.3.2 presents a critical review of Lieber and Baayen's (1999) explanation concerning the E/R ambiguity, in order to show that such proposal does not adequately account for the data under discussion.

3.3.1 Lieber's (2004) lexical semantic model

Along the same lines of Jackendoff's (1990) and Wierzbicka's (1972; 1980; 1988) systems of semantic representation, Lieber's model of lexical semantics is decompositional; lexical units are decomposed into atoms or primitives of a grain-size allowing the (cross-categorial) lexical semantic description of nouns, verbs and adjectives.

Besides, following a basic tenet of lexical semantics, Lieber suggests that the lexical semantic representation of lexemes and affixes is composed of two parts, which, with an evocative anatomic metaphor, are respectively named as Semantic/Grammatical Skeleton and Semantic/Pragmatic Body.[14] The first building block, i.e. the skeleton, only contains semantic information that is relevant for the syntax; it is decompositional, hierarchically arranged, and relatively fixed. Along the same line of Jackendoff's LCS, the skeleton formally represents meaning decomposition into smaller semantic features. On the contrary, the body is encyclopaedic, non-decompositional and only partially formalizable; it is understood as a list of information concerning shape, purpose, use, dimension, composition, etc., hence reminding the set of properties that Pustejovsky (1995) encoded in his Qualia Structure. As Lieber points out, the distinction between skeleton and body parallels with Mohanan and Mohanan's (1999) partition into «Grammatical Semantic Structure» and «Conceptual Structure», and with Rappaport Hovav and Levin's (1998) separation between «Event Structure Template» and «Root/Constant» (cf. Chapter 4 for a review of RH&L's theory on verbal semantics).[15]

Aimed at capturing the skeletal representation of lexical entries, Lieber's model establishes a severely restricted number of semantic atoms / features in the semantic skeleton of a given item. The two main features she proposes are [material] and

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[14] In particular, according to Lieber, affixes should have little or no semantic body and should be instead characterized by a definite skeleton.

[15] The skeleton is also comparable to Jackendoff's Lexical Conceptual Structure, and contains information which Pustejovsky attributes to the event and argument structure.

[dynamic], which can be used both in equipollent and privative way to classify ontological and semantic classes; that is, they are binary ([+] or [−]) in value, but may also be either present or absent in a skeleton.

The semantic feature [±material] defines the conceptual category of "SUBSTANCES / THINGS / ESSENCES", corresponding to the syntactic category Noun. The [+] value of the feature denote the presence of materiality, and hence defines a concrete noun; conversely, the [−] value defines an abstract noun.

The semantic feature [+/−dynamic] identifies the conceptual category of "SITUATIONS", corresponding to both verbs and adjectives. As with the feature [material], [dynamic] can be used in equipollent way to distinguish [+dynamic] EVENTS and [−dynamic] STATES within the conceptual domain of SITUATIONS (cf. Chapter 5 for a thorough presentation of the taxonomy of SITUATIONS).[16, 17]

To represent the skeleton, Lieber adopts Jackendoff's (1990) formalism for the LCS representation, consisting of functions and arguments predicated of those functions, as in (2)a.; and yet a skeleton can also consist of hierarchically arranged functions and arguments, as in (2)b.:

(2)   a. $[F_1 ([argument])]$
       b. $[F_2 ([argument], [F_1 ([argument])])]$

The above-mentioned semantic features are meant to be functions in the skeleton of a lexical item, exactly like Jackendoff's semantic primitives (e.g. BE, CAUSE, etc.) in the LCS. But what is the nature of the arguments defined by these features-functions?

Lieber assumes that not only verbs, but also nouns and adjectives are argument-taking categories, and that nouns contain at least the *R* argument, first introduced by Williams (1981) and Higginbotham (1985). According to Lieber, affixal elements should also be characterized by an *R* argument, which represents the highest argument of the semantic features/functions in their skeleton (the lowest argument being represented by the base they are joined with).

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[16] Lieber (2004: 24) explains that « (t)erms like SITUATION and SUBSTANCE/THING/ESSENCE are not meant to be primitives themselves, but mnemonic terms that we can use for referring to those large conceptual/ontological categories ».

[17] Lieber also introduces a third major ontological feature, [Loc], which primarily defines the class of adpositions in her system (i.e. prepositions, in English and Italian). This feature will be presented in Chapter 5, and originally employed for isolating the skeletons of a subset of verbs in the category of SITUATIONS. In Chapter 5, I also introduce the feature [IEPS] (i.e. Inferable Eventual Position or State), which defines the set of EVENTS OF CHANGE.

Therefore, a noun like *table* (conceptually, a THING), for example, has the following lexical semantic representation, where the *R* argument is formally represented by the blank space between square brackets:

(3)   *table*   [+material ([ ])]

Conversely, the arguments taken by verbs correspond to syntactic arguments proper. Therefore, transitive verbs take one argument; intransitives instead take two (and ditransitive will take three):

(4)   *yawn*   [+dynamic ([   ])]
       hear   [–dynamic ([   ], [   ])]

As mentioned before, semantic features are taken to be broadly cross-categorial and, what is more, they are not mutually exclusive; that is to say, a skeleton can take a pairing of features as functions, instead of a single one. In fact, there exist lexemes denoting events or states (i.e. simple event nouns, like *race*, *effort*, etc.) or, in general, entities with a processual flavor like Agent/Instrument nouns (e.g. *chef/knife*). Lieber's model allows us to express the processual semantics of these lexemes by means of a joint use of the major ontological features. Specifically, the equipollent use of [material] is combined with the privative use of [dynamic] in the skeleton of these processual nouns. Hence, these lexemes take the skeletons in (5) (Lieber 2004, 27), where the bare presence of the feature [dynamic] signals the processual semantics:

(5)   *author*   [+material, dynamic ([   ], [   ])]
       poet   [+material, dynamic ([   ])]
       habit   [–material, dynamic ([   ], [   ])]
       sunset   [–material, dynamic ([   ])]

As shown by the skeletons of *author* or *habit*, nouns can be relational and, in this case, they take more than one argument; specifically, the highest argument being the *R* argument, the lowest is instead a semantic argument in their skeleton (e.g. [The author [*of this book*]]).

What is more, the privative use of [dynamic] demonstrates the cross-categorial nature of semantic features; in effect, as Lieber (2004: 27) points out « (t)he feature dynamic is

used in a binary way to define SITUATIONS, and in a privative way to distinguish processual from non processual SUBSTANCES / THINGS / ESSENCES ».[18]

The conceptual category of SITUATIONS is different from the category of SUBSTANCES / THINGS / ESSENCES, because it is characterized by the complete absence of the feature [material]. As Lieber informally puts it, « things can be processual, but processes, events, and states can't be "thingy" without, of course, ultimately being things » (*ibid.*).

As introduced in Chapter 1, derivational affixes, since they expand the simplex lexicon, are expected to fall within the same semantic spaces defined by simplex lexemes. For instance, agentive nouns (like *author*) and agentive affixes should exhibit the same skeleton (suffixes, because they are bound morphemes, always take a base skeleton as the lowest argument of their skeletons):

(6)   *author*   [+material, dynamic ([   ], [   ])]

        -er, -ee, -ant/*ent, -ist*   [+material, dynamic ([   ], <base>)]

Further, the creation of a new complex lexeme always involves the integration or merger of the constituents' skeletons into a single referential unit and it is this unit that determines how many arguments might be projected in the syntax. Concerning derivational processes, in particular, Lieber (2004: 36) explains that:

> The semantic part of derivation involves adding the affixal skeleton as an outer layer to the skeleton of the base, thereby subordinating that skeleton. […] affixation will require the coindexation or binding of an affixal argument with a base argument.

Indeed, a basic principle of Lieber's theory is co-indexation, the specific device which, in the case of derivation, « allows us to integrate the referential properties of an affix with that of its base » (Lieber, 2004: 45).

Co-indexation is ruled by a corresponding principle:

> In a configuration in which semantic skeletons are composed, co-index the highest nonhead argument with the highest (preferably unindexed) head argument. Indexing must be consistent with semantic conditions on the head argument, if any. (Lieber 2004: 61)

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[18] Developing the skeletons of the E/R affixes, I will point out that semantic features can be lexically *underspecified*, that is, they are introduced by a [±] value which gets its precise specification through co-indexation (see below).

The co-indexed arguments are discharged by the same phrase in the syntax, in argument structural terms, or they are predicated of the same referent, in logical terms. The second part of the Co-indexation Principle alludes to the important fact that the there are affixes with specific semantic selectional properties. That is to say, certain affixes require that the nonhead co-indexed argument satisfies one or more semantic constraints; this explains why co-indexation does not always involve tying together the affixal argument with the highest (=outermost) argument, but can involve other (lower) arguments in the base skeleton.

As I will show in this study (cf. in particular Chapter 5), Lieber's lexical semantic framework, endowed with some necessary improvements, can be successfully employed to account for the ambiguity, and for the related syntactic behavior displayed by deverbal nominalizations.

3.3.2 Previous analysis: Lieber and Baayen's (1999) account

Lieber and Baayen (1999) have analyzed the problem of ambiguity in deverbal nominals by isolating the semantic contribution of English transpositional affixes; nevertheless, their approach disregards the denotation of nominals, because it is mainly aimed at capturing their behavior in the syntax. As it will be shown in the following discussion, Lieber and Baayen's solution, although representing an important starting point of the present analysis, does not satisfactorily account for the data under discussion.

According to Lieber and Baayen (1999), transpositional suffixes of English, *-ing* , *-(at)ion*, *-ment*, *-ure* and *-al*, all make the same semantic contribution to their bases; they therefore fall within a single paradigmatic cell of semantic derivation.[19] Since such suffixes primarily form abstract lexemes pertaining to the category of SUBSTANCES / THINGS / ESSENCES, they all have a [–material] feature as outer function of their skeleton.[20] However, because they form prototypical situational or processual nouns, it follows that, semantically, they share something with the ontological category of SITUATIONS. Lieber and Baayen suggest in fact that the [dynamic] feature, identifying the class of SITUATIONS, can be used cross-categorially to characterize the skeleton of those affixes which typically form situational nouns (cf. discussion in the previous section).

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[19] Cf. Booij and Lieber (2004) for discussion about the paradigmatic nature of affixal semantics.

[20] Lieber and Baayen (1999) employ the feature [substance], instead of [material]: the latter is introduced by Lieber (2004), which adapts Lieber and Baayen's (1999) theoretical account of the CEN vs. RN distinction to her own lexical semantics representational system. Further, it is worth noting that, in Lieber's (2004) system, a categorial change can only be brought about by those affixes bearing major ontological features (i.e. [material] and [dynamic]): hence, such affixes correspond to head elements in traditional generative morphology.

Concerning the ambiguity in nominals which is the object of the present research, it is important to observe that the Lieber and Baayen approach is strictly focused on the morpho-syntactic features of such nominals and disregards instead their denotation. In their proposal based on Grimshaw's three-way classification of nominals (cf. section 2.2.1.1), "complex event nominal" and "result nominal" are merely cover-labels indicating the presence or absence of argument structure and of all the other properties characterizing the former, on the one hand, and the latter class of nominals, on the other (cf. Grimshaw's, 1990 diagnostics). These scholars point out in fact that, even in the domain of (underived) simple event nouns, there are different "readings" which are triggered by the syntactic-semantic context (cf. Lieber and Baayen 1999:189):

(7)   a.   Barbara's constant war *(with the neighbors)   Complex Event
        b.   That war   Result

In (7)a. the noun is modified by a temporal modifier, *constant*, which forces its complex event interpretation and the projection of full argument structure; while in (7)b. *war* is a referential noun, which does not project arguments and takes a demonstrative. To express this distinction, Lieber and Baayen propose to reserve a [+dynamic] specification for nouns which have a complex event reading, like *war* in (5.a) and a [−dynamic] feature for those which display the syntactic behavior of result nouns (or simple event nouns), like *war* in (7)b. On the basis of this explanation, a complex event reading is not determined lexically, but at the syntactic level; argument inheritance and its obligatory syntactic discharge implies the [+] value of [dynamic], while its [−] specification arises in the case of optional projection of LCS participants or complete absence of syntactic satellites. Since the distinction between complex event and result nouns is a matter of syntax, Lieber and Baayen propose that this second feature should be used in a privative fashion in the skeleton of *-ing, -ment, -(at)ion* etc. (and of simple event nouns too).[21] Consequently, the skeleton of transpositional suffixes of English, *-ing, -ment, -(at)ion, -ure* and *-al*, is the following, with the highest argument being represented by an *R* variable:

(8)   *-ing, -ment, -(at)ion, -ure, -al*   [−material, dynamic ([   ], <base>)]

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[21] The skeleton of lexemes and affixes only contains information which is relevant at the lexical level. Therefore, concerning the use of the [dynamic] feature in the skeleton of nouns, Lieber (2004:28), elaborating Lieber and Baayen's account, explains that « nouns do not come with inherent specifications for [dynamic]; however, the positive or negative values are induced in a larger syntactic context by the presence or absence of determiners and the presence or absence of nominal arguments ». This is an assumption I discuss and reject in section 3.2.3.

Lieber and Baayen's approach, being strictly focused on the syntactic behavior of nominals, has several shortcomings and leaves many issues unexplained. To start with, as we have seen with the example in (7), their approach assumes that the assignment of a deverbal nominal to the complex event or result class does not have much to do with its lexical semantic representation, but simply with its behavior in the syntax (this is also the standpoint of a neo-constructionist approach such as Borer, 2003, cf. section 2.2.2.1.2). However, this perspective completely obscures the semantic distinction between nominals denoting situations and those denoting referential entities. The latter, in fact, usually do not take syntactic satellites corresponding to arguments, while the former typically do. In other words, there are many cases where different syntactic options are clearly associated with the interpretation of deverbal nominals, as pointed out by Grimshaw, but this fact remains unaccounted for in the Lieber and Baayen analysis, which assume that the interpretation of a nominal is always coercible by the syntactic context. However, concerning their example in (7), I doubt that the nominal in a. is actually a complex event nominal. Indeed, *war* differs from a deverbal complex event nominal such as *fighting*, for instance, since only can the former appear in the plural.[22]

(9)   a.   Barbara's wars with the neighbors
      b.   * Barbara's fightings with the neighbors

In addition, the latter, but not the former, allows modification with *for-x-time* phrases, i.e. aspectual modifiers, which is evidence for the presence of event structure (cf. Grimshaw, 1990, and Pustejovsky, 1991):

(10) a.   *Barbara's war with the neighbors for two years[23]
      b.   Barbara's fighting with the neighbors for two years totally distressed her family.

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[22] Deverbal E nominals, even some of those formed by means of *-ing*, can appear in the plural: *killings* and *meetings* are among these cases. *Contra* Grimshaw (who maintains that complex event nominals cannot take the plural), and keeping with Brinton (1995), I propose that some deverbal *E* nouns can pluralize: specifically, the capability of pluralization of *E* nouns is explained on the basis of the *Aktionsart* properties of the base verb, on the one side, and of the intrinsic properties of the suffix, on the other. In the case of *fighting*, the lack of plural form is predictable because of the activity (*Aktionsart*) type of the base predicate (*to fight* is not amenable to a telic interpretation) and the specific characteristics of *-ing*, which tends to only form mass nouns. However, a fact remains, that there are deverbal nominals which cannot take the plural, while underived simple event nouns (as nouns denoting dynamic situations) can always pluralize.

[23] Other examples are from Grimshaw (1990: 59):

(i)   *Jack's trip in five hours/for five hours was interesting.
(ii)   *The process in five hours/for five hours

This state of affairs shows that simple event nominals might pass some of the diagnostics which usually accommodate complex event but not result nouns. However, aspectual modification, which is one of the most important indications of the presence of event structure in deverbal nominals, is typically excluded by simple event nominals, showing that the latter crucially differ from the former.

Further, according to Lieber and Baayen's explanation, all complex event nominals should exhibit a [-material, +dynamic] skeleton at the syntactic level: but what about nominals denoting states (e.g. *admiration*, *possession*)? Interestingly, in fact, nominals describing non-dynamic situations suspiciously look like complex event ones, since they can be modified by constant, are mass nouns and usually require argument structure.[24]

(11)   John's constant admiration(*s) for Lucy

According to Lieber and Baayen's solution, all complex event nominals should be characterized as [+dynamic]. Nevertheless, in the case of *admiration* in (11), we would have a contrast between an intrinsic non-dynamic character of the nominal (denoting a state) and its "external" behavior of complex event nominal, which should be expressed accordingly by [+dynamic].

Finally, another important drawback of Lieber and Baayen's account is that it totally ignores the existence of those R nouns that denote concrete entities (e.g. *construction* as edifice, *development* in the sense of a concrete expansion). Therefore, it remains unexplained how to characterize these concrete nominals, which should take [+material] as outer function of their skeleton.

As I will illustrate in the following sections, the same combination of features proposed by Lieber and Baayen can be employed to characterize the skeletons of E and R nominals; however, since the denotations of these nominals crucially differ, I propose that also their suffixes should display different skeletons, whose feature values are entirely specified at the lexical level, rather than at the syntactic one.

In what follows, I will present an in depth exploration of the semantic properties of deverbal nominalizations aimed at isolating the skeletons of the suffixes which are the morphosyntactic heads of these complex forms. Starting from the E class, I will especially focus on the actional (or aspectual or *Aktionsart* values) of E derived nominals.

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[24] While state nominals belong to the result class according to Grimshaw (1990), Rozwadowska (1997) shows that they exhibit many of the properties of the complex event class (cf. also Borer, 2003 for similar observations).

3.4   E nominalizing suffixes

Traditionally, suffixes involved in the formation of E nominals are defined as transpositional because they simply shift the verbal meaning into a nominal lexeme; in other words, E nominals nominalize the situations (i.e. events or states) expressed by their corresponding predicates, giving them a "name". Because they are highly underspecified in meaning, if we were to measure these suffixes on a scale of semantic strength, E suffixes could be defined as the semantically "weakest" ones, since they simply act like nominalizing operators (cf. Bisetto, forthcoming).[25]

In order to define the exact semantic value of E nominalizing suffixes, I will try to understand whether they can modify or instead leave completely unaltered the semantic properties of the base verb.

3.4.1 Verbal Actionality: a question of inheritance

Italian derived nominals cannot pass on information about tense, aspect and person, which correspond to inflectional elements, and can be split into different functional nodes of a verbal projection (i.e. Inflection Phrase, or IP). Hence, none of these inflectional elements is retained in Italian derived nominals, neither morphologically nor semantically.

On the contrary, it seems that actionality (more commonly known as *Aktionsart*) is a defining feature of verbs, and is preserved in a derived nominal. This can be easily explained, since actionality, which defines the *situation types*, is a lexical property. It therefore plays a crucial role in the morphological process of nominalization, which only involves lexical elements.[26]

In the next section, I will shortly summarize the main situation types, following the accepted standpoint of philosophy and linguistic literature of distinguishing among verbs in terms of their internal temporal properties. However, the literature on this topic is really vast, and, obviously, I can in no way do it justice here.[27]

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[25] According to Bisetto (forthcoming), weak suffixes differ from strong ones, which have a definite meaning reproduced in the derivatives and whose characteristic property is that of imposing (semantic) restrictions on their bases (cf. also Bisetto 2006, as to the Italian suffix –*tore*, and Booij & Lieber 2004, concerning the English suffix -*ee*). As a consequence, almost all the nominals derived with strong suffixes have a specific interpretation (e.g., -*tore* nouns are mainly agentive). Weak suffixes, on the contrary, do not semantically 'select' their bases and, in the case of our nominalizing suffixes, give E nominals as default option.

[26] Actionality indeed is also known as *lexical aspect*.

[27] Influential studies on lexical aspect are: Bach (1986), Binnick (1991), Brinton (1988), Dowty (1979), Freed (1979), Krifka (1992), Mourelatos (1978), Smith (1991), Tenny (1994), Vendler (1957) and Verkuyl (1972, 1993).

3.4.1.1   Situation types

Situation types (or actional/*Aktionsart* classes) define the semantic typology of situations – in the sense of event descriptions – as they are encoded in a language. In the philosophical and linguistic literature there is a significant tradition of studies on the lexical semantics of situations (especially on verbs); many of these investigations, even the most recent ones, elaborate on the verbal classification known as Vendler-Dowty taxonomy, which distinguishes four distinct classes of situations: states, activities, accomplishments and achievements (cf. in particular Vendler, 1957-1967 and Dowty, 1979). In what follows, we will see what the basic features are which define these actional classes.

A first criterion for distinguishing among situations is dynamicity: situations which lack this feature (and are thus lexically marked as stative) do not require a new input of energy or effort to go on (cf. Comrie 1976-a).[28] Besides, states have no internal changes or phases and do not focalize on a culminating point.

In Italian and in most Indo-European languages, certain verbs (e.g. *cononoscere* 'know', *amare* 'love', *volere* 'want', *credere* 'believe') and adjectives (e.g. *felice* 'happy', *grasso* 'fat', *stupido* 'silly') are the lexical items systematically employed to portray stative (=non-dynamic) situations. Grammatically, stative verbs differ from dynamic ones because they do not license imperative or progressive form:

(12)   *Conosci la storia!
          'Know history!'

(13)   *Gianni sta conoscendo la storia.
          'John is knowing history.'

Dynamic situations are exclusively expressed by means of verbs: they can be classified into a number of different types according to other criteria, namely, durativity and telicity. Activities and accomplishments, such as *correre* 'run' or *giocare* 'play', and *costruire* 'build' or *scrivere* 'write', are durative because the situations they denote usually stretch over a certain time interval, as states usually do. Activities and accomplishments differ because the former denote unbounded/open-ended processes, while the latter refer to actions with a natural endpoint or culmination (or *télos*). To put it differently, activities are atelic because, once they have started, they can go on indefinitely: the description of an activity event itself does not imply an endpoint. On the contrary, accomplishments describe events moving towards an inherent endpoint or

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[28] Recall that [dynamic] is one of Lieber's (2004) major ontological features: being a lexical property, it is expected that the presence or absence of this feature is specified in the skeleton of lexical items.

culmination. The property of event descriptions of tending towards a culminating point is traditionally called *telicity*, but, because this property arises in the syntax, the distinction between activities and accomplishments hinges on the lexical contribution to telicity, which the former class but not the latter crucially lacks.[29]

Furthermore, since the endpoint of an event description is usually defined by means of an internal object, there is a compositional aspect of telicity which should be highlighted. Namely, concerning accomplishments, the structure of the internal object determines the telicity of the VP, which remains therefore to be determined syntactically. Krifka (1992-1998) observes in fact that quantization of the internal object[30] establishes the telicity of the corresponding IP, while its non-quantization or cumulativity[31] does not.

(14) a John built a house.   →   telic
      b. John built houses.   →   atelic

Given the same accomplishment predicate, i.e. *build*, it is composition with a quantized DP internal object which determines the telicity of the IP in (14)a., while composition with a non quantized DP generates an atelic sentence in (14)b.[32]

The last class isolated by Vendler is the achievement class: achievement predicates denote near instantaneous events, which are over at the same time they have begun. Typical representatives are *notare* 'notice', *arrivare* 'arrive', *partire* 'leave', *morire* 'die', which are punctual event-descriptions; but, like accomplishments, they also have inherent endpoints. Hence, on the basis of durativity, achievements are distinguished from states, accomplishments and activities, while, with respect to telicity, they differ from activities and states (and semelfactive, cf. discussion below). Achievements denote in fact near instantaneous changes of state: *morire* for instance describes a punctual

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[29] Telicity and atelicity are properties of the verb phrase. The status of a verb phrase with respect to these properties is not only defined by the inherent lexical contribution of the verb, but also by the interaction of the verb with other constituents of the VP. Cf. discussion below.

[30] That is to say, countable nouns and measure constructions, e.g. *five apples, a glass of wine*.

[31] That is to say, bare plurals and mass nouns, e.g. *apples, wine*.

[32] Another important distinction between activities and states, on the one hand, and accomplishment and achievements, on the other, is homogeneity; namely, the property of being composed of analogous / identical subparts. This property emerges very clearly if we take into account the phenomenon known as imperfective paradox.

(i) Activity: Gianni sta correndo.   ENTAILS   Gianni ha corso.
                    'John is running.'   'John ran'
(ii) Accomplishment: Gianni sta scrivendo una lettera. DOES NOT ENTAIL Gianni ha scritto una lettera.
                    'John is writing a letter.'   'John wrote a letter.'

While any subpart of a running event is also a running event, any subpart of a writing-a-letter event is not a writing-a-letter event. States and achievements are like activities and accomplishments, correspondingly, with respect to this property (cf. Dowty, 1979 for discussion of this subject).

transition from being alive to not being alive. Therefore, the inherent culminating point of achievement predicates corresponds to their resulting state.

A common test for distinguishing among atelic (states and activities) and telic situations (accomplishment and achievements) is compatibility with so-called *frame adverbials*, that is to say, temporal modifications expressed by means of *for-* and *in-x-time* phrases. While *in-x-time* phrases are usually compatible with telic situations, since they focalize on a final culminating point, atelic ones are fine with *for-x-time* phrases which indicate duration over a time interval without focalizing on a final point.

(15) a. Lucia ha amato Gianni per anni/*in anni.   (STATE)
          'Lucy has loved John for years/in years'
      b. Lucia ha corso per due ore/*in due anni.[33]   (ACTIVITY)
          'Lucy has run for two hours/in two hours'
      c. Lucia ha scritto una lettera a Gianni in due ore/per due ore.

                                                           (ACCOMPLISHMENT)
          'Lucy has written a letter to John in two hours/for two hours'
      d. Lucia è morta in pochi giorni/*per pochi giorni.   (ACHIEVEMENT)
          'Lucy died in a few days/for a few days'

Some accomplishments (cf. (15)c.) can be compatible with *for-x-time* phrases, but in such cases they do not entail the reaching of a culminating point: writing a letter for two hours does not entail having finished writing it. On the contrary, the inference in (15)c. is that the letter has not been finished.

Elaborating on the Vendler-Dowty taxonomy, Smith (1991) ascertains a fifth actional class on the basis of the criteria discussed so far. She in fact identifies verbs which are dynamic and instantaneous, but inherently atelic (e.g. *bussare* 'knock', *starnutire* 'sneeze', etc.). Smith calls these verbs *semelfactive* (but cf. also Verkuyl's 1993 use of this term), from the Latin word *semel* 'once', since they describe atelic events which

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[33] This sentence is marginally acceptable in contexts where the predicate *ha corso* refers to a specific distance, like in the contexts of car-races, for instance. In these cases, one can postulate the presence of an internal object, which is not projected in the syntax but changes the atelic characterization of a running activity into the telic one of an accomplishment event:
(i)   Gianni ha corso (la gara) in due ore.
         'John run (the race) in two hours.'
Activities are likely to be heads of telic VP when they are composed in syntax with other elements, like directional PPs. In (ii) the change of the auxiliary (from *avere* 'have' to *essere* 'be') signals that the verb has shifted from unergative to unaccusative.
(ii)   Gianni è corso al negozio.
         'John ran to the store.'

happen once and are near instantaneous or non-durative.[34] When these verbs are accompanied by durative adverbials (or *for-x-time* phrases), an iterative interpretation is usually triggered.

(16)   Gianni ha starnutito tutta la notte.
        'John has sneezed the entire night'

In the next section, however, I shall ignore this last verb class, and especially focus on the accomplishment / activity distinction in derived nominals.

To conclude, situation types can be represented as in Table (3), where the *Aktionsart* types are expressed through the combination of the positive and negative values of the features identified in the discussion above:

Table (3)   *Situation Types*

Situations	dynamic	durative	telic
States	[-]	[+]	---
Activity	[+]	[+]	[-]
Accomplishment	[+]	[+]	[+]
Achievement	[+]	[-]	[+]
Semelfactive	*[+]*	*[-]*	*[-]*

In the next section, I will try to explain whether the properties of actional types are inherited or altered by transpositional suffixes, focusing in particular on lexical contribution to telicity.

3.4.1.2   Actional properties of E nouns

Among the studies on Italian nominals, Gaeta (2002:114-125) offers a very detailed exploration of the actional features displayed by derived nominals. In his discussion on *Aktionsart* in Italian nominalizations, Gaeta observes that the following four different cases could be realized in the nominalization process of a language:

(17)   1- Verbal actionality is inherited.
        2- Verbal actionality is (partially) modified.

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[34] Every real world situation stretches over (from minimally short to maximally lengthy) time intervals: to say that a situation type (which is merely a linguistic interpretation of a real situation) is non-durative only means that its duration is so minimal that it is irrelevant at the level of its grammatical encoding.

3- The suffix selects a special portion of the lexicon from the aspectual viewpoint, but does not modify the *Aktionsart* properties of the base verb (this is the case of the Italian suffix *-za*).

4- The suffix selects a special portion of the lexicon from the aspectual viewpoint and modifies the *Aktionsart* properties of the base verb (this is the case of the Italian suffix *-ata*).

Following previous investigations by Bartsch (1981-1986), Gaeta observes that the most productive Italian nominalizers have an effect of "closure" on the *Aktionsart* properties of their bases. In other words, these affixes add a perfectivizing or resultativizing effect onto the actional value of their base verbs. Therefore, he maintains that the case 2 (in (17)) accommodates Italian nominalizing suffixes like *-mento, -zione, -tura*, etc. Gaeta also offers interesting insight on cases 3 and 4, pointing out that there are Italian nominalizers (*-ata* and *-za*) which also realize these logical options. However, I shall exclude these cases from the discussion below and concentrate instead on *-mento, -zione* and *-tura*.

Gaeta's explanation is based on a comparison between Italian derived nominals and *Infinito Sostantivato* (cf. Zucchi, 1993); further, he grounds his conclusions on the fact that nominals obtained from activity verbs are also compatible with *container* predicates triggering a resultative character (Gaeta, 2002: 123).[35] This scholar, in fact, observes that all the container predicates in (18) are compatible with nominals denoting dynamic situations, but prove useful for distinguishing between bounded and unbounded nominals.

(18) a. …dura già da due anni.

   '…has lasted for two years already'

   b. …portò via due anni.

   '…took two years'

   c. …si compì in due anni.

   '…was achieved in two years'

   d. …è stato interrotto.

   '…was interrupted'

   e. …è stato completato.

   '…was completed'

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[35] The introduction of the term *container* to refer to the "host" sentences containing nominalizations is due to Vendler (1967: 124). However, Vendler's use of containers is aimed at establishing a partition between *perfect* and *imperfect* nominals, and does not hinge on the problem of boundedness and telicity, which we are going to discuss below.

f.   …è stato terminato.

'…was finished/stopped'

g.   …è stato concluso.

'…was concluded'

Let me briefly speculate on these predicates, before examining Gaeta's analysis.

While the container predicate in (18)a. focuses on the duration of the E nominal it is composed with, all the other predicates focus instead on the final, culminating point of an event. Assuming hypothesis 1 in (17), that the suffix cannot alter the actional properties of the base verb, I calculate that this final or culminating point should correspond to a *telos* in the case of nominals derived from accomplishment and achievement verbs, but it should not in the case of nominals obtained from activity verbs. Further, if the containers *si compì in due anni* 'was achieved in two years', *è stato completato* 'was completed' and *è stato concluso* 'was concluded' express a completion sense, this implies that they should only accommodate nominals derived from accomplishments. These predicates should be incompatible with activity nominals, because they lack an inherent culminating point. With the exception of c., these containers should not host achievement nominals because they are typically punctual. As I will show below, all these predictions are actually true.

However, Gaeta (2002:123) takes the sentences in (19) and (20) as pieces of evidence supporting his own analysis (i.e. case 2 in (17)). Starting from the assumption that *insegnare* 'teach' and *sfruttare* 'exploit' are both predicates of activity, Gaeta observes that their corresponding derived nominals can be associated with predicates making reference to the presence of a culminating point. On the contrary, *Infinito Sostantivato* cannot.

(19)   a.   L'insegnamento del latino è stato completato.

lit. the teaching of Latin has been completed

b.   *L'insegnare il latino è stato completato.

lit. the teaching the Latin has been completed

(20)   a.   Lo sfruttamento dei giacimenti auriferi è stato terminato.

'The exploitation of gold-deposits has been finished/stopped'

b.   *Lo sfruttare i giacimenti auriferi è stato terminato.'

lit 'the exploiting gold-deposits has been finished/stopped'

According to Gaeta, the comparison between derived nominals in a. and *Infinito Sostantivato* in b. reveals that the suffix of derived nominals (-*mento* in this case) adds a

perfectivizing value and turns an (unbounded) activity into a bounded action. *Infinito Sostantivato* is unable, instead, to focalize on the final point of an action, if the latter is an activity. In other words, only *Infinito Sostantivato* leaves the actionality of the base completely unaltered, while derived nominals allow bounded readings.

However, some objections can be raised concerning Gaeta's analysis. Firstly, concerning (19)a., it could be argued that the nominal construction *l'insegnamento del latino* gives rise to a telic reading, although the derived nominal *insegnamento* is opened to both telic and atelic interpretations. The VP *insegnare il latino* is indeed compatible with both *in-x-time* and *for-x- time* adverbials.

(21)   a.   Mi ha insegnato il latino in 2 anni.[36]
            lit. he/she has taught me the Latin in two years
       b.   Mi ha insegnato (?il) latino per 2 anni.
            lit. 'he/she has taught me (?the) Latin for two years'

Actually, in (21)b., the sentence is more acceptable if the internal object is expressed by a bare NP. This evidence suggests that the VP *insegnare il latino* triggers the accomplishment value of the base verb *insegnare* 'to teach', rather than the activity value and, hence, there is the presence of a *télos* at the syntactic level. Consequently, the compatibility of *insegnamento del latino* with a predicate like *è stato completato* in (19)a., compatible with telic predicates, naturally follows. But, at the lexical level, *insegnamento* seems to be open both to a bounded telic interpretation and to an unbounded atelic one, as well as the corresponding base verb *insegnare* (cf. (21)).[37]

Gaeta's second example in (20)a. shows that the nominal *sfruttamento* 'exploitation' can refer to a bounded activity. Still, I point out that his example does not indicate that the suffix has modified the actional value of the base verb, because the container predicate *è stato terminato* does not imply a telic, but a *temporally bounded* interpretation of the E (activity) nominal. In order to explain this point, let us compare the predicate *sfruttare* 'exploit' with *correre* 'run', which instantiates a prototypical activity. It is worth noting that a running event can be stopped / ?finished as well as an 'exploitation-of-deposits' event can. However, in none of the two cases does the culmination of the corresponding action imply the achievement of an inherent *telos* (which activities always lack). Therefore, according to this line of reasoning, the acceptability of (20)a. is straightforwardly explained because *è stato terminato* simply

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[36] While I regard this sentence as perfectly grammatical, I have found a couple of native speakers of Italian who judge it awkward or even ungrammatical. However, these speakers accordingly exclude (19)a. as well.

[37] Dowty (1979) observes in fact that many transitive activity predicates can be interpreted as accomplishments, especially if accompanied by definite internal arguments.

triggers a bounded (≠telic) interpretation of the nominal, which the corresponding predicate is also likely to convey at the level of syntactic composition.

Furthermore, the absence of a telic culminating point in (20)a. is confirmed by the unacceptability of the following sentence, where the same nominal construction is associated with a predicate triggering a telic reading.

(22) a. *Lo sfruttamento dei giacimenti auriferi è stato completato in due anni.
          'The exploitation of gold-deposits has been completed in two years'
      b. Lo sfruttamento dei giacimenti auriferi dura/va avanti da diversi anni.
          'The exploitation of gold-deposits has lasted for several years'

This implies that the adjunction of the suffix -*mento* has not changed the original atelic value of the base verb *sfruttare* 'exploit'.

On the whole, although I do not completely disagree with Gaeta's observations, I suggest that his analysis does not clearly distinguish between boundedness and lexical contribution to telicity:[38] (un)boundedness of a verb is a property which is determined by the aspectual and tense systems operating upon verbs. Therefore, this is not a lexical property but arises instead at the level of syntactic-semantic composition.[39] In the case of activity nominals, for instance, this boundedness can be triggered by container predicates such as (18)a. and d., which focus on the duration of an activity.

The lexical contribution to telicity, or, more generally, the actional denotation of a verb in terms of the activity/accomplishment/achievement distinction, cannot be altered by the addition of a transpositional nominalizing suffix. Activities and (some) states, i.e. homogeneous situations, can be temporally bounded as well. E nominals derived from these predicates are open to bounded and unbounded interpretations, but the nominalizing affix is not able to turn them into inherently telic situations.

Therefore, it seems that a derived nominal preserves the basic actional value of the base verb, as stated by hypothesis 1 in (17), and is open to bounded or unbounded reading; *Infinito Sostantivato*, instead, rules out focalization on a final/culminating point, unless it is lexically inherent, as it is in achievements.

In what follows, I shall present some clear examples of nominals derived from prototypical representatives of all the actional classes of verbs, starting from state verbs.

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[38] The distinction between boundedness and telicity is very often blurred and confused in the literature on verb semantics: very often, telicity is a property attributed directly to the lexical elements and boundedness is used as its near synonym.

[39] The only exception is represented by nominals derived from achievement verbs, which are inherently bounded because they refer to an instantaneous change of state.

Besides, I shall verify the compatibility of such nominalizations with the container predicates listed in (18).

3.4.1.2.1 *State nominals*

Ex: *godere* ' benefit (from)/enjoy' → *godimento* 'possession/enjoyment'

(23)   Il godimento del diritto al voto (da parte degli immigrati) …

'(Immigrant's) possession of the right to vote…'

    a.   ...dura già da anni.   → unbounded

        '…has lasted for two years already'

    b.   *…portò via due anni.

        '…took two years'

    c.   *…si compì in due anni.

        '…was achieved in two years'

    d.   ?…è stato interrotto.   → bounded

        '…was interrupted'

    e.   *…è stato completato.

        '…was completed'

    f.   ?…è (stato) terminato.   → bounded

        '…was (/is) finished/stopped'

    g.   *…è (stato) concluso.

        '…was (/is) concluded'

State nominals are usually incompatible with container-predicates like those in (18), which typically accommodate dynamic predicates. However, a state-denoting nominal like that in (23), describing a reversible/temporary state, is acceptable with predicates such as those in a., d. and f. (in the active version), which exclude reference to a culminating/telic point, but simply focus on the duration of a situation (a.) or on its stopping point (d. and f.).[40]

3.4.1.2.2 *Activity nominals*

Ex: *amministrare* 'administer' → *amministrazione* 'adminstration'

(24)   L'amministrazione di questa azienda (da parte del gruppo Pirelli)…

'The administration of this company (by the Pirelli group)…'

    a.   ...dura già da anni.   → unbounded

        '…has already lasted for two years'

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[40] See the difference with respect to other state nominals, such as *conoscenza* 'knowledge', which refer to permanent/irreversible states and, accordingly, are not compatible container predicates focusing on duration.

    b.   *…portò via due anni.

        '…took two years'

    c.   *…si compì in due anni.

        '…was achieved in two years'

    d.   …è stata interrotta/bloccata.   → bounded

        '…was interrupted/blocked'

    e.   *…è stata completata.

        '…was completed'

    f.   ?…è (stata) terminata.[41]   → bounded

        '…was (/is) finished/stopped'

    g.   *…è (stata) conclusa.

        '…was (/is) concluded'

Activity nominals (*amministrazione*) are open to temporally bounded and unbounded interpretations, as shown by the compatibility with containers in (24)d. and f.; however, the unacceptability with the other predicates demonstrates that a telic value is always excluded by activity nominals.

3.4.1.2.3 *Accomplishment nominals*

Ex: *costruire* 'construct' → *costruzione* 'construction'

(25)   La costruzione di questo edificio (da parte dell'impresa)…

    'The construction of this building (by the company)…'

    a.   …dura già da due anni.   → unbounded/atelic

        '…has lasted for two years already'

    b.   …portò via due anni.   → bounded/telic

        '…took two years'

    c.   …si compì in due anni.   → bounded/telic

        '…was achieved in two years'

    d.   …è stata interrotta.   → bounded/atelic

        '…was interrupted'

    e.   …è stata completata.   → bounded/telic

        '…was completed'

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[41] This sentence is only marginally acceptable; on the other hand, it becomes perfectly fine when the nominal is associated with a synonymous container predicate 'essere portati a termine', *lit.* 'to be drawn to a close/end':

(i)   L'amministrazione di questa azienda è stata portata a termine con successo.

        lit. the construction of this building has been drawn to an end with success

f.　…è stata terminata.　　　　　→ bounded/telic

'…was finished/stopped'

g.　…è stata conclusa.　　　　　→ bounded/telic

'…was concluded'

Interestingly, in the case of an accomplishment base verb, the derived nominal accepts all the container predicates listed above, but it gives rise to different interpretations. Namely, *la costruzione di questo edificio* is acceptable in contexts triggering either a telic or atelic reading; but it accepts also containers eliciting (temporally) bounded but atelic interpretations (cf. (25)d.).

Besides, it is important to observe that, if the internal object of the nominal is expressed by a bare plural (a cumulative DP), the E nominal phrase can only give rise to atelic readings; it therefore rules out the (18)e. container predicate, because it requires a telic interpretation of the nominal phrase, which is unavailable in this case.

(26)　La costruzione di edifici (da parte dell'impresa)

'The construction of buildings by the company…'

a.　?/*…è stata completata.

'…has been concluded'

b.　…è terminata.　　　　　　→ bounded/**a**telic

'…is finished'

Nonetheless, the DP in (26) is fine with the container in (b) which triggers a bounded but atelic interpretation.

This fact proves that accomplishment nominals such as *costruzione* are neither telic or atelic at the lexical level, but that telicity arises at the level of syntactic-semantic composition with appropriate internal objects and predicative contexts. At variance with activity nominals, though, accomplishment nominals can yield telic readings, attesting that the fundamental lexical contribution to telicity in accomplishment predicates is preserved in the derived nominals.

3.4.1.2.4 Achievement nominals

Ex: *raggiungere* 'reach'→ *raggiungimento* 'reaching'

(27)　Il raggiungimento del traguardo…

'Reaching of the finishing line…'

a.　*…dura già da due anni.

'…has lasted for two years already'

b.　…portò via due anni.　　　　→ bounded/telic

'…took two years'

c.   …si compì in due anni.   → bounded/telic

'…ended in two years'

d.   *…è stato interrotto.

'…was interrupted'

e.   *…è stato completato.

'…was completed'

f.   *…è stata terminato.

'…was finished/stopped'

g.   *…è stato concluso.

'…was concluded'

Nominals from achievement verbs are compatible with predicates focusing on the final point, but excluding duration in a narrow sense, since they lexicalize punctual actions. On the other hand, they accept predicates which make reference to the preliminary stage leading to the finale state, as examples b. and c. demonstrate.

3.4.1.2.5   Summary

What emerges from these data is the general inability of Italian nominalizing affixes to change the actional type of a base verb. Container predicates may elicit the range of interpretations of a nominal to the same extent that syntactic composition, together with Tense and Aspect systems, are able to trigger different aspectual properties of the corresponding predicate. In other words, just as verbs are open to bounded or unbounded readings depending on the (inflectional) values expressed by the Tense and Aspectual systems, derived nominals are able to convey bounded or unbounded situational senses depending on the lexical-aspectual properties of the base verb and on the container predicates associated with them.[42]

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[42] This observation is clearly reminiscent of Pustejovsky's analysis (cf. section 2.3.2), which treats this clustering of meaning options of derived nominals as a case of logical polysemy. In particular, his claim is that derived nominals such as *examination* and *development* usually convey an activity reading, corresponding to an on-going interpretation, and the result state one. My suggestion is, in this respect, different, because I simply focalize on the (un)boundedness of a nominal which arises in a specific syntactic-semantic context, without claiming that the nominal actually conveys a result state reading. Further, I suggest that the possibility of a nominal to convey both a bounded and an unbounded interpretation does not represent a case of polysemy, but arises from the vagueness (or semantic underspecification) of the derived nominal with respect to this property.

3.4.2 The semantic contribution of E suffixes in Lieber's model

In the previous sections, *Aktionsart* properties of nominalizations have been analyzed in order to detect a possible influence of the nominalizing suffixes on the actional properties of the base verbs. I hope to have demonstrated that the most productive nominalizing suffixes lack an inherent actional value in their own semantic content. Therefore, the first of the research questions to be addressed is to precisely express the meaning of E nominalizing suffixes in Lieber's (2004) framework.

To start with, E suffixes are nominalizers, that is to say, they induce a categorial change over their bases. In Lieber's system a categorial change can only be brought about by those affixes bearing major ontological features, which correspond to categorial heads in generative morphology. In the case of nouns and noun forming affixes, the feature at stake is [material]: the equipollent use of this feature identifies the class of nouns, i.e. the syntactic/categorial equivalent of the ontological class of SUBSTANCES / THINGS / ESSENCES (« the notional correspondent of the syntactic category Noun » cf. Lieber, 2004: 24). As transpositional affixes, E suffixes induce abstraction over the situations they nominalize: therefore, following Lieber and Baayen (1999), I propose that the feature [material] will be characterized by a negative value [-material] (they form, in fact, abstract nouns).

The second observation is that these nouns preserve the basic actional value of their base verb: the lack of intrinsic *Aktionsart* specification of E suffixes can be expressed by means of the underspecified (±) use of the second of Lieber's ontological features, i.e. [dynamic], which is used to cross-classify SUBSTANCES / THINGS / ESSENCES and SITUATIONS.[43] As we have seen in section 3.4.1.1, [dynamic] is one of the features determining the actional value of a predicate (that is, its situation type). Since actional properties are not changed by E suffixes, I propose that the presence of [±dynamic], employed in a lexically underspecified fashion, implies the complete inheritance of the actional value of the base verb (these nouns are in fact abstract but also situational, in a broad sense). In other words, the [dynamic] feature being present but underspecified, the

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[43] Lieber (2004) explains that if morphologically simple nouns and noun-forming affixes can be semantically characterized by the feature [material] and sometimes by the presence of the feature [dynamic] as well, verbs and adjectives (and corresponding affixes) are only characterized by the presence of the feature [dynamic] and the absence of the feature [material]. This asymmetry in the distribution of features has the following ontological implication: lexemes characterized by [material] are SUBSTANCES / THINGS / ESSENCES which are ontologically necessary and thus prior to the semantic class of SITUATIONS. In point of fact, SITUATIONS always imply the presence of participants (or arguments) corresponding to the semantic class of SUBSTANCES / THINGS / ESSENCES: these latter, however, do not presuppose the semantic category of SITUATIONS.

suffix is compatible with both non-dynamic (states) and dynamic situations (activities / accomplishments / achievements).[44]

Thus, E nominalizing suffixes, which basically add the same semantic contribution to their bases and fall within the same paradigmatic slot of semantic derivation, cover a precise semantic space defined in terms of the following combination of functions:

(28)   Skeleton of E suffixes: [–material, ±dynamic ([   ], <base>)]

Although superficially similar to the skeleton proposed in Lieber and Baayen's (1999) rationale, the present skeleton differs from that offered in their solution (cf. (8)). *Contra* Lieber and Baayen, I suggest that:

a)   Such skeleton exclusively accommodates suffixes forming E nouns, which are those that inherit event structure (i.e. aspectual properties) and argument structure from their base verb;

b)   Further specification of [dynamic] is determined lexically, and not syntactically. The [dynamic] feature being unspecified with respect to a [+] or [–] value, the suffix is compatible with both non-dynamic (states) and dynamic situations (activities / accomplishments / achievements). What is more, I suggest that the suffix *inherits* this positive or negative specification from the verb it is merged with through co-indexation in the derivational process. This means that an E nominal like *ammirazione* 'admiration' denotes a non-dynamic situation because of the actional type of the base (*ammirare* 'admire' is a state verb, hence a [– dynamic] situation), and not as a consequence of inherent actional contribution.

c)   In addition, given this broad lexical semantic underspecification, I propose that the argument taken by the skeleton of E suffixes is able to bind an *Event* (=*E*) variable, instead of an *R* argument, through co-indexation.[45] I in fact suggest that this *E* role should be represented in the skeleton of all types of situations, in accordance with Higginbotham (1983; 1985) and Parsons (1990), who extend this *E* position also to states. This variable is the outermost argument of verbs, but it is non-thematic, i.e. it does not carry a thematic role nor does it correspond to an LCS participant. Since none of the LCS participants in the situation described by the base predicate is lexically bound in the co-indexation of E

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[44] The "underspecified" use of [dynamic] does not differ in a relevant way with respect to its "privative" use. With the diacritic [±], I simply emphasize that [dynamic] gets its specification in derivation (thorough co-indexation with the base argument).

[45] Cf. section 3.6.1 for discussion on the *E* variable. The role of this variable in the co-indexation of E nominals is fully explained in Chapter 5.

nouns, we have an explanation of why they can appear in syntax with full argument structure.[46]

3.4.3 Simple event nouns

As explained in Chapter 1, Booij and Lieber (2004) and Lieber (2004) assume that simple lexemes and affixes cover the same semantic spaces, and are organized in corresponding paradigmatic classes. In other words, because derived words extend the base lexicon of a language, affixes creating novel lexemes are expected to fall within the same lexical semantic paradigmatic classes of underived lexemes and have thus the same skeletal representations. Therefore, I suggest searching within the taxonomy of the ontological and semantic class of SUBSTANCES / THINGS / ESSENCES in order to individuate the semantic equivalent of E suffixes within the domain of simple lexemes:

(29)   SUBSTANCES / THINGS / ESSENCES

```
                          /\
              [+material]              [–material]
                /\                          /\
     [dynamic]        ---        [dynamic]        ---
        |              |             |              |
 autore 'author'  persona 'person'  festa 'party'   sera 'evening'
 cuoco 'chef'     tavolo 'table'    guerra 'war'     tempo 'time'
 attrezzo 'awl'   denaro 'money'    addio 'farewell' modo 'manner'
```
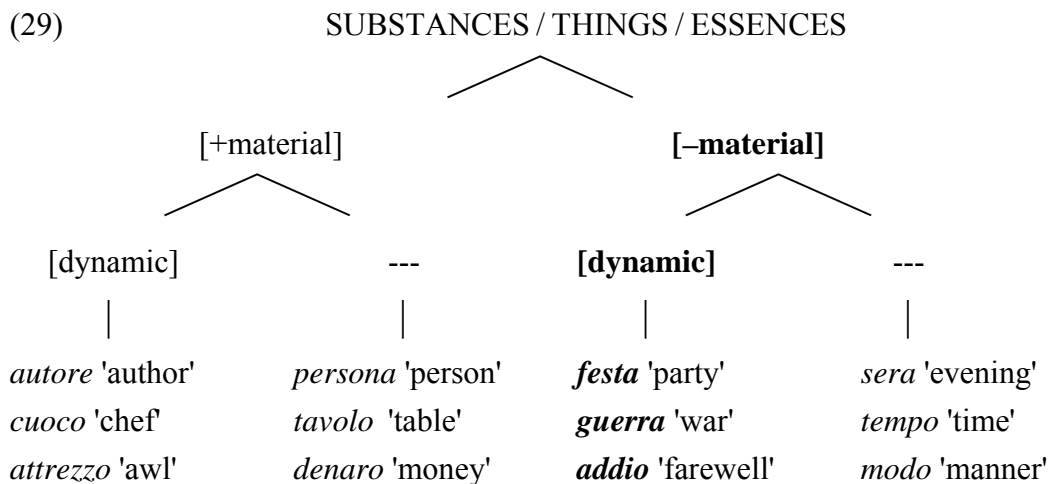
On the basis of the taxonomy in (29), it emerges that E derived nominals cover the same lexical semantic space of those nouns that Grimshaw calls simple event nouns (in boldface in (29)).[47] Actually, E derived nominals and underived simple event nouns do occur in the same syntactic-semantic contexts. They both can be associated with predicates like *accadere* 'occur', *aver luogo* 'take place' or *durare a lungo* 'last long', as shown by the analogous behavior of the underived *festa* and its near synonym *festeggiamento* 'celebration' in this respect.

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[46] Cf. Chapter 4 for further discussion on the syntactic behavior of E nominals.

[47] The classification in (29) is given on the basis of the taxonomy of English lexemes in Lieber (2004). In Lieber's account, there is no lexical specification of the [dynamic] feature of simple event nouns. However, see a different perspective on this point in section 3.5.2.1, where I propose that simple event nouns also come with inherent specification with respect to this feature.

(30) a. La festa di compleanno di Lucia è durata a lungo / ha avuto luogo un paio
         di settimane fa.
         'Lucy's birthday party lasted long / took place a couple of weeks ago'
      b. Il festeggiamento del compleanno di Lucia è durato a lungo / ha avuto luogo
         un paio di settimane fa.
         'The celebration of Lucy's birthday lasted long / took place a couple of
         weeks ago'

However, the two noun classes are not fully equivalent. For instance, as observed by Grimshaw, only complex event nominals (our E nominals) are characterized by an associated event structure, as indicated, for instance, by the chance of aspectual modification within E nominal constructions (cf. the lack of this option for the simple event noun in (31)b).

(31) a. La costruzione della casa (da parte dell'impresa) in pochi mesi
         'The building of the house (by the company) in few months'
      b. *La guerra (tra bande rivali) in pochi mesi/per pochi mesi
         'The war (between rival gangs) in few months/for few months'

As explained by Grimshaw (1990), actional properties of her complex event nominals can indeed be explained on the basis of an aspectual/event structure analysis associated with them. However, *contra* Grimshaw, my claim is that both event structure (also intended as a clustering of actional/aspectual features) and argument structure are not directly supplied by the suffix, but are instead inherited from the base verb and, specifically, from the *E* variable of the base verb, which is bound by the argument of the suffix in the co-indexation process of E nouns.[48] The suffix not only inherits the [+] or [−] specification of [dynamic] (which is an aspectual or actional feature), but also information about intrinsic contribution to telicity and inherent durativity (cf. Table (3)). In other words, deverbal nominals, through the binding of the *E* variable, preserve all the aspectual properties of the base verb and, because they inherit this aspectual dimension, they retain the argument taking properties of the verb too (cf. Chapter 5 for the formal implementation of the derivation of *E* nominals).

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[48] Although developing my solution from the opposite perspective of Borer's (2003) neo-constructionist approach to nominalizations, I agree with her solution in that I suggest that event structure and argument structure are inherited by the base verb, and are not supplied by the suffix.

3.5   R nominalizing suffixes

In the following sections, a comprehensive analysis of the denotations of *R* nominals is provided in order to capture a unitary lexical semantic representation of the semantic contribution of R suffixes. It will be shown that, although R nominals do not always refer to the product or result of an event, but express specific semantic values corresponding to other LCS participants in the situation denoted by the base verb, it is possible to isolate a core semantic import for this semantically composite class. In addition, I will try to shed light on the correlation between the aspectual properties of the base verb and the essence of the R interpretation, while a deeper analysis of the relation between the R interpretation of a nominal and the semantics of its base verb is deferred to Chapters 4 and 5, along with the details of co-indexation of both E and R nominals.

3.5.1 R nominals: a semantically heterogeneous class

In section 1.1.3, the semantic heterogeneity of the R class has been sketched out without specifying in depth what the core meaning of R nouns is. In the following sections, a deeper analysis of the meaning options of R nominals is provided, and a partition is established between PRODUCT, MEANS, ENTITY IN STATE readings on the one side, and SENSE EXTENSIONS on the other.[49] I propose that the former set of interpretations captures the core semantics of *R* nominals, and that all types in this set share a common aspect of meaning, and can be subsumed under a general ENTITY IN STATE label; on the contrary, SENSE EXTENSIONS are interpretations elicited by different factors, as I will show in section 3.5.1.5. Further, I also call attention to abstract PATH or MEASURE values, suggesting that the existence of such interpretations reveals interesting connections between the interpretation of R nominals and the aspectual properties of the base verbs (cf. section 3.5.1.4).

3.5.1.1   Product

Beginning with the analysis of the heterogeneous class of R nominals, I shall take into account those nominals which name the PRODUCT (or effect or outcome or result) of an action: this semantic value is prototypically associated with the class of so called result nouns that have been named in the literature on nominals after this predominant sense.[50] Typical examples in Italian are *costruzione* 'construction' and *traduzione*

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[49] From the following discussion I will exclude the interpretation known in the literature as *resulting state reading*, mentioned in section 2.3.2.1. The investigation of this semantic value, not always available to derived nominals, is left to future investigation (cf. Rainer, 2004 on the use of action nouns as quality or state nouns)

[50] These nominals are occasionally found in the literature with the evocative label of *Nomina Rei Actae*.

'translation' as referring to the entities or objects resulting from the carrying over of the action expressed by the base verb:

(32)   La costruzione accanto alla chiesa è crollata la settimana scorsa.
        'The construction next to the church collapsed last week'

(33)   La tua traduzione del testo di Prisciano è piena di errori.
        'Your translation of Priscian's text is full of mistakes'

In the sentences above, the nominals represent neither events nor states (or resulting states); *costruzione* and *traduzione* refer instead to entities, either concrete or abstract. The exact characterization of these nouns in terms of concreteness (or abstractness) seems to depend on the fine-grained lexical semantics of the base verb and the internal object it typically subcategorizes for. It is worthwhile noting in fact that *costruzione*, albeit usually denoting a concrete *artifact*, can also be employed with the meaning of an abstract entity, as (34) shows:

(34)   Le costruzioni sintattiche sono associate a specifiche classi verbali.
        'Syntactic constructions are associated with specific verb classes'

Furthermore, concerning (33), we can observe that a translation is an 'information object' in the sense proposed by Pustejovsky (1995). As such, it can refer to an abstract content, or can assume a more concrete manifestation (as an oral or written translation). If these nominals denote the ordinary and prototypical products/outcomes of the actions named by their verbal bases, it follows that verbal semantics should play a role in defining the possibility of such derived nominals to express a PRODUCT interpretation.

The PRODUCT interpretation seems totally unmarked from the viewpoint of a quantitative characterization. In particular, R nominals can be collective lexical items like *documentazione* 'documentation', *regolamento* 'regulation(s)', or mass nouns such as *distruzione* in the specific interpretations of 'debris/ruins', as well as singulative (non-collective) and countable items (cf. the above mentioned cases of *costruzione* or *traduzione*). Other examples are *allevamento* 'breeding / farm', *produzione* 'production' (in general, these collective lexemes display a locative sense extension, cf. 3.5.1.5.1). Again, this semantic property seems to depend on the intrinsic semantic value of the base verb and the type of effect(s) it typically produces.

Further, PRODUCT nominals can be subject to semantic shifts, which characterize both the simple and derived lexicon and are defined as (the effect of) *logical polysemy* in Pustejovsky (1995) and well exemplified with *dot-object* nominals like *book*. Such

simple nouns are in fact lexically polysemous between an interpretation as concrete / physical object and as 'information object'. The two senses, concrete vs. abstract, can be easily contrasted by means of different predicative contexts:

(35)   a.   That book is on the table.   →   concrete object
        b.   That book is very interesting.   →   information object

  Only in the second case does the syntactic-semantic context elicit the information-object meaning, which is instead blocked by the predicate of the first sentence. I refer to this semantic shift as *metonymic displacement* and, with Pustejovsky, I maintain that such logical polysemy is widespread in the lexicon, either morphologically simple or complex. In addition, these nominals are easily accommodated by co-predicative contexts, highlighting both of their clustered senses:

(36)   The book that you put on the table is very interesting.

  Nominalizations display an analogous behavior. The derived nominal in (33), *traduzione*, can in fact refer not only to the information-object *translation*, but also to the concrete container of the translated text:[51]

(37)   La tua traduzione del testo di Prisciano, che è stata più volte corretta, è stata messa sulla scrivania.
        'Your translation of Priscian's text, which has been revised many times, was placed on the desk'

  The sentence in (37) triggers two senses of the nominal at issue: the information-object meaning is elicited by the predicate 'be revised' which can only refer to the abstract content, while the predicate 'be placed' can only refer to the concrete manifestation of the translation.

  However, I suggest that word knowledge and context information only allow for the referential or denotative character of such nominals, highlighting their possibility of referring to specific, concrete entities. It is worth noting that the exact form of the concrete manifestation such translations take is not established *a priori*. Without a pragmatic context, there is no possibility to know whether *translation* refer to sheets,

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[51] Observe that if one uses *traduzione* to refer to a single translated word the concrete-object interpretation is pragmatically less plausible.

volumes, floppy disks, etc.[52] This implies that such nominals have an abstract sense which is primary (i.e. the information-object sense) and a concrete one which is derived by metonymic displacement. In principle, such a concrete interpretation might be available to all nominals associated with writing or image creation activities (in other words, events/activities implying the creation of an information object). Since these actions represent the core semantics of verbs such as *draw* or *write*, but seem to be determined by pragmatics and world knowledge in the case of *translate*, lexical semantics of the verbal base plays a minor role in determining a concrete meaning option for the derived nominal *translation*, which primarily has an information-object meaning.[53]

3.5.1.2 Means

Even if most R nominals indicate the product or effect of the action expressed by the verbal base, there are other instances of R nominals, that is to say nominals referring to objects or entities which play different roles in the situation denoted by the base predicate.

In point of fact, another common sense displayed by R nominals is the so called MEANS interpretation (already discussed in Bierwisch, 1991). Instances of this semantic option are *otturazione* 'filling', *verniciatura* 'painting', *argentatura* 'silver-plating'.[54] Typically, such an interpretation makes reference to the material/object used to perform a specific action; but, importantly, this entity can also be interpreted as the object or artifact resulting from the accomplishment of the action.

(38)   L'otturazione di/in questo dente è molto resistente.[55]
         'The filling in this tooth is very resistant'

(39)   L'argentatura di/su questo anello è molto sottile.
         'The silver-plating on this ring is very thin'

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[52] In this sense, there is also pragmatic-contextual information which disambiguates the interpretation of a nominal.

[53] One can translate a text without producing a concrete translation of that text.

[54] Many nominals conveying the MEANS interpretation are derived by means of *-tura* and many of these latter are mass nouns, when they are R nominals, but allow pluralization when denoting the situational value, disconfirming Grimshaw's diagnostics.

[55] Cf. the distinction, in Italian, between *otturatore* 'shutter' and *otturazione* 'filling': while the former is an intermediary instrument that is dynamically involved in the performance of the underlying event, the latter is simply a means, and is obviously non-agentive. In other words, the former is the intermediary instrument which is used to perform the action of *otturare*, in the meaning of closing-shutting; while the latter is the means but also the entity resulting from a filling event, which therefore captures a different nuance of meaning of the verbal base.

Because of this similarity with the abovementioned class, I suggest setting this specific MEANS value within the broader class of PRODUCT nominals. Moreover, both classes, MEANS and PRODUCT, can be grouped with other R nominals and subsumed under the generic label of ENTITY IN STATE, as I am going to explain in the following section.

3.5.1.3 Entity in State

A MEANS interpretation can be expressed by cases like *ostruzione* 'obstruction', *collegamento* 'connection', *isolamento* 'insulation', *decorazione* 'decoration', *impedimento* 'impediment', which can also be ambiguously interpreted as the product or output as well as the means used to perform the underlying events. However, contrary to the abovementioned MEANS (*argentatura*) and PRODUCT classes (*costruzione*), there are some predicative contexts that show that such nominals cannot always be interpreted as outputs of events, because they simply refer to objects/entities (also interpretable as natural types) participating in states (i.e., non-dynamic situations). This semantic distinction reflects the properties of syntactic mapping of the corresponding verb's arguments. The examples in (40)-(41) show in fact that R nominals like *ostruzione* and *collegamento* might exhibit a subject-like interpretation, whilst *argentatura* and *costruzione* cannot. However, when such a linking option is realized, the verb does not portray a dynamic situation but, crucially, it describes a state:[56]

(40) a. Occorre rimuovere l'<u>ostruzione</u> di questa valvola.
          'It is necessary to remove the obstruction of/in this valve'
      b. <u>Detriti</u> ostruiscono questa valvola.
          'Fragments obstruct this valve'

(41) a. I <u>collegamenti</u> fra Roma e Milano sono stati ristabiliti.
          'Connections between Rome and Milan have been re-established'
      b. <u>Questa via</u> collega due punti opposti della città.
          'This way connects two opposite points of the town'

This can be explained by the fact that such verbs, depending on the type of subject they take, can be interpreted aspectually as accomplishments or states. In fact, the inanimate subjects of *ostruire* 'obstruct' and *collegare* 'connect' coerce the dynamic interpretation of such verbs onto a non-dynamic actional characterization.[57]

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[56] Cf. section 3.6.2 for further discussion on the correspondence between R nouns and participants in the situation denoted by the corresponding base verb.
[57] Cf. Kratzer (2000) for similar observations.

The examples in (40)-(41) are very interesting because they call attention to a typical aspect of R nominals: that of denoting objects associated with states or with a stative component of verb semantics.[58] However, they exclude an interpretation of instruments/tools that perform, or are used to perform dynamic situations. This semantic peculiarity emerges if we compare the cases of *collegamento* or *argentatura* above with cases of instrument nouns such as *frullatore* 'mixer' / *stampante* 'printer': the latter are prototypical intermediary instruments which are involved in the performance of dynamic actions.[59] Hence, there is an intrinsic dynamic and agentive value in the semantics of such instrument nouns that R nominals typically lack instead.[60] Given the inherent non-dynamic specification of these R nominals, I give this meaning option the generic label ENTITY IN STATE in order to emphasize that these nominals prototypically denote objects/entities which play different roles in the corresponding non-dynamic situations.

That a stative characterization is at stake in R nominals is confirmed by cases of unambiguous statives like *preferire* 'prefer' and *conoscere* 'know', whose corresponding derived nominals *preferenza* and *conoscenza* denote the internal objects of the base verbs. Again, the R nominals refer to those (animate and inanimate) objects/entities associated with the states expressed by the underlying predicates.[61]

(42)   Le sue molteplici conoscenze ci sono state molto utili.

     lit. his/her numerous knowledges has been very useful to us

     a.   'His/her profound knowledge have been very useful to us'

     b.   'His/her numerous acquaintances have been very useful to us'

(43)   Le sue preferenze ci sorprendono sempre.

     'His/her preferences always surprise us'

---

[58] Pustejovsky (1991) observes that both accomplishment and achievement predicates are complex event structures, formed by a subevent of activity and a subevent corresponding to a resulting state. The latter is the subevent which is relevant for the LCS participant expressed by an R nominal.

[59] Note that instruments typically participate in the syntactic alternation Levin (1993:80) calls Instrument-Subject Alternation. Although associated with different syntactic realizations, subject and oblique, these elements share the same aspectual (accomplishment-causative) structure, as shown by the compatibility with the temporal *in-x-time* phrase in both the following sentences:

(i)   John printed twelve pages in 1 minute <u>with his brand new printer</u>.

(ii)   <u>The printer</u> printed twelve pages in 1 minute.

It is worth stressing that the actional value of the verb is preserved in these alternations, contrary to what happens with verbs like *collegare* 'link' where an inanimate subject (a means) turns the basic accomplishment value into a stative one.

[60] Analogous examples are *arredamento* 'furniture', *abbellimento* 'adornment', *decorazione* 'decoration', *sbarramento* 'barring/obstacle'. All the base verbs of these R nominals become stative when their subjects correspond to inanimate objects/means.

[61] As pointed out by Gaeta (2002), -(*an*)*za*/(*en*)*za* suffix shows a marked preference for non-dynamic situations, but it is not able to change the inherent *Aktionsart* of its base verb: therefore it behaves like -*mento*, -*zione* and -*tura* in this respect. Further, like these suffixes, -(*an*)*za*/(*en*)*za* also forms nominals displaying the relevant E/R ambiguity as shown by the examples in (42) and (43).

With psychological verbs (aspectually split between causatives/inchoatives and statives), instead, the R nominal might refer to the entity / object corresponding to the Source or STIMULUS of the psychological situation.

(44)   Ci sono molti divertimenti in questa città.
        'There are many amusements in this town'

Interestingly, an R nominal can never refer to the Experiencer of a psychological situation, which is usually expressed by means of other suffixes (*-ante/-ente* in Italian, cf. *amante* 'lover', *credente* 'believer'). Besides, psych R nominals tend to denote only inanimate entities. However, the STIMULUS meaning option is limited to a few cases of psych nominals, which usually only express a state reading (that is to say, the situational value expressed by E nominals).

With nominals obtained from achievement verbs, such as *rinvenimento* 'finding/discovery' (cf. also the near synonyms *ritrovamento / scoperta*), *vincita* 'win' and *acquisizione* 'acquisition', R interpretations can again fall within the ENTITY IN STATE subclass. In such cases, in fact, R nominals denote the entities associated with the resulting states of achievements, which express punctual / instantaneous changes of states.

So far, I have listed different meanings of R nominals, but I have also tried to bring to light a common property: all these nominals denote (prototypically inanimate/non personal) entities associated with specific states. In particular, however, differences in the interpretation of these nominals can be related with the base verb's aspectual properties:

a)   If an accomplishment value is detectable in the base verb, the R nominal typically denotes the product or result of the action, namely, the entity which is brought into a state of existence.
b)   If the base verb denotes a state, the R nominal refers to the (non-Experiencer) entity in that state (cf. also the *psych stimulus* denotation).
c)   If the base verb denotes an achievement situation, the R nominal can refer to the inanimate entity participating in the resulting state.

Therefore, I propose that the core semantic value of R nominals is represented by the ENTITY IN STATE class, intended as a macro-category including PRODUCT, MEANS (and other interpretations like the PSYCH STIMULUS meaning). (cf. Table (4) below).

3.5.1.4 Path and Measure

To continue our overview of the core meaning options of R nominals, I will focus on what I call the PATH reading: this label has been attributed in the literature to those *path* arguments (also *measure*, *extent* or *degree*) which measure out an event (cf. Jackendoff, 1990 for the notion of *path*, and Tenny, 1994 for the notion of *measuring out*). Concerning our deverbal nominals, this semantic value is more subtle and abstract with respect to those expressed by the ENTITY IN STATE class. As I will explain in the next chapter, a PATH reading emerges in correspondence with a specific aspectual value of the base verb semantics (namely, lexical contribution to telicity), and, accordingly, it only characterize a definite class of deverbal nominals. In particular, PATH nominals are derived from verbs which have a path component of meaning in their semantics and which lexically involve an underlying scalar structure (cf. Hay, Kennedy and Levin, 1999 for important observations concerning scalar structure in verbs). What I suggest in this section, deferring an adequate analysis of the issue to the next chapter, is that a PATH interpretation shows interesting correlation with the R nominals described so far, and that this connection hinges on the aspectual properties of the base predicate.

Let us start with a nominal like *prolungamento* 'continuation/extension', derived from the verb *prolungare* 'extend', aspectually pertaining to the class of *degree achievements* (cf. Dowty, 1979).[62] *Prolungamento* in (45) can be understood as a PRODUCT nominal, since it denotes the artifact obtained by means of an extension event:

(45)   Il prolungamento di questa strada è di proprietà privata.
        'The continuation of this road is private property'

However, it is interesting to note that there are predicative contexts highlighting that this nominal can also convey the abstract meaning of a spatial or directional path, with no need to refer to a specific, concrete entity:

(46)   Gli operai hanno prolungato la strada di 5 chilometri.
        'The workers extended the road <u>by five kilometers</u>'

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[62] Hay, Kennedy and Levin (1999) show that *degree achievement* is an inappropriate definition for this verb class that, aspectually, share many similarities with the activity-accomplishment class. Levin and Rappaport Hovav (1995:73) distinguish, within this verb class, between «(a)telic verbs of change of state» (*widen, dim, cool, harden*, etc.) and «(a)telic verbs of inherently directed motion» (*ascend, descend, rise, fall*, etc.). Degree achievements of the former class are peculiar because they can be both transitive and intransitive. Aspectually, the transitive form differs from the intransitive because it contains a causative component that the intransitive appears to lack.

(47)   Il prolungamento della strada ha superato i 5 chilometri previsti nel progetto
        iniziale.

        'The <u>extension</u> of the road exceeded the five kilometers estimated in the original
        project'

 (46) and (47) highlight the semantic equivalence between the measure or path phrase
that delimits the extension event described by the verb and the meaning of the
corresponding nominal. Now, concerning the PRODUCT interpretation of the nominal in
(45), things can be seen from a different perspective, if one considers that
prolungamento refers to the entity that *reifies* the (spatial) path which measures out the
extension event.

    The fact that such nominals can refer to an abstract path of meaning is made clearer if
we create a similar context for the antonym of *prolungamento*, i.e. *accorciamento*
'shortening', for which an entity reifying the underlying path covered by the shortening
event is ruled out as pragmatically implausible:

(48)   L'accorciamento della strada ha superato i 5 chilometri previsti nel progetto
        iniziale.

        'The shortening of the road exceeded the 5 kilometres estimated in the original
        project'

    Nonetheless, *accorciamento* is also able to convey a PRODUCT interpretation because
it can also denote the newly effected / transformed entity (e.g. *abbreviation*/*shortening*
in the specialized (linguistic) sense of a shortened word), which is obtained through a
(word-) shortening event.

    Nominals derived from a subclass of degree achievements, that is, verbs of directed
motion, which also have underlying directed path of meaning, display the same semantic
variety; *discesa*, from *discendere* 'descend', might refer to a spatial path, as shown in
(49), where it denotes the space covered by the directed motion event of the
submarine:[63]

(49)   La discesa del sottomarino ha ormai superato i 15 chilometri.

        'The descent of the submarine already exceeded 15 kilometres'

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[63] Among these nominals, however, *discesa* represents a special case since it is derived by means of a
nominalization process, the feminine of the past participle or, in short, *-ata* suffix, which has *Aktionsart*
properties distinguishing it from mere default nominalizers (like *-mento* and *-zione*) (cf. Gaeta, 2002,
among others). Unaccusative verbs that are inherently atelic, as verbs of inherently directed motion
typically are, are usually nominalized by means of *-ata*.

When expressing these abstract path or degree values, the nominals usually appear in the syntax with the internal argument, showing that PATH nominals are relational nouns, although they do not denote events.

Further, *discesa* can convey a concrete reading because it is partially lexicalized and commonly used to denote the physical entity which typically instantiates the descending path itself, i.e., a slope:

(50)   E' molto divertente percorrere questa discesa con la mountain-bike.
        'It is a lot of fun to go down this slope on a mountain-bike'

In the case above, the nominal is non-relational, and, accordingly, it does not take syntactic satellites.

To conclude, there is another interpretation, the MEASURE interpretation, which shares with the PATH reading, the fundamental reference to an underlying scalar structure expressed by the base: but, while a PATH reading arises in correspondence with a dynamic E nominal, in the case of the MEASURE interpretation the corresponding E nominal denotes a non-dynamic situation.

(51)   L'apertura alare di questo aereo è di 38 metri.
        'The wing span of this plane measures 38 meters'

In (51) *apertura* expresses the measure value of the distance between two edges of a plane. Analogously, the nominals in the following examples refer to the extent or degree of the underlying properties (concentration and extension, respectively).

MEASURE nominals are rather close in semantics and syntax to PATH nominals; both express a quantifiable extent/degree of a corresponding entity, and are in fact relational nouns.

(52)   La concentrazione di sale in questa soluzione è troppo elevata.
        'The concentration of salt in this solution is too high'

(53)   L'estensione di questa vallata è enorme: supera i 10.000 ettari.
        'The area of this valley is huge: it covers more than 10.000 hectares'

The MEASURE nominals in (51) through (53) entail the discharge of the syntactic satellite or modifier (*alare*, *di sale*, *di questa vallata*, respectively) corresponding to the entity of which the (measure of the) property is predicated.

However, while a PATH nominal refers to the path / extent of an underlying (dynamic) event, a MEASURE reading can only be associated with an underlying state. In the case of deverbal nominals, a measure reading can be expressed by those nominals which, besides a dynamic/eventive interpretation, can also express a result state reading. *Apertura, concentrazione* and *estensione* are in fact ambiguously dynamic and non-dynamic E nouns, and, interestingly, a MEASURE reading is expressed by deadjectival nominals denoting properties or qualities, like *lunghezza* 'length', *altezza* 'height', *intensità* 'intensity', etc.

PATH and MEASURE nominals do not describe concrete entities but lexicalize the scalar properties of base verbs (or adjectives). However, as we have seen with *prolungamento* 'continuation' and *discesa* 'slope', such lexemes can also refer to the concrete objects which reify the abstract paths of meaning.

In the next chapter, a classification of predicates based on the individuation of their specific aspectual and semantic properties will be developed in order to detect the basic components of verbal semantics that determine the interpretative options of their derived nominals. Crucially, as already suggested on the basis of the nominals presented in this section, it seems that the aspectual component of meaning (identified by a path or, more in general, by a scalar structure) of verb semantics might play a relevant role in determining the chance of an R reading for a derived nominal. In general, the hypothesis I will pursue is that the notion of PATH, as instantiation of a scalar property of verb semantics, can be employed for identifying not only PATH but also a relevant subset of PRODUCT nominals.

3.5.1.5 Sense Extensions

There are other non-E interpretations of action nominals which deserve discussion. These further meanings are grouped together in the present work under the label of *sense extensions*, but, because semantically heterogeneous, they should be split into the following subclasses:

- Agentive-Collective and Locative
- Manner, Temporal, and Factive

Nominalizations of the former subset – agentive-collectives and locatives – are sometimes found with the label of "result" or "referential" nominals, in particular within syntactic approaches, since, from a formal viewpoint, they are common nouns which do not exhibit argument structure. However, there is a general lack of attention to the Agentive-Collective and Locative classes, even in the domain of lexical semantics

studies, because these interpretations are not as common as the PRODUCT or MEANS nominals outlined in the previous sections.

Conversely, manner, temporal, and factive interpretations have been often listed as common sense extensions of action nominals (the factive interpretation, in particular, has been studied since Vendler, 1957). These readings, however, are not actual cases of lexical ambiguity; they are in fact triggered or coerced by the predicative context, and are due to the lexical vagueness (or imprecision) of Action Nouns, rather than being an expression of their actual polysemy.

3.5.1.5.1 *Agentive-Collective and Locative*

It is commonly acknowledged that the suffixes involved in the formation of transpositional nouns can also be employed to express a collective meaning in Italian (cf. Grossmann, 2004).[64] In the previous outline of the core semantic value of R nouns, we have seen that a collective value can characterize PRODUCT nominals or other ENTITY IN STATE nouns because the suffix is unspecified with respect to a quantitative characterization. While R nouns such as *documentazione* 'documentation', *regolamento* 'regulation', *allevamento* 'breeding', *produzione* 'production' are collectives, their same head suffixes are employed to form non collective / singolative nouns, as in *costruzione* 'construction', *ingrandimento* 'enlargement', *rivestimento* 'covering'. On the other hand, a different issue is that of collectives denoting groups of agentive individuals, since I have explicitly proposed that R nouns cannot be agentive. Specifically, I refer to derived nominals denoting groups of people agentively and dynamically involved in the performance of a certain activity, such as *amministrazione* 'administration', *redazione* 'editorial staff', *assistenza* 'assistance', *protezione (civile)* '(civil) protection', *difesa* 'defense'. Consider the example below:

(54) a. La nuova amministrazione ha modificato alcune delle regole di pagamento.
          'The new administration modified some of the payment rules'
      b. L'amministrazione è al primo piano.
          'The administration is on the first floor'

In (54)a., *amministrazione* denotes a group of people or an associated structure/institution involved in the performance of an administrative activity; but it can also refer to the place where such activity is carried out, cf. (54)b.

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[64] Grossmann (2004: 224) states « La categoria derivazionale dei nomi collettivi è realizzata mediante un gran numero di suffissi diversi. Tuttavia solo per pochi la formazione dei collettivi è la funzione primaria, la maggioranza di essi formano nomi d'azione, nomi di qualità, nomi di status, nomi di luogo ecc. con estensioni semantiche collettive. »

In general, agentive-collective and locative interpretations are obtained from verbs of (inherently atelic) activities; however, in those less frequent cases of accomplishment verbal bases, the nominal still refers to the group/assembly of Agents or to the place where the activity is performed. Hence, the meaning focus of these nominals is always on the activity component of underlying verb semantics, while the state component of verbs semantics is shadowed, if any.[65]

Concerning the relation between collective and locative extensions, it has already been observed in the literature on polysemy that there is a natural connection between names of place and names of groups/collectives. Locatives typically display the collective sense extension, but also the contrary case holds, as shown by Lieber's analysis of collectivizing English affixes (cf. the discussion on *-ery* in Lieber, 2004).[66] Concerning locative readings in nominals, however, it is worthwhile observing that the locative meaning is not always associated with a collective value. Cases can be found where just the former semantic option is available to the nominal, along with the E value.

(55)   L'entrata di questo palazzo è maestosa.
        'The entrance to this palace is magnificent'

As maintained by Apresjan (1974), action nouns are likely to be employed to refer to the places where such actions are carried over. This explains why *entrata* 'entrance', when denoting the place where entering events prototypically take place, does not need to be associated with a collective reading.

In the following example, the E noun *rianimazione* 'resuscitation' has a (primary) locative sense extension:

(56)   Il paziente è stato trasferito in rianimazione.
        'The patient was transferred to the resuscitation ward'

It is worth noting that a possible collective reading for *rianimazione* is, in turn, a sense extension from the locative meaning; in general, nominals indicating hospital

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[65] Compare, among the above-mentioned examples, *ammistrazione* and *redazione*: the first example is derived from an activity predicate, *amministrare* 'administrate', whilst the second is obtained from an accomplishment verb, *redarre* 'edit'. The presence of a possible complex structure in the event template is irrelevant because both the collective and locative values focus on the activity subevent of the accomplishment event (cf. sections 4.2 for a deeper analysis of verb semantics).

[66] Cf. also Nunberg (1995) and Cruse (2000) among the relevant literature on the collective – locative polysemy. Also Copestake and Briscoe (1995) propose that there is a natural sense extension from place to collectivity.

wards can be employed to refer to the patients or to the working staff in those wards. But this seems to an instance of the general sense extension pattern PLACE → COLLECTIVITY.

Let us consider again the agentive-collective extension. In Italian and English, there is a group of R nominals such as *riscaldamento* 'heating' (like in *riscaldamento centrale* 'central heating') or *illumina-zione* 'lighting', which have an ambiguous E/R reading. In their concrete interpretation, they refer to systems, plants, or to specific instruments (according to the DISC, for instance, *illuminazione*, in its concrete reading, is defined as 'l'insieme dei mezzi che danno luce ad un ambiente').[67] Interestingly, the meaning conveyed by these nominals is somehow comparable with the collective reading detected for *amministrazione* above. These nominals in fact do not refer to single entities but to systems/sets of objects performing (or used to perform) a certain activity. Of course, the constituent subparts of these complex entities do not have to correspond, ontologically, to a group of identical objects (for instance, *riscaldamento* 'heating' refers to a plant comprised of pipes, heaters, boiler, etc.). Nevertheless, a single word is used to lexicalize the grouping of different entities, because they all are involved in the performance of a shared activity. The similarity with cases like *amministrazione* 'administration' or *redazione* 'editorial staff' emerges if one observes that also these nominals do not denote a group of administrators or editors, but a team of people playing different roles in the performance of a common activity (*administer* and *edit*, respectively). In this respect, there is a difference between simple lexemes like *gregge* 'flock', as a group of distinct but similar entities (the sheep), on the one side, and words like *amministrazione / riscaldamento*, on the other. In these latter cases, the possible dissimilarity of the individuals composing the collective entity follows from and is overcome by the situational value expressed by these nominals (note that a situational value is instead missing in a collective lexeme like *gregge*). In other words, the collective value is in these cases accompanied by the property of sharing a common inherent actional value, and explains the fact that the single constituents do not need to be ontologically equal.

The reason for grouping collective and locative interpretations is radically different from that identified for the ENTITY IN STATE class of R nominals: we have seen so far that different senses of R nominals can indeed be put together because they share similar semantic properties. In the case under discussion, however, agentive-collective and locative senses can be grouped under the same label because they share the same "origin". Specifically, following Lieber (2004) and Booij and Lieber (2004), I suggest that these interpretations come out as «paradigmatic extensions under pragmatic

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[67] Tr. 'the complex of devices producing light in a place'.
Lately, the word *illuminazione* has started to be used as a synonym of lamp/light, but it preserves a rather technical flavour and it is not employed in everyday language with such meaning.

pressure». Agentive-collective and locative can be expressed by means of E/R suffixes, because there is, in the morphological system of Italian, a lack of derivational affixes that express those meanings.[68] According to Booij and Lieber (2004) and Lieber (2004), when there is a pragmatic pressure, that is to say, a real-world need to create words with specific meanings, but there is no productive and systematic morphological means to produce words with those meanings in a given language, then the closest productive derivational means may be put to use to fill the semantic gap. In the morphological system of Italian, E/R suffixes are the semantically closest affixes which can be used to express each of the meanings listed above.

Affixes such as *-mento, -zione, -tura*, etc. (cf. Table (2)) can form nominals denoting both abstract and concrete entities; moreover, they can form collective or mass and countable nouns. These nominal affixes are therefore unspecified with respect to an inherent concrete or abstract, and also lack an intrinsic quantitative specification. Because Italian does not have dedicated morphological means for expressing the cluster of agentivity and collectivity, I suggest that E/R affixes are employed to form *agentive*-collective (such as *amministrazione, redazione*), even though agentivity is usually excluded by the lexical semantics of these affixes. It is worthwhile noting that an agentive suffix like the Italian *-tore* is too definite and specific from a semantic viewpoint to be employed in the derivation of agentive-collective nouns (cf. Bisetto, 2006); *-tore* only forms singular countable nouns, and cannot form collectives instead. E/R suffixes, on the other hand, can be employed in the derivation of nominals denoting both singulatives and collectives, and are therefore unspecified in this respect. Besides, E/R suffixes (displaying a double skeleton) have both the properties characterizing agentive-collective lexemes, since they can be material and dynamic, as Agent nouns also are.

Likewise, concerning locative sense extensions, Italian lacks productive systematic morphological means for the formation of locative nouns from verbal bases (in other words, name of places with a situational flavor). Lo Duca (2004:234-240) lists the suffixes employed to form names of place in Italian, but, importantly, these suffixes mainly operate over nominal bases, that is, lexemes taking a [±material] outermost function in their skeleton. This means that the locative lexemes formed by such suffixes crucially lack the situational component of meaning which is instead conveyed by locative nouns obtained by means of *-zione, -mento, -ata, -aggio*, etc. Other dedicated suffixes for the expression of the place where certain activities are performed are described by Lo Duca (2004: 374-376). Affixes such as *-eria* and *-toio/toia/torio* can select verbal bases (conceptually, SITUATIONS); but, first, they display a low

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[68] The affixes that compose the morphological system of a language do not always cover the semantic spaces expressed by simple lexemes in the overall lexical system.

productivity, and, what is more, they have specific/restricted semantic uses. For instance, *-eria* occasionally forms nouns such as *segheria* 'sawmill', *stireria* 'laundry', which indicate the specific places where the professional activities expressed by the base verbs are performed. Nevertheless, *-eria* is most often employed to form nouns from other nouns (e.g. *birr-eria* 'brewery/pub', *profum-eria* 'perfumery', etc.). The case of *-toio/torio* (and its feminine variant *-toia)* affixes is more interesting, because these suffixes are primarily employed in the formation of instrument nouns (e.g. *innaffiatoio* 'watering can'); in other words, also for these affixes the formation of locative nouns seems to result from a paradigmatic sense extension of a different (primary) meaning.

Given the broad semantic underspecification of transpositional suffixes, which form situational nouns, the fact that they are often employed to indicate the place where the activities expressed by the base verbs are carried out should not be surprising.

If compared with the core R interpretation outlined in the previous sections, it emerges that these sense extensions are semi-productive, because they do not represent the prototypical interpretations of derived nominals and arise to answer specific pragmatic needs. The semantic extension of the core meaning of these affixes in order to express other semantic values represents in fact a violation of the normal co-indexation options of E/R nominals.

3.5.1.5.2 Manner, Temporal, and Factive

The second subset of sense extensions associated with action nominals qualify as radically different cases from the agentive-collective and locative interpretations just discussed. If the latter are sense extensions arising in the lexicon as instances of actual polysemy, manner, temporal and factive readings are a consequence of the vagueness of action nominals, and are triggered by the syntactic-semantic predicative context (although some action nominals are partially lexicalized with either a manner or temporal sense extension, see below).

Since the earliest studies on nominals (cf. in particular Vendler, 1967), it has been shown that action nominals are likely to express different meanings depending on the context (or *container*, in Vendler's terms) in which they appear. For instance, it seems that a manner interpretation can be commonly expressed by an action nominal. There are in fact specific predicative contexts that focus on the manner in which a certain action is performed:

(57)   La sua amministrazione dell'azienda è stata irresponsabile.
        'His/her administration of the company was irresponsible'

(58)   L'accoglienza degli ospiti (da parte di Gianni) è stata poco calorosa.
        '(John's) welcoming of the guests was scarcely friendly'

That the manner interpretation is connected with the E interpretation of a deverbal nominal is also proved by its syntactic behavior. A manner interpretation can arise where full argument structure accompanies the nominal (cf. (57) and (58)). Simple event nouns, like *guerra* 'war' or *gara* 'race', also exhibit the same vagueness of deverbal nominals, and show that a manner reading is usually associated with an event interpretation:

(59)   a.   L'incessabile guerra contro i miei vicini mi sta facendo impazzire. →EVENT
              'The constant war against my neighbors is making me crazy'
        b.   La guerra tra Israele e Palestina è estremamente sanguinosa. → MANNER
              'The war between Israeli and Palestine is extremely bloody'

However, there are action nominals like *scrittura* 'writing/calligraphy' that are lexically associated with a manner sense, and others that only denote a manner reading because they have completely lost the original E value:

(60)   Gianni ha un portamento fiero.
        'John has a proud bearing'

(61)   Gianni si muove con un'andatura spedita.
        'John moves with a swift walk'

As explained in Chapter 1, these nominalizations are lexicalized forms (they are frozen with a manner value), and do not represent good cases for the purposes of the present research because they are no longer compositional in meaning.[69]

Temporal values are also often cited in the literature as cases of semantic extension displayed by action nominals. Of course, the temporal sense extension is very close in meaning to the E semantic value, since events are prototypical temporal objects. In general, every action nominal can denote the time span it covers, in particular when

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[69] Nominals obtained by verbs which have an intrinsic manner component of meaning are likely to convey a manner interpretation, and such reading can become part of the lexical meaning of the derived nominal. Consider manner of motion verbs, for instance: their nominals (usually suffixed by –*ata* / or the feminine past participle) like *camminata* 'walk', *corsa* 'run', *nuotata* 'swim' saliently convey the manner interpretation, besides the E reading.

inserted in specific syntactic constructions which highlight the temporal extent of the event, like "*durante* 'during' + action nominal" (e.g. *durante la costruzione della casa* 'during the construction of the house'). However, some action nominals are lexically associated with the temporal sense extension. *Allattamento* 'breastfeeding', *aratura* 'plowing', *fioritura* 'flowering/bloom', *fidanzamento* 'engagement', for instance, are cases of action and time-denoting nominals; in particular when used without syntactic satellites, these nominals might not only refer to specific events, but also to the time-spans over which the corresponding actions are performed.

(62) a. L'allattamento dei cuccioli (da parte della madre) avviene diverse volte nell'arco di una giornata.
'Puppies' feeding (by the mother) occur numerous times during a day'
      b. L'allattamento è un periodo di durata variabile.
lit. breastfeeding is a period of variable length
'Breastfeeding can have variable duration'

In the example above, the nominal *allattamento* is used to denote specific feeding-events (cf. (62)a.), but it also expresses the overall period of time over which such events usually take place (cf.(62)b.). In the former case, the eventive character is focused, while in the latter this eventive (situational) character is overshadowed (i.e. non-emphasized) and the time-span reading is instead triggered.

Again, simple event nouns show the same vagueness in this respect:

(63) a. La vendemmia comincia a fine agosto.
'Grape harvest starts at the end of August'
      b. A pranzo di solito non mangio, perché faccio una colazione abbondante.
'At lunch I do not usually eat, because I have a rich breakfast'

Concerning a., like in the case of *allattamento,* the predicative context highlights that *vendemmia* 'grape harvest' does not refer to a single grape harvest, but to the whole period of time over which such action typically takes place.

In b., instead, *pranzo* is employed not to refer to a food-consumption event, but to the time-span at which one usually has lunch.[70]

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[70] Observe that nominals lexicalizing near-instantaneous events, such as *raggiungimento* 'reaching', *scoperta* 'finding', do not allow this sense extension. That is to say, the temporal sense extension is generally obtained by event descriptions involving significant duration.

Finally, as first pointed out by Vendler (1957; 1967), action nominals can typically display a factive reading besides the actional/transpositional one. Let us consider the nominal constructions in (64)-(65):

(64)   La sospensione dei festeggiamenti è avvenuta a mezzogiorno.
        'The suspension of the celebrations took place at midday'

(65)   a.   La sospensione dei festeggiamenti è un fatto.
              'The suspension of the celebrations is a fact'
        b.   Gianni mi ha informato della sospensione dei festeggiamenti
              'John informed me of the suspension of the celebrations'

The nominal in (64) unambiguously denotes an event; only events can "occur" or "take place". The nominal constructions in (65) have instead a factive reading. Facts are eternal and timeless objects (cf. Asher, 1993); hence, they cannot take place, nor they 'last' over time, but can instead be denied, can cause other events and emotional reactions, etc.

Importantly, as already pointed out by Zucchi (1991), Asher (1993) and Pustejovsky (1995), the factive interpretation « is due to the coercive property of factive predicates such as *inform* and *be a fact* rather than the inherent semantics of the event nominal itself. » (Pustejovsky, 1995: 176). If the factive interpretation is *coerced* or elicited by the context or *container* sentence, then it means that it emerges at a level of syntactic-semantic composition which is 'higher' than the lexical one.[71] In fact, nominals with factive interpretation have the same argument structure properties of E nominals, while the E/R distinction, which is an example of lexical ambiguity, notoriously correlates with distinct argumental properties. Event-denoting nouns in the simplex lexicon domain show the same kind of vagueness, and allow for factive interpretations in the appropriate coercing contexts:

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[71] Interestingly, nominals can be found that do not allow the fact reading, and this fact can be due to lexical constraints (I thank Denis Delfitto for bringing this problem to my attention and for fruitful discussion). It seems in fact that only nominals derived from verbs denoting a state or containing a change of state component as part of their meaning can be felicitously inserted in a factive context:
(i)   *Ho constatato l'amministrazione dell'azienda.
           'I ascertained the administration of the company.'
                         vs.
(ii)   Ho constatato la rottura del condizionatore.
           'I ascertained the breaking of the air conditioner.'
The discussion of this issue is beyond the goals of the present analysis, mostly focused on lexical polysemy, and is left for future analysis.

(66)   Sono stato informato della guerra in Iraq.
         'I was informed of the war in Iraq'

I conclude this analysis by adding that evidence for this "vagueness" of E nominals is given by the fact that manner, temporal and factive interpretations can be coordinated in contexts of co-predication, where different predicates might trigger different senses of the same co-referential subject:

(67)   L'amministrazione$_i$ di questa azienda da parte del gruppo Pirelli è durata per diversi anni, ma Ø$_i$ è stata disastrosa.
         'The administration of this company by the Pirelli group lasted for several years but it was a disaster'

In the sentence above, the Event and Manner senses of the nominal *amministrazione* are both accessible for coordination (in particular, the first predicate triggers the E interpretation, while the second elicits the manner interpretation of the nominal). On the other hand, it seems instead much harder to coordinate action nominals with truly polysemous senses:[72]

(68)   *L'amministrazione$_i$ di questa azienda è appena iniziata ed Ø$_i$ è composta di persone capaci / ed Ø$_i$ è al primo piano.
         'The administration of this company has just begun and it is composed of skilled people / is at the first floor'

The fact that the E and the agentive-collective or locative meanings cannot be felicitously coordinated in the above sentence is evidence that they are semantically incompatible (though related) meanings of the same lexeme.

3.5.1.6   Summary

Before concluding this brief overview of the heterogeneous class of R nominals, it should be stressed that, in opposition to Grimshaw's analysis, R nominals cannot be systematically associated with simple event nominals (cf. Grimshaw, 1990). Despite their sharing of the same syntactic properties, R nominals do not usually denote events/situations, while simple event nouns systematically do. From a strictly semantic viewpoint, in fact, I have already shown that simple event nouns resemble E derived

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[72] Cf. Copestake and Briscoe (1995) on sense extension and co-predication. But see also Gaeta (2004) for an analysis of the coordinability tests applied to action nominals.

nominals, the two nominals differing in their morpho-syntactic properties (cf. in particular Grimshaw's tests in Table (1), and concerning discussion in section 3.2.2.2). R nominals cannot occur in the same contexts of E and simple event nouns; in (69), *costruzione* 'construction' as synonym of edifice does not accept the same predicates which accommodate instead situation-denoting nouns.

(69)   *La costruzione è avvenuta / ha avuto luogo l'anno scorso.
       'The construction occurred / happened last year'

To conclude, in this section I have listed some of the most common nominals going under the R label: while most R nominals refer to the PRODUCT (or outcome/effect) of the action (i.e. dynamic situations) named by the verbal base, other nominals display non-eventive readings and denote concrete or abstract entities which cannot be reduced to or grouped together with the PRODUCT interpretation. However, even if the R class shows little homogeneity, some features identifying the core sense of R nominals can be found. R nouns can denote either concrete or abstract entities but exclude any reference to events, processes or states (in a single term, to situations). Put differently, while E nominals can only refer to situations (resulting states included), R nominals can only denote objects/entities (in some cases they can also denote animate entities); furthermore, the core sense of R nominals is always situational in character, but is also characterized by a negative specification of dynamicity. This means that R nominals can never denote Agents or Instruments, i.e. LCS participants agentively involved in dynamic situations. Within the macro-category of what I have called the ENTITY IN STATE class, PRODUCT nominals only represent a subclass: they denote things/entities that result from an event that is a change of state.

Sense extensions, as explained in section 3.5.1.5, are instead distinct from the core sense of R nominals, as they represent semantic options (more or less frequently associated with E/R nominals) which arise under pragmatic and paradigmatic pressure (the need to create a specific word) and lack of dedicated morphological means for expressing a specific semantic content.

The meanings of R nominals can be summarized as in the following table:

Table (4)　　*Meaning options of R nominals*

R NOMINALS	
ENTITY IN STATE *(LOGICAL/ INHERENT POLYSEMY)*	**PRODUCT**: *costruzione* 'construction', *traduzione* 'translation' *documentazione* 'documentation' **MEANS**: *argentatura* 'silver-plating', *otturazione* 'filling', *verniciatura* 'painting-coat' *ostruzione* 'obstruction', *collegamento* 'link/connection', *impedimento* 'impediment', *preferenza* 'preference', *conoscenza* 'knowledge', *vincita* 'win', *sorpresa* 'surprise', *attrazione* 'attraction', *intrattenimento* 'entertainment'
ABSTRACT VALUES	**PATH**: *prolungamento* 'continuation', *accorciamento* 'shortening', *discesa* 'descent' **MEASURE**: *concentrazione* 'concentration', *apertura* 'span'
SENSE EXTENSIONS *(POLYSEMY)*	**AGENTIVE-COLLECTIVE**: 1) groups of people: *amministrazione* 'administration (staff)', *direzione* 'management (staff)' 2) systems/plant: *riscaldamento* 'heating', *illuminazione* 'lighting' **LOCATIVE**: *direzione* 'management (office/place)', *entrata* 'entrance'

Finally, other readings emerge in specific contexts because of the vagueness of E nominals, and are not referential in a narrow sense.

Table (5)　　*Sense Extensions of E nominals*

SENSE EXTENSIONS *(VAGUENESS)*	**MANNER**: Any; lexicalizations: *portamento* 'bearing', *andatura* 'walk/gait'
	TEMPORAL: Any; specialized meanings: *fioritura* 'bloom', *allattamento* 'feeding'
	FACTIVE: Any (excepting for activity nominals)

In the following section, I will provide a more specific semantic characterization of the ENTITY IN STATE category, which represents the core meaning options of R derived nominals. In particular, I will offer a representation of the semantic-grammatical skeleton of R suffixes, which are the heads of these complex forms, but I will also investigate the properties of the semantic-pragmatic body of R derived nominals.

3.5.2 The semantic contribution of R suffixes in Lieber's model

The listing of meaning options conveyed by R nominals has revealed that these nouns sketch out a very complex picture from the interpretative viewpoint. From this picture, I suggest excluding for a while those R nominals defined above as path/measure values and sense extensions: while the former class will be explored in the next chapters, I have already explained that sense extensions do not represent the core meaning of R nominals and are instead to be explained as paradigmatic extensions under pragmatic pressure or as interpretations only triggered by the predicative contexts. In order to determine the skeleton of R suffixes, therefore, I shall concentrate on the macro-category of Referential lexemes defined with the general name of ENTITY IN STATE.

Like E nominals, R nominals are lexemes pertaining to the lexical semantic category of SUBSTANCES / THINGS / ESSENCES: as such they are defined by the major ontological feature [material], which is the outermost function of their skeleton. However, since *R* nouns denoting both concrete and abstract entities[73] can be found, I suggest that their heads, i.e. *R* suffixes, are characterized by the underspecified use [±] of the [material] feature. This implies that R suffixes are not intrinsically marked with respect to concreteness/abstractness.[74] The [+] or [−] value of this feature is determined at the lexical level, through the co-indexation mechanism; in particular, this positive or negative value depends on the concrete or abstract characterization of the relevant argument which is bound in the co-indexation process. For instance, an *R* nominal like *rinvenimento* has [+material] as the outermost feature of its skeleton because the internal

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[73] The term «entity» is here used not only in opposition to the class of SITUATIONS, but also in opposition to those lexemes that denote situations but pertain to the class of SUBSTANCES/THINGS/ESSENCES (i.e., these lexemes are Nouns), namely, simple event nouns and E nominals. According to the present use, entities can be abstract or concrete but cannot denote situations.

[74] In a previous version of this work, I proposed that [material] is used in a privative fashion in the skeleton of *R* suffixes. However, R. Lieber suggested to me that a privative use of [material] implies that you could have a nominalization that lacks [material] altogether, which is not the case. Further, the proposal of underspecification of [material] is more consistent with Bisetto and Melloni's (forthcoming) formal representation of *E* and *R* suffixes.

object of the verb *rinvenire* 'find', which is bound in co-indexation, corresponds to a concrete object.[75]

Furthermore, similar to E nominals, R nominals are also situational, but in a different sense. The underspecified use of the feature [dynamic] in E suffixes simply indicates that they are employed to form lexemes which denote situations (prototypical [±dynamic] lexemes). But, what about R suffixes? How do we capture their situational characterization in Lieber's featural model?

On the basis of the overview of the R class offered in the previous sections, a semantic characterization of R suffixes can only imply that R nominals denote referential entities and, as to their situational component, that such entities are involved in non-dynamic situations (they therefore lack agentivity and all other properties characterizing Agent nouns in general). Generally defined as ENTITIES IN STATE, R nominals simply denote those objects (artifacts, natural kinds and individuals)[76] which participate in the non-dynamic situations expressed by the base verbs. While in the case of PRODUCT nominals the state at issue is the one indicating the existence of a certain artifact, in the case of ENTITY IN STATE nominals, the state at issue is the one that the R entity plays a role within: as subject/means in *collegamento* 'connection', as object/patient in *rinvenimento* 'finding/discovery', but also as subject/psychological stimulus in *divertimento* 'amusement'. I therefore suggest that the feature [dynamic] should be used in an equipollent sense, and, in particular, it should be negatively specified in the skeleton of R nouns. As far as quantitative meaning is concerned (this information is expressed with the [±CI] and [±B] features in Lieber's framework), R suffixes appear as underspecified, because R nouns can be found which denote either individuals or collectives.

Consequently, I propose that the semantic-grammatical skeleton of R suffixes is represented by the following combination of functions, where the highest/first argument is an *R* variable capable of binding one of the LCS participants in the situation described by the base verb:[77]

(70)   *the skeleton of R suffixes*   [±material, −dynamic ([   ], <base>)]

Contrary to what Lieber and Baayen (1999) have suggested, it is not the syntax which determines the [−] value of [dynamic], but it is the lexical semantic skeleton of R suffixes that already contains such specification. What is more, since R suffixes take an external *R* argument and form referential nouns, it is expected that R nominals do not imply discharge of obligatory arguments. As common nouns, they can be absolute, like *dog*, or relational ones, like *biography*. This possibility of R nominals seems to be a direct consequence of the functioning of co-indexation at work in derivation (whose details are omitted for the moment):

(71)   a.   La tua creazione è più originale della mia.
              'Your creation is more original than mine'
        b.   La tua traduzione di questo testo latino è piena di errori.
              'Your translation of this Latin text is full of mistakes'

In (71)a. the noun is non relational because the R suffix binds the internal object of the base verb, so that it cannot be discharged in the syntax. In (71)b. the suffix does not bind a true syntactic argument (*traduzione* does not correspond to a syntactic argument but to the implied result of the corresponding event); therefore, both LCS participants (corresponding to Agent and Source) are available for optional syntactic discharge.

The skeletal representation of R suffixes appears as very unusual especially if we acknowledge Lieber's (2004) predictions concerning the fact that: a) nouns do not come with intrinsic specifications for [dynamic]; and b) a single suffix capable of forming [+material] and [−material] lexemes at the same time should not exist in a language. In order to give explanation for the markedness of the skeletal representations of R suffixes, I shall try to identify their semantic counterpart in the domain of simple lexemes, analyzing issues a) and b) in sections 3.5.2.1 and 3.5.2.2 respectively.

3.5.2.1   The situational character of R suffixes

To begin with, I have already observed in section 3.5.1.3 that the [−dynamic] featural specification of R nominals clearly emerges if we compare them with the lexical semantic class of those nominals named by Lieber and Baayen (1999) and Lieber (2004) as *concrete processual*. Underived nouns like these typically denote Agent or instrument/tool nouns. In the domain of underived lexemes, *attrezzo* 'tool' and *coltello* 'knife' are prototypical examples of instrumentals, while their semantically

corresponding derived nominals are formed with affixes such as *-tore* or *–a/ente* in Italian and *-er* in English (e.g. *frullatore* 'mixer', *disinfettante* 'disinfectant').[78]

Nominal lexemes such as *coltello* refer to entities which are typically involved in [+dynamic] situations. Lieber (2004) proposes that the precise sense of the situational character of these nouns is inferable from their bodies.[79] Assuming that the body of nouns contains some of the information expressed in Pustejovsky's (1995) Qualia Structure, Lieber suggests that all these nouns have (purpose) TELIC senses which are most prominent (cf. section 3.5.3 for a presentation of Qualia Structure).[80] To give an example, in the case of an instrument noun like *coltello* 'knife' the (purpose) TELIC quale is expressed by the event predicate 'cut' (cf. Pustejovsky, 1995:100): a knife cuts or is used to cut, which is a dynamic situation.[81]

Within the domain of derived lexemes, R nominals like *copertura* 'covering', *completamento* 'completion', *collegamento* 'connection' are also concrete situational nouns; in other words, they can also have uppermost TELIC senses.[82] However, the predicate involved in the (purpose) TELIC of these R nominals is expressed by a [−dynamic] situation (i.e. state), instead of a [+dynamic] one (cf. *coltello-tagliare* 'knife-to cut'). *Copertura* denotes an entity that «covers/lays upon» another entity. Exploring the domain of simple/underived lexemes, nouns like these are *tetto* 'roof' or *ponte* 'bridge':

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[78] This does not imply that such agentive suffixes come with an inherent [+dynamic] feature. On the contrary, as pointed out by Bisetto (2006), *-tore* has a [+material, dynamic [( )]] skeleton, where dynamic is used in a privative fashion. However, because of the semantic restriction 'bound to' imposed by this suffix on the relevant argument of its base, the existence of words such as *contenitore* 'container' (from the state verb *contenere* 'contain'), not very different from *collegamento* 'connection' from a semantic viewpoint, is expected. This shows that, given the underspecification of the skeleton of all suffixes and the absence of a body associated with them, there might be cases of semantic overlap between suffixes in a morpho-lexical system of a natural language.

[79] My proposal is somewhat different with respect to Lieber's, as I will clarify below: while in her proposal, as to the skeletons of SUBSTANCES / THINGS / ESSENCES, [dynamic] is only used in privative way, in the present account this feature is used in binary fashion.

[80] In the present investigation, the semantic/pragmatic body is expressed with a structured and decompositional semantic block, that is to say, in terms of qualia structure representation, as proposed by Pustejovsky (1995). The qualia structure of an item is composed of four levels: FORMAL, CONSTITUTIVE, TELIC and AGENTIVE. The TELIC quale, in particular, expresses information about the purpose and function of an object (hence, it has noting to do with *aspectual telicity*). Cf. section 3.5.3 for a more detailed explanation of qualia structure.

[81] It is worth specifying that, according to Pustejovsky (1995: 99), there are two modes of the TELIC quale:
 «direct TELIC: something which one acts on directly»
 «purpose TELIC: something which is used for facilitating a particular activity»
For a noun like *beer* its direct TELIC, i.e. its purpose, is expressed by the predicate *drink*, where *beer* corresponds to a variable which is the object of the activity predicate; for a noun like *knife*, instead, the purpose TELIC is defined by the predicate *cut*, and *knife* corresponds to a variable which is the external argument/subject of this predicate. It is not unexpected, hence, that R derived nominals having a purpose TELIC quale are most likely to be associated with arguments occupying a subject position with respect to those which have direct TELIC quale in their qualia structure representation.

[82] Actually, nominals like *copertura /ostruzione* are ambiguous because they can be used to denote both artefacts (products) and natural types: while in the latter case the (purpose) TELIC sense is the uppermost, in the former it is the AGENTIVE quale which is focused. Cf. discussion in the next section.

these lexemes have very general meanings (objects which cover and link/connect, respectively, other entities), where their situational character is particularly prominent, as proved by the polysemous range of uses they typically display.

It should be clear now that what I am suggesting is to implement Lieber's taxonomy of SUBSTANCES / THINGS / ESSENCES in (29) by splitting each class of [±material, dynamic] nouns in two subclasses where the situational character is specified in terms of a [+] or [−] value of dynamicity respectively.

Of course, looking at this implemented taxonomy, we will expect to find underived near synonyms of R nouns in two classes at least: the one of [+material] and the one of [−material] SUBSTANCES / THINGS / ESSENCES, both further specified as [−dynamic]:

(72)

SUBSTANCES/THINGS/ESSENCES

[+material]			**[-material]**	
[dynamic]	---		[dynamic]	---
[+dynamic]	**[–dynamic]**		[+dynamic]	**[–dynamic]**
coltello 'knife'	*tetto* 'roof'	…	*esame* 'exam'	*verdetto* 'verdict' …
cuoco 'chef'	*ponte* 'bridge'	…	*pranzo* 'lunch'	*idea* 'idea' …
maestro 'teacher'	*perito* 'expert'[83]	…	*concerto* 'concert'	*amore* 'love'[84] …
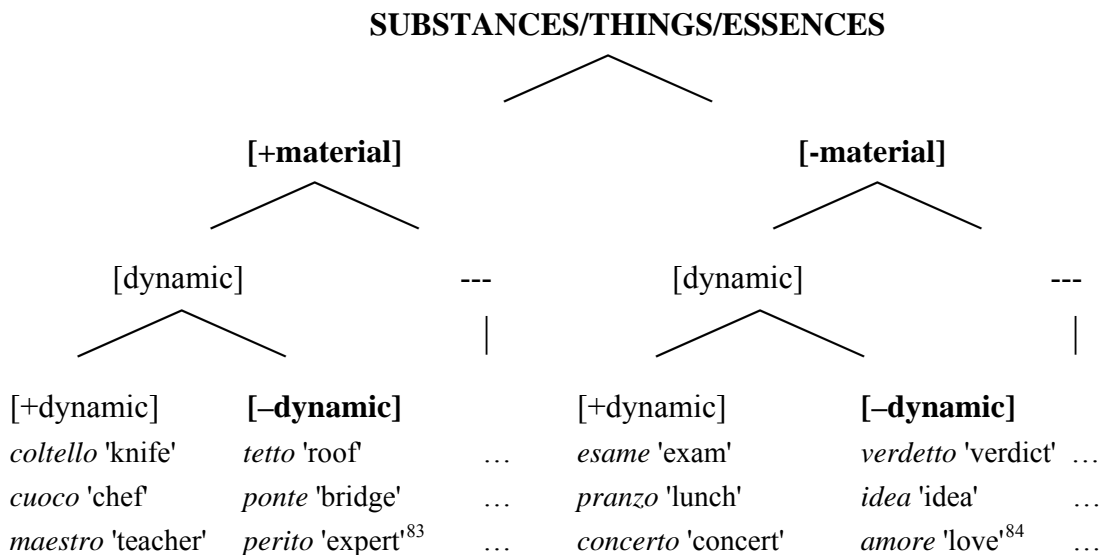
In point of fact, near synonyms of R nouns, split in two classes (in boldface in (72)), can be found in both the above-mentioned subcategories of SUBSTANCES / THINGS /

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[83] Contrasting examples such as *maestro* and *perito* prove that not only inanimate entities, but also animate entities can differ with respect to an intrinsic value of dynamicity: *maestro*, in fact, denotes an Agent noun involved in a dynamic activity (*insegnare* 'teach'), while *perito* refers to a human characterized by an intrinsic state of knowledge or experience (a non-dynamic situation), and complete lack of *agentivity* or *volitionality* which are properties characterizing Agent nouns in general.

[84] Nominals like *amore* 'love' and *verdetto* 'verdict' are both [−material, −dynamic] SUBSTANCES / THINGS ESSENCES: the obvious question that should be raised is how it is possible to distinguish between them. Given the combination of functions/features in their skeletons, these lexemes appear as semantically equivalent. Of course, there is a distinction in their content: the former primarily denotes a non-dynamic situation (i.e. a state), the second refers to an abstract entity. In other words, there is an obvious semantic difference between nominals denoting abstract entities and those denoting states that the combination of the [material] and [dynamic] features by itself is unable to convey. What I suggest is that the combination of functions [−material, −dynamic] in a skeleton is able to take different arguments: the *R* (referential) argument (cf. Williams, 1981) and the *E* (event) argument (cf. Davidson, 1967). Only the latter argument characterizes the outermost function of E nominals, whilst the former usually represents the highest argument of R nominals. For further discussion on this point, cf. section 3.6.1.

ESSENCES. While R nominals like *copertura* or *collegamento* are [+material, –dynamic], in the semantic space defined by the combination of features [–material, –dynamic] we find abstract R nouns like *traduzione* 'translation', *approfondimento* (*lit.*) 'deepening', or 'careful study', and, in general, all those derived nouns which primarily denote information objects. Although it is not easy to find comparable examples in the domain of simple lexemes, I suggest that good cases are represented by *verdetto* 'verdict', *idea* 'idea', or *tema* in the specific meaning of '(oral/written) development/composition' (*svolgimento* from *svolgere (un tema)* 'develop/write (a composition)' is in fact its derived synonym in Italian). Concerning these words, it is worthwhile noting that the uppermost sense inferable from the qualia is not the TELIC quale (its purpose/or function), but the AGENTIVE quale, which expresses the manner in which something comes about. Specifically, a *verdetto* is the by-product of an assessment event, an *idea* is the output of a thinking event, while a *tema* is also created through a mental activity and, like the other two, can acquire a physical manifestation (usually, its creation implies writing it). However, in such cases, as in the above-mentioned *copertura* / *collegamento*, R nominals like *traduzione* and *approfondimento* are inherently non-dynamic SUBSTANCES / THINGS / ESSENCES, because they denote the abstract entities brought into a resulting state of existence through the accomplishment of the event denoted by the base predicate.

3.5.2.2   The polysemy solution

The question which remains to be answered now is the following: why don't R affixes and corresponding nominals represent a coherent homogeneous class in Lieber's taxonomy, but are instead spread over two semantic and ontological (sub)categories at least? A possible explanation can be found by looking at those nouns characterized in (72) as [–material, +dynamic].[85] These nouns are names of events (simple event nouns, in Grimshaw's, 1990 definition), but can also express other related senses. In this category, we in fact find instances of *dot object* nominals, i.e. complex types clustering eventive / stative and result / physical-object / information-object senses (cf. Pustejovsky, 1995). *Esame* 'exam', for instance, denotes an event, but also the exam questions and the result of the exam itself (in (73)c., in the sense of a clinical text):

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[85] This skeletal representation characterizes only a part of those simple lexemes which are the counterpart of E nouns, coherently characterized as underdetermined as to the positive or negative value of their [dynamic] feature. In the same taxonomy, in fact, I have also given the example of *amore* 'love' (but another good case is *rabbia* 'anger'), that is to say, a name denoting a state and coherently characterized as [–material, –dynamic].

(73)   a.   L'esame di storia è durato due ore.
            'The history exam lasted two hours'
       b.   Questo esame è lungo tre pagine.
            'This exam is three pages long'
       c.   I miei esami del sangue sono molto preoccupanti.
            'My blood analysis is rather upsetting'

Similarly, *pranzo* 'lunch' does not only refer to an eating-event, but is commonly used to indicate the specific food which is consumed at lunch-time; while *concerto* 'concert' refers to the music/sound produced during the corresponding performance (/sound-emission) event. Therefore, *pranzo* (as food) should also exhibit a [+material, –dynamic ([   ])] skeleton, while *concerto* and *esame*, denoting abstract entities, should have a [–material, –dynamic ([   ])] skeleton. Further, a comparable case is also found in the category of [–material, –dynamic] lexemes: the word *amore* 'love' expresses a psychological state (emotion).[86] However, this lexeme can also convey a concrete value when it is used to refer to the loved person; therefore, in this case *amore* should exhibit a [+material, –dynamic ([   ])] skeleton.

More explicitly, what I am suggesting is that, since these simple lexemes are cases of logical or inherent polysemy, the deverbal nominals that are their counterpart in the domain of derived lexemes, are also expected to be logically or inherently polysemous. It follows that the denotations and skeletal representations of R nouns do not correspond to a semantically coherent class just because the semantic contribution of R suffixes has to cover the range of polysemy that simple event nouns (and, among these, also those denoting states) are likely to display. This polysemy is very broad, but it is not unconstrained. On the contrary, I suggest that it is possible to coerce and predict (at least to a certain extent) the denotation of R nominals starting from their basic E meanings; that is to say, by exploring the semantics of the base verb in order to capture the characteristics of the relevant argument of the non-head which semantically corresponds to an R nominal (cf. Chapter 4).

Furthermore, the explanation I have put forward provides an answer to the polysemy-homonymy question concerning the relationship between E and R nominals and corresponding affixes. In general, the fact that E and R nominals do not constitute separate (homonymous) lexical entries is not only suggested by the apparent semantic relation between them, but also by the existence of comparable ambiguous words in the simplex lexicon domain. All these facts add evidence in support of the polysemy

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[86] *Amore* (but cf. also *sonno* 'sleep', *passione* 'passion', *stato* 'state'), being underived and situation-denoting, corresponds to the class of simple event nouns; unlike *gara* 'race', *evento* 'event' and *viaggio* 'journey', however, *amore* portrays a stative situation. This is evidence that also underived nouns come with inherent specification of [±] dynamicity.

solution. Specifically, I propose that the interpretations of the nominals under discussion represent a case of logical polysemy, where the E (= SITUATION) and R (= ENTITY IN STATE) senses are two types clustered in a logically polysemous deverbal noun (or *dot object nominal*), i.e. a single lexical item that corresponds to a semantically complex type (cf. Pustejovsky, 1995).[87, 88]

Most importantly, such polysemy is the consequence of the inherent polysemy of the E·R affixal heads, which do not only determine the morpho-syntactic properties but also define the "outermost" semantic features of the skeleton of the complex lexemes they form (recall, in fact, that the skeleton of an head affix is the outermost semantic layer of the complex lexeme's skeleton, since it hierarchically subordinates the nonhead skeleton, cf. (28) and (70))

3.5.3 More on the *body* of R nominals: the Qualia Structure

So far, I have tried to shed light on both the "skeletal" and "bodily" representations of R nouns: if the outermost layer of the skeleton of R nouns is given in (70), I suggest that (dotted/complex types) E·R suffixes do not have a semantic-pragmatic body. Most affixes, in fact, are assumed to have no body in Lieber's model.[89] However, we have already noticed that the lexical semantics of R nominals is marked according to specific modes of explanation which are not directly encoded in the skeleton. While in section 3.5.2.1 I have pointed out the difference between the qualia structure of instrumentals and (some) R nouns, I now attempt an in depth exploration of the semantic-pragmatic body of R nouns (i.e., the ENTITY IN STATE category), or, more precisely, of the structured part of the body which corresponds to Pustejovsky's Qualia Structure.

> The qualia structure for an object can be viewed as an elaboration of its typing specification. Each quale role provides a distinct but essential component to uniquely determining the meaning of a word (or phrase).
>
> (Pustejovsky, 1998: 332)

The qualia structure of an item is in fact structured into four levels, each capturing an essential aspect of lexical meaning. Let me briefly outline the syntax of a qualia structure representation as follows (quotations are from Pustejovsky, 1995: 85-86):

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[87] Cf. Jacquey (2001) for similar conclusions on the lexical ambiguity of (a class of) derived nominals in French.

[88] An intriguing issue, which is totally unexplored here but which I hope to clarify in future investigation, is posed by the failure of these nominals to accept co-predication, which is usually fine with other dot-objects (like *lunch* or *book*).

[89] Lieber (2004) assumes that there are affixes, like prefixes derived from prepositions, which do display a body, since they preserve some lexical content associated with the lexeme they are derived from (cf. the analysis of *over*- in Chapter 4 of Lieber, 2004).

- The CONSTITUTIVE quale describes « the relation between an object and its constituents or proper parts ». It thus provides information concerning material, weight, parts and component elements.
- The FORMAL quale: « distinguishes the object within a larger domain ». It therefore provides information about the orientation, magnitude, shape, dimensionality, color, position, etc.
- The TELIC quale: defines the « purpose that an agent has in performing an act », or a « built-in function or aim of the object ». In particular, there are two modes of this quale:

  « direct TELIC: something which one acts on directly »;

  « purpose TELIC: something which is used for facilitating a particular activity ».

  For instance, the direct TELIC of *beer* is expressed by the predicate *drink*, where *beer* corresponds to a variable which is the object of the activity predicate; for a noun like *knife*, instead, the purpose TELIC is defined by the predicate *cut*, and *knife* corresponds to a variable which is the external argument/subject of this predicate.
- The AGENTIVE quale: encodes the « factors involved in the origin or "bringing about" of an object ». This role is essential to the distinction between Natural Kinds and Artifacts. For a noun like *sandwich*, an artifact, there is a predicate (*make*) in its agentive that specifies the mode of its coming into being. [90]

Following Pustejovsky (1995), I assume that dot objects have a single qualia structure; in our case, E·R nominals have the same qualia because the E and R types are clustered into a single lexical conceptual paradigm (henceforth, lcp). Nonetheless, in what follows, I will exclusively focus on the roles in the qualia which express the situational character of R nouns, overshadowing the information relevant for the E meaning.

Let me emphasize that there is an interesting difference between CONSTITUTIVE and FORMAL, one the one side, and TELIC and AGENTIVE roles, on the other:

> While the formal is treated as reference to the supertype and const returns the material mode of the object, notice that both agentive and telic make reference to events.   (Pustejovsky, 1998: 332)

---

[90] Pustejovsky (1995: 76) explains that there are two general points concerning qualia roles:
(1)   Every category expresses a qualia structure;
(2)   Not all lexical items carry a value for each qualia role.
Natural types (e.g. the lexeme *rock*) do not have a value for the AGENTIVE and TELIC qualia.

Since our R nominals (as a subtype of the complex E·R type) are per definition situational nominals, somehow related with an underlying event or state, it is expected that they carry a value for at least one of these two roles.

The generalization I propose is that the composition of the qualia structure of an R nominal is straightforwardly dependent on the semantics of the base verb. Specifically, it is the base verb that surfaces as the (eventive or stative) predicate which establishes a relationship between its own verbal arguments in one of the two roles, either AGENTIVE or (direct or purpose) TELIC. Therefore, I assume that R nominals can have or the AGENTIVE or the TELIC roles in their qualia depending on the semantics of their base predicate.

Let us start with R nominals pertaining to the PRODUCT class: *costruzione* 'construction', *creazione* 'creation' – denoting both concrete and abstract entities – and information objects such as *traduzione* 'translation', *componimento* 'composition', *svolgimento* 'development' all pertain to this category, because they denote the by-products or outcomes of the events expressed by their corresponding base verbs. Since the base predicate is in such cases a creation verb, it follows that PRODUCT nouns typically have not the TELIC, but the AGENTIVE as the quale expressing their uppermost situational sense. The fact that in the case of a nominal like *componimento*, for instance, the base verb (*comporre* 'compose') has a creation value implies that it is this predicate which establishes a relation between the arguments (Agent and effected object) in the AGENTIVE quale. Underived lexemes are usually unmarked from this viewpoint, and even when denoting artifacts, they usually lack this situational characterization.

To maintain that the AGENTIVE quale of PRODUCT nominals represents their uppermost sense does not imply that such lexemes are inherently [+dynamic] entities; on the contrary, as explained by Pustejovsky (1995: 97) « the AGENTIVE is represented as an event predicate, where the object being defined is typically bound to the second argument of the relation ». That is to say, the R nominal does take as its R argument (cf. Williams, 1981) not the Agent of the action (the first argument), but the second argument of the predicate, the produced/effected entity, as shown in the following qualia structure representation, where the Agent corresponds to x and the effected object to y:[91]

---

[91] As explained before, I here provide a 'partial' qualia structure of the E·R dot objects, since I exclusively focus on the R type. However, their qualia should contain information related to both types clustered in the *lcp*.

(74)   *costruzione* 'construction'

$$
\text{QUALIA}^{92}
\begin{bmatrix}
\textbf{event} \cdot \textbf{product \_lcp} \\
\text{FORMAL} = \text{R (e, y)}^{93} \qquad\qquad (y = \text{PRODUCT}) \\
\textbf{AGENTIVE} = \textit{costruire} \text{ 'construct' (e, x, } \underline{\textbf{y}} \text{)}
\end{bmatrix}
$$

Further, cases of abstract R nominals like *lettura* 'reading' can be found where the R interpretation is that of an information object (and defined by the following features [−material, −dynamic]), but the composition of the qualia crucially varies, depending on which sense of the base verb (performance vs. creation) is selected by the corresponding nominal. The following examples show in fact that *lettura* might refer to the information object which is read, something like a novel, for instance; but this nominal can also and more saliently refer to the *interpretation* resulting from a reading event (in this case the suffix seems to select a secondary sense of the verb *leggere* 'interpret'):

(75)   Le sue letture sono sempre molto impegnative.
        lit. his/her readings are always very complex
        'The things he/she reads are always very complex'

(76)   La tua lettura di questo testo è totalmente errata.
        'Your reading (=interpretation) of this text is totally wrong'

Let us start from (75): in such an example, the nominal at stake does not pertain to the PRODUCT subclass and, accordingly, we should expect that the AGENTIVE quale could not be the most prominent sense. As a performance verb, in fact, *leggere* cannot give information about the coming into being of an object; therefore, *lettura* exhibits a qualia structure in which the direct TELIC quale, not the AGENTIVE, is the most prominent. In (76) the opposite situation holds, since *lettura* refers to the information object brought into existence by means of a reading (=interpreting/understanding) event; *leggere* assumes here the value of a creation verb, because it explains how the reading (interpretation) comes about. Therefore, it is the AGENTIVE role which explicates the situational character of this R noun (and, in general of all PRODUCT nominals). It should be clear that the composition of the qualia structure of R nominals (specifically, the presence of either a TELIC or an AGENTIVE role) is straightforwardly dependent on the base verbs. Being *lettura* derived from *leggere* 'read', lexically ambiguous between a

---

[92] The quale roles are formally represented as components of the type by means of typed-feature structures. Cf. Pustejovsky (1995) for further explanation.

[93] R in the FORMAL stands for the predicate (here left unexpressed) establishing the Relation between the arguments of the types in the dot object. Cf. Pustejovsky (1995) for speculation on the nature of this Relation predicate.

performance verb and a predicate of creation, its prominent role will be the (direct) TELIC in (75) and the AGENTIVE in (76).[94] In both cases, the R semantic types denoted by *lettura* do not make reference to the first member of the relation expressed by the base predicate (the Agent, i.e. the reader), but to another one: the object which is read in (75) and the interpretation which is produced in (76):[95]

(77) *lettura₁* 'reading'

$$\text{QUALIA} \begin{bmatrix} \textbf{event} \cdot \textbf{entity in state\_ lcp} \\ \text{FORMAL} = R\,(e,\,y) \qquad\qquad (y = \text{ENTITY IN STATE}) \\ \text{(direct) } \textbf{TELIC} = \textit{leggere}\,(\,e,\,x,\,\underline{\textbf{y}}\,) \end{bmatrix}$$

(78) *lettura₂* 'reading'

$$\text{QUALIA} \begin{bmatrix} \textbf{event} \cdot \textbf{product \_ lcp} \\ \text{FORMAL} = R\,(e,\,z) \qquad\qquad (z = \text{PRODUCT}) \\ \textbf{AGENTIVE} = \textit{leggere}\,(\,e,\,x,\,y,\,\underline{\textbf{z}}\,) \end{bmatrix}$$

In (78), the PRODUCT nominal refers to a third entity, labeled as z, which comes about through the accomplishment of the event denoted by the base verb; in (77), instead, the created / effected object corresponds to the internal argument y.

Let us now continue examining other nominals which are not *strictu senso* PRODUCTS, but have been generically labeled as ENTITIES IN STATE. Starting from R nominals derived from achievement verbs, what is the uppermost situational sense inferable from the qualia structure of nominals like *vincita* 'win' or *rinvenimento* 'discovery'? Although they are not derived from creation verbs, it is interesting to note that such nominals also have the AGENTIVE quale which specifies their situational (i.e. [-dynamic]) characterization. They in fact refer to what is (metaphorically) brought about by winning or by discovering. Interestingly, the antonyms of such nominals (*perdita₁* 'loss', *scomparsa* 'disappearance')[96] only are E nominals. Nominals like *vincita* and *rinvenimento* appear therefore close in meaning to the PRODUCT class.

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[94] Cf. footnote 81.

[95] It is worth noting that also the uppermost sense of so called MEANS/PRODUCT nominals, such as *argentatura* 'silver-plating' (cf. section 3.5.1.2), is again expressed by the AGENTIVE quale. However, as with *lettura* 'interpretation', in such case the R nominal denotes the resulting entity, corresponding to a third participant/argument, which is a component of the verb LCS along with the external (i.e., Agent) and internal arguments (i.e. the object corresponding to the affected entity towards which the action is directed).

[96] Interestingly, there is an R interpretation of *perdita*, which I name *perdita₂* 'leak' (a near synonym of *fuoriuscita*): the derived nominal captures in this case the « substance emission » meaning of the predicate *perdere₂* 'pour out' (vs. *perdere₁* 'lose'). Interestingly, in this case the R nominal describes an object that comes into sight or, metaphorically, is brought into (a new state of) existence in virtue of an underlying

(79) *rinvenimento* 'discovery'

$$
\begin{array}{ll}
\text{QUALIA} & \left[\begin{array}{l}
\textbf{event} \cdot \textbf{entity in state\_ lcp} \\
\text{FORMAL} = \text{R} (e, y) \qquad\qquad\qquad (y = \text{PRODUCT}) \\
\textbf{AGENTIVE} = \textit{rinvenire} \, (\, e, x, \underline{\textbf{y}} \,)
\end{array} \right.
\end{array}
$$

In (79) the R nominal corresponds to *y*, i.e. the verb internal object, the entity which is in the (resulting) state of being discovered.

Psych STIMULUS have instead primary purpose TELIC senses: *divertimento* 'entertainment', *sorpresa* 'surprise' have underlying predicates (i.e., *divertire* 'amuse' / *sorprendere* 'surprise') indicating the purpose/function of the objects denoted by R nominals. The (purpose) TELIC of the object *divertimento* is expressed by the predicate *divertire* and an analogous observation holds for *sorpresa*:

(80) *sorpresa* 'surprise'

$$
\begin{array}{ll}
\text{QUALIA} & \left[\begin{array}{l}
\textbf{event} \cdot \textbf{psych stimulus\_ lcp} \\
\text{FORMAL} = \text{R} (e, x) \qquad\qquad\qquad (x = \text{PSYCH STIMULUS}) \\
\text{(purpose) } \textbf{TELIC} = \textit{sorprendere} \, (\, e, \underline{\textbf{x}} \, , y \,)
\end{array} \right.
\end{array}
$$

R nominals that have a (purpose) TELIC quale are most likely to be linked to subject positions, as shown by the range of arguments taken by the predicate *sorprendere* 'surprise' in (80): if *x* corresponds to the psychological stimulus, *y* is the Experiencer. However, as we have seen in section 3.5.1.3, the *x* variable corresponding to the R nominal must be interpreted as non agentive, since it does not correspond to a Causer, but to a psych Stimulus (as such it totally lacks agentivity).

Similar cases are represented by other instances of ENTITY IN STATE nominals: in point of fact, *collegamento* 'connection' and *ostruzione* 'obstruction', for instance, are ambiguously characterized as to their qualia structure. That is to say, when they refer to the output of an event (artifacts) their uppermost sense is expressed by the AGENTIVE. In contrast, when they denote entities (also natural kinds) surfacing as the syntactic subjects of the corresponding states, they have a topmost (purpose) TELIC quale. In these cases, however, the prominence of one of the quale roles is not lexically determined, but it is only established in the predicative context.

I have shown in this section that, given a unitary though underspecified representation of the skeleton of R suffixes, the corresponding nominals are likely to exhibit subtle semantic differences, which can be captured in terms of distinct situational senses

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perdita 'pouring out' event. Cf. Chapter 4 for a descriptive analysis of emission verbs and their derived nominals.

inferable from their qualia structure (that is, the structured part of the complex and not entirely decompositional *body* of lexemes). This implies that differences in the interpretation of R nominals are strongly determined by the semantic nature of the base verbs. This point will be discussed in detail in Chapter 4.

3.6   Co-indexation

Once the skeleton of the suffixes and that of the bases are identified, we will be ready to explain in detail how the co-indexation mechanism is able to pattern the derivational process of nominalization and to account for the polysemous senses of E·R nominals. So far, I have only examined the heads of these derived nominals; a comprehensive exploration of the base verbs will be provided in the next chapter. However, before entering the complexities of the lexical semantic representation of verbs, a presentation of the co-indexation mechanism will be briefly sketched out.

Co-indexation, as a morpho-semantic principle guiding word formation processes, is fairly innovative; however, it elaborates on an idea which is not new in morphology. Following a proposal originally put forward by Marchand (1969), many authors working within the generative framework have suggested that there are cases of word formation which can be explained as instances of "topicalization" or binding of one of the verbal arguments.[97] In particular, this solution seems to hold in those cases where a head affix (in general, a derivational suffix) is merged with a base verb to form a nominal whose reference is to one of its arguments.

Similar proposals have been suggested, for instance, to account for agentive nominalizations (or *Nomina Agentis*); since such deverbal nominals typically refer to the Agent or external argument of the base predicate, it has been suggested that the nominal incorporates or links just this argument (cf. in particular, Rappaport Hovav and Levin, 1992 for English, and Bisetto, 1996 for Italian). Specifically, it is the deverbalizing suffix that binds the external argument, whose projection or discharge in the syntax is therefore blocked.[98] The topicalization solution seems to hold for patient nominals (or *Nomina Patientis*) as well: these derived nominals (typically characterized by the adjunction of *-ee* in English and by conversion of past participle in Italian) incorporate the internal argument, a Patient, according to the Thematic Theory, so that it cannot be projected syntactically.

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[97] For the first relevant implementation of this idea cf. in particular Di Sciullo and Williams (1987) and Booij (1988). But cf. also Rappaport Hovav and Levin (1992) for *-er* English nominals.
[98] Cf. Higginbotham (1985) for the innovative use of the term "discharge" in his theory of linking.

From the data and the discussion presented so far, the solution of topicalization or binding of an argument structure participant, to account for the denotation and syntactic behavior of E and R nominals, appears as somewhat problematic for different reasons:

a)   As far as E nominals are concerned, a question arises with respect to what argument is bound in their derivation. Because the verbal argument structure is usually preserved, none of the verbal thematic arguments seem to be lexically bound in the derivation of E nouns so that it cannot be projected syntactically. On the other hand, the external argument changes its status of obligatory argument into optional one.

b)   As far as R nominals are concerned, the situation is even more challenging because there is no clear evidence that a specific argument (or adjunct) is lexically bound. Actually, the denotation of these nominals is so varied that it seems that, in principle, any argument structure participants or adjuncts (or other lexical semantic participants) of the base verb can be bound by the suffix (cf. discussion in section 3.6.2)

What is more, co-indexation, although violable to a certain extent, has to formalize and rule the process of integrating the referential properties of two elements (bases and affixes, in the case of derivation) and it does it according to a highly constraining mechanism.

Let us quote again the Principle of Co-indexation (as stated by Lieber, 2004: 61, and repeated below from section 3.3.1):

> In a configuration in which semantic skeletons are composed, co-index the highest nonhead argument with the highest (preferably unindexed) head argument. Indexing must be consistent with semantic conditions on the head argument, if any.

According to a co-indexing mechanism working in such a manner, in absence of restrictions imposed by the head argument, there would always be co-indexation of the highest (most external) argument of both head and non-head components. Since I maintain that the suffix is the head of a derived word, in the case of E suffixes, this would mean that the R argument of the suffix would always be co-indexed with the highest argument of the verb, generally corresponding to the Agent or external argument, in Lieber's system. Nevertheless, since Agents can usually be discharged in syntax, albeit optionally, the question in (a), what verbal argument is co-indexed in E

nominals, remains to be answered. I will further tackle co-indexation in E nominals in section 3.6.1.

As to R nominals, since they only episodically have a subject-like interpretation, it should be hypothesized that there are specific constraints which the R suffix imposes over its base and which regulate the application of the principle of co-indexation. In order to understand its precise functioning in R nominals' formation, it is necessary to:

b.i) understand whether R nouns only correspond to argument structure participants or can be identified with other participants in the LCS of the base verb;

b.ii) determine the semantic constraints that pattern the co-indexation with R forming suffixes.

While question (b.ii) is not trivial and will be fully addressed in Chapter 4, we will first explore the issue raised in (b.i.) in section 3.6.2

3.6.1 Co-indexation with E suffixes: the Event argument

As we have already seen in Chapter 2, E nominals are argument-taking lexemes. In particular, once they are projected in the syntax, E nominals usually require the presence of the internal argument, which preserves, within the DP of the nominal construction, the thematic relation with its base verb. The projection of the external argument is instead optional, and subordinated to syntactic discharge of the internal one; in other words, the *di*-phrase in (81)b. can only correspond to the internal argument since the syntactic projection of the external argument cannot precede that of the internal one. The agentive external argument is usually expressed by means of a *da parte di*-phrase (that is, a by-phrase) or a prenominal possessor in transitive action nominals:

(81)   a.   La distruzione di Roma
            'The destruction of Rome'
       b.   La distruzione di Roma da parte dei nemici
            'The destruction of Rome by the enemies'
       c.   La loro distruzione di Roma
            'Their destruction of Rome'

Since none of the verbal arguments is lexically bound in the co-indexation process, but is free to be projected in the syntax, I maintain that co-indexation operates over a different argument, which is not employed in Lieber's model. Specifically, my proposal

is that verbs (i.e., corresponding to [±dynamic] SITUATIONS) take as their highest (or most external) argument an *E* (event) argument, along with other arguments corresponding to LCS participants.

The *E* argument was first introduced by Davidson (1967) and reworked by Higginbotham (1985) and Parsons (1990), mainly to account for modification by the tense operator (the *E* position is associated with inflection in the case of finite verbs) and adverbials, within the domain of a sentence. Davidson originally proposed the *E* argument for action sentences; this means that stative sentences do not have this argument.[99] On a lexical level, Grimshaw (1990) includes the *E* argument into the LCS/argument structure of the verbal lexeme. Although it is still controversial which predicates have the *E* argument, I suggest that this *E* role should be represented in the skeleton of all types of situations, in accordance with Higginbotham (1983; 1985; 2000), Parsons (1990) and Pustejovsky (1995), who extend this *E* position to states. This implicit argument is non-thematic, i.e. it does not carry a thematic role nor does it correspond to a LCS participant of a situation, but it is instead a «semantic function role» as explained in Spencer (1999).

In my view, the introduction of the *E* role is particularly consistent with Lieber's (2004) model of lexical semantics representation. According to her, only affixes and nouns take a non-thematic role (the *R* argument, introduced by Williams, 1981). The introduction of *E* entails that all lexemes, even verbs, and all affixes take a semantic function role as their own highest argument. Some lexemes can also (optionally) take syntactic arguments corresponding to semantic participants. Verbs (i.e., the ontological category of SITUATIONS) are systematically characterized by the presence of the *E* argument (or semantic function role); nouns (i.e., SUBSTANCES / THINGS / ESSENCES) usually take the semantic function role *R*, which indicates referentiality. On the other hand, there are special cases, specifically our E nouns (hence, their E suffixes) and simple event nouns (e.g. *festa* 'party', *rabbia* 'anger'), that are different because they take the *E* instead of the *R* argument. These cases are marked, because there is a sort of disagreement between their featural specification, the corresponding category and the non-thematic argument they take.

It is worthwhile stressing at this point that the present use of *R* and *E* arguments does not have much to do with the options of syntactic projection of the lexemes they characterize. In particular, I suggest that the fact that a noun projects under a DP does not depend on its *R* argument (as proposed by Higginbotham, 1985), but on the outermost function of its skeleton. Namely, it is the major ontological feature [material],

semantically defining the category of SUBSTANCES / THINGS / ESSENCES and, from the categorial viewpoint, equivalent to the class of Nouns, which determines a corresponding syntactic projection. Besides, it should be clear that the introduction of an *E* variable does not make the use of the feature [dynamic] a redundant specification in the skeletons of SUBSTANCES / THINGS / ESSENCES. The *E* function role distinguishes among inherently eventive or stative SUBSTANCES / THINGS / ESSENCES (those which denote situations) and those lexemes that, despite having a situational flavor, do not denote situations, but referential entities (their situational character is specified according to different modes of explanation, which are structurally represented in their qualia structure, as seen in section 3.5.3).

To conclude this brief anticipation about co-indexation in E nominals, my proposal is that E suffixes have the following skeleton, whose combination of functions takes the *E* semantic function role as the highest argument:

(82) $[$–material, ±dynamic $([\quad]_E$, <base>$)]$

Given this skeletal representation, it follows that co-indexation will involve the *E* argument of the E nominal forming suffix and the *E* semantic role of the base verb.

The skeleton in (82) also accommodates simple lexemes like *festa* 'party' or *sonno* 'sleep', with the difference that these lexemes are further lexically specified as [+dynamic] and [–dynamic], respectively (and, as free morphemes, they do not have a lower base argument in their skeleton).[100] There is another important difference between deverbal E nominals and simple event nouns: while the former display aspectual and event structure properties, the latter are unable to take aspectual-temporal modifiers, such as *in-* or *for-x-time* phrases, nor do they take agent-oriented modifiers (i.e. *intentional*) (cf. Grimshaw's diagnostics in Table (1)). This can be straightforwardly explained if we take a closer look at the skeletons of simple event nouns. Their skeletal representations do not express much information about the actional type of the corresponding event, but only specify their inherent dynamicity or stativity (cf. again *festa* 'party' / *guerra* 'war' and *sonno* 'sleep'/ *rabbia* 'anger', respectively). On the other hand, aspectual (event-structure) and thematic properties of E nominals are not supplied by the skeletons of the E suffixes, but are instead directly inherited from the *E* arguments of the base verb. Therefore, the specific properties of E nominals (event structure and argument structure) can be explained on the basis of those aspectual features

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[100] Specifically, their skeletons should be characterized as follows:
(i)   *festa* $[$–material, +dynamic $([\quad])]$
        sonno $[$–material, –dynamic $([\quad])]$

(dynamicity, but also durativity and lexical contribution to telicity) and LCS participants/arguments that are inherited from the base verb.

3.6.2 Co-indexation with R suffixes: beyond argument structure

In this section, I take into account the co-indexation mechanism in R deverbal nouns. Without entering the details of the derivational process leading to their formation, I intend to show that the relevant argument of the base verb which gets co-indexed in R nominals' derivation cannot be expressed on the basis of rigid/fixed argument positions. In particular, if compared with the usual co-indexation options displayed by other suffixes (like the Italian suffix –*tore*), which have quite restricted possibilities of argument-binding, we can observe that co-indexation of R nominals does not only involve syntactic (i.e. argument structure participants), but also semantic participants in the skeleton or LCS of the base verb (whose projection in the syntax is not only optional, but can sometimes be ruled out).[101] This implies that R suffixes do not bind the *E* variable of the base verb, but take an *R* (referential) argument which is identified through co-indexation with the appropriate argument of the base verb. Therefore, *R*, instead of *E*, is the most external argument of the skeleton of an R nominal.

Let us start with the core sense of R nominals, defined as ENTITY IN STATE interpretation, and, in particular, from the sub-class of PRODUCT nominals. As explained in section 3.5.1.1, PRODUCT nominals are typically derived from creation verbs:

(83) a. Armani ha creato <u>un nuovo abito</u>.
          'Armani created a new dress'
      b. <u>Questa creazione</u> (di Armani) è la più raffinata tra tutti i modelli dell'ultima collezione.
          'This creation (by Armani) is the classiest among all models of the last collection'

The data in (83) show that it is the direct object of the verb, corresponding to an internal argument, which is bound in the derivation (it is worthwhile reminding the reader that Grimshaw has suggested that the adjunction of an R suffix binds something like a Theme). Similar cases are those of nominals derived from achievements, such as *scoperta* 'find', *rinvenimento* 'discovery', *acquisto* 'purchase', which also appear to bind

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[101] Carrier-Duncan (1985) introduces the term "non-inherent" argument position, while Lieber (1983) makes use of the notion of "semantic" argument position for those participants that are not part of argument structure and, thus, are not obligatorily discharged in syntax.

the internal argument (a Patient or Theme according to thematic theory) of the base verb.[102]

However, this possibility is not the default case of binding; many examples can be found where it is not the direct object, but an adjunct (or "shadow argument" in Pustejovsky's theory) or a syntactic subject which is bound by the R suffix. The examples in (84)a. and b. show a verb, *rivestire* 'cover', whose *E* variable is able to range over proper events (dynamic situations) and states (cf. the cases quoted in section 3.5.1.3). Accordingly, the derived R nominal could be said to link either the oblique/ adjunct corresponding to the material/means employed by the Agent to perform the covering event (in a.), or the subject, expressing the entity that covers (=state) its Patient object (in b.):

(84) a. Gianni riveste il divano <u>con un tessuto decorato</u>.
          'John covers the sofa with a decorated fabric'
      b. <u>Un tessuto decorato</u> riveste il divano in cucina.
          'A decorated fabric covers the sofa in the kitchen'
      c. <u>Il rivestimento</u> (di questo divano) è riccamente decorato.
          'The covering (of this sofa) is particularly decorated'

The examples in (84) demonstrate that, because a verb is likely to present different verbal constructions, the corresponding R nominal might be accordingly associated with different argument positions.[103]

Interestingly, returning to the PRODUCT interpretation, we find cases where it is impossible to detect an argument structure participant corresponding to the R interpretation of the nominal:

(85) a. Gianni ha tradotto un libro dal tedesco all'italiano.
          'John translated a book from German to Italian'
      b. Questa <u>traduzione</u> è piena di errori / è sul tavolo.
          'This translation is full of mistakes / is on the table'

A *traduzione* cannot be said to correspond to any of the verbal arguments; *tradurre* is in fact a transitive verb, whose projected arguments are the external one, the Agent, and

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[102] Interestingly, as seen in section 3.4.3, all these nominals have an AGENTIVE quale in their qualia structure, where the R nominal corresponds to the direct object incorporated by the predicate of the AGENTIVE.

[103] Again, in these cases the qualia structure representation of R nominals is ambiguously specified as having an AGENTIVE or a purpose TELIC quale. The difference in the argument linking option could be explained according to this ambiguous mode of explanation. In fact, as explained by Pustejovsky (1995: 99), « there is no simple one-to one mapping between theta roles and qualia ».

the internal one, the Patient/Source. Cases like this are far less than unusual, indeed: *riflessione* 'reflection', *distruzione(i)* 'destruction/debris' denote the products of the underlying actions (i.e. *riflettere* 'reflect (upon)' and *distruggere* 'destroy'), but do not correspond to any of the syntactic arguments or adjuncts of their base verbs.[104] *Distruggere*, for instance, projects argument structure participants corresponding to the Agent (the external argument in subject position) and the affected patient (the internal argument in direct object position), but do not have a dedicated argument position for the object resulting from the destroying event; *riflettere* is an intransitive verb whose external argument corresponds to the Agent/Experiencer of the situation.

The exploration of the R nouns labeled as sense extensions further complicates the picture. Looking at the agentive-collective sense extensions, for instance, many examples of R nominals can be found, which highlight their tendency towards a subject-like behavior, as shown in (86)b.:

(86) a. <u>Il nuovo staff</u> amministra l'azienda <u>in modo irresponsabile</u> / <u>nella nuova sede milanese.</u>
'The new staff is administering the company recklessly / in the new headquarters in Milan'

b. <u>L'amministrazione</u> (dell'azienda) è composta di persone esperte.
$\rightarrow$ *agentive-collective*
'The administration (of the company) is composed of experienced people'

c. Gianni deve recarsi <u>in amministrazione</u> al più presto. $\rightarrow$ *locative*
'John has to go to the administration as soon as possible'

d. L'amministrazione di questa compagnia è molto irresponsabile. $\rightarrow$ *manner*
'The administration of this company is fairly careless'

Besides, examples (86)c.-d. show that a locative and a manner interpretation (the latter arising from vagueness, instead of polysemy of the E nominal) might be explained through the binding of locative and manner adjuncts, respectively. Similar observations hold for temporal and measure interpretations as well, as shown by the following cases:

(87) a. La cagna allatta i suoi cuccioli <u>per diversi mesi</u>.
'The dog feed her puppies for several months'

b. <u>L'allattamento</u> è un periodo di durata variabile.
lit. breastfeeding is a period of variable length
'Breastfeeding can have variable duration'

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[104] This is not a peculiar property of Italian R nominals, as proved by the analogous cases of *démolition(s)* in French and *destruction* in English.

(88) a. Questa valle si estende <u>per alcuni chilometri</u>.
          'This valley extends over some kilometers'
      b. <u>L'estensione</u> di questa vallata è di alcuni chilometri.
          'The extension of this valley covers some kilometers'

To conclude, it seems that all syntactic arguments, internal and external, (corresponding to both subject and object positions), and adjuncts (expressing manner / temporal / measure modification) of the base verb might be co-indexed with the highest argument of the skeleton of R suffix in the derivation process of R nominals.

Since R nominals do not correspond to a fixed argument position within the verb argument structure, what I propose is that an R nominal should at least correspond to a participant in the LCS of the base verb, which defines the entire set of participants in a situation, even those for which a syntactic projection is never allowed. Verbs usually project some of these participants into their argument-structures and only do these latter acquire the status of true syntactic arguments.

Therefore, it is not surprising that, in the case of creation verbs, the R nominal corresponds to an internal object, a participant in both LCS and argument structure of the base verb; but in the other cases, it will simply denote a LCS participant whose syntactic projection is sometimes ruled out. In many cases, in fact, R nouns cannot be associated at all with a syntactic argument (or argument structure participant) of the base verb; *distruzione* and *traduzione* are instances of these non-exceptional cases.

Of course, although some clues have already been suggested in the descriptive account of R nominals, it is not clear why they allow this broad range of variation in their co-indexation options. I put forward that variation in co-indexing possibilities exhibited by R nominals depends on three (related) factors:

- The skeleton of the R suffix is broadly underspecified from a semantic viewpoint, as shown by its featural properties, and exhibits semantic compatibility with different participants in the verb LCS;
- The co-indexing mechanism is ruled by precise semantic restrictions that the relevant argument (an LCS participant) of the base must satisfy in order for co-indexation to apply. Therefore, variability in the co-indexation options of R nominalizations follows from the fact that the argument of the head (=R suffix) binds the most external argument of the base verb capable to satisfy such semantic constraints. Obviously, given the different thematic grid and argument-linking options associated with verbal concepts, the lack of a fixed argument structure position corresponding to R nominals should not be surprising.

- The principle of co-indexation is violable; generally, this is not a preferred strategy of word formation but arises to answer pragmatic needs, as shown in the case of paradigmatic sense extensions.

3.7   Concluding remarks

In this chapter, I have surveyed the range of interpretations displayed by E and R classes of deverbal nominals in order to identify the semantic contribution of the corresponding affixes. In particular, I have assumed that each E/R suffix, though corresponding to a single lexical entry, has a double representation in terms of lexical semantic contribution. This double skeleton expresses the logical or inherent polysemy of affixes such as *-mento, -zione, -tura*, etc., and of the nominals they form. Namely, by means of the featural system and machinery of lexical semantic representation proposed by Lieber's (2004), I have identified the following skeletons for E and R suffixes, respectively:

(89)   E skeleton: [−material, ±dynamic ([$]_E$, <base>)]
(90)   R skeleton: [±material, −dynamic ([$]_R$, <base>)]

The skeleton of E suffixes is merged with that of their base verbs as indicated by the Principle of Co-indexation. Since E suffixes are not able to change the dynamic or stative aspectual values of their bases, I have suggested that the [+] or [−] value of the dynamic feature of their skeleton (which is the outermost layer of the skeleton of E nominals) should be defined through the co-indexation process. Namely, whether E nominals denote states or events is a consequence of the negative or positive dynamic feature of the base verb, whose [+] or [−] value is inherited by the suffix. Besides, I have argued that the argument taken by the skeleton of these suffixes does not place any semantic constraints over the relevant argument of the skeleton of their non-heads (the base verbs) and that co-indexation should bind the highest argument of heads and non-heads, in absence of semantic constraints. Implementing Lieber's model, I have suggested that the highest argument of all verbs and E suffixes is an *E* variable, corresponding to a non-thematic argument or semantic function role; in absence of semantic constraints, and given the semantic compatibility of the *E* arguments, co-indexation is expected to apply without limitations.

As for R suffixes, I have proposed that, since they form referential nouns, they should take an *R* argument, instead of an *E* one. I have also showed that their skeleton is unusually specified with respect to the skeletons of other SUBSTANCES / THINGS /

ESSENCES because R suffixes do not cover a particular semantic space (which, accordingly, the suffixes should share with a specific class of underived lexemes). Their skeletal representation is instead specified in such a way that it can cover all the possible semantic values displayed by logically-polysemous simple event nouns (cf. the parallelism of E·R nominals such as *costruzione* 'construction' and *traduzione* 'translation' with simple event nouns like *esame* 'exam' and *concerto* 'concert'). It is thus expected that their skeleton is unusual and highly underspecified from a semantic viewpoint. What is more, the specification of the overall meaning of these nominals (even their concrete or abstract character) should largely depend on the type of base verb they are merged with, as I hope to have shown also with the discussion on the qualia structure of R nominals.

Concerning the taxonomy of R nominals, I have shown that – besides the core meaning of R nominals – we can find sense extensions like the agentive-collective and locative reading. Such interpretations surface as the result of a pragmatic pressure to form nouns with those meanings, combined with a lack of systematic and productive derivational means for the expression of those meanings in the morpholexical system of Italian. However, the emergence of these senses produces a type of polysemy which is different from the logical or inherent polysemy indicated for E·R (with R=ENTITY IN STATE) nominals.

Further, there are sense extensions that are only triggered by the predicative contexts where E nominals are inserted, and can be explained as deriving from the *vagueness* of E nominals, as manifested by the manner, temporal and factive readings.

On the one hand, a nontrivial question remains to be answered: if the transpositional semantic value is the default interpretation of a nominal derived through the suffixes listed in Table (2), the chance of the same nominals to display one of the R interpretations is much more limited. On the other hand, on the basis of the skeletal representation of R suffixes proposed in the course of this chapter, it is not directly evident why, how and to what extent the formation of R nominals is more constrained than that of E nominals.

In the next chapter, I shall discuss what semantic constraints limit and rule the co-indexation options of R nominals; specifically, it will be also shown, as anticipated in this chapter, that the identification of such limitations entails a deep analysis of verb semantics.

4 BASE VERBS AND R CONSTRAINTS

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4.1 Introduction

In the previous chapter, I have developed an in depth analysis of the interpretation of deverbal nominals aimed at capturing the lexical semantic contribution of the suffixes involved in the formation of these (inherently/logically) polysemous lexemes. Specifically, it has been shown that such polysemy is determined by the polysemy of the transpositional suffixes; therefore, a distinct formal representation has been assumed for suffixes forming R nominals with respect to those forming E nominals. However, an important issue has been ignored so far: namely, whether there are any semantic constraints on the formation of R nominals. It has been shown in fact that there are underived event-denoting nouns which display logical or inherent polysemy (e.g. *pranzo* 'lunch', *concerto* 'concert'), but that many others do not (e.g. *guerra* 'war', *gara* 'race'). Likewise, derived nominals that are primarily E nouns do not always have a corresponding R interpretation (e.g. *abolizione* 'abolition', *cancellazione* 'cancellation', *cessazione* 'cessation', *inseguimento* 'chase', *lavaggio* 'washing', *sfruttamento* 'exploitation', etc.).

In this chapter, I intend to give an explanation for this state of affairs. That is to say, I will try to understand what the semantic constraints are which limit the derivation (expressed through co-indexation) of R nominals, with respect to the derivation of E nominals (it has been noted in section 3.6.1 that the derivation of the latter seems instead unconstrained from a semantic viewpoint). Specifically, I intend to show that the interpretations nominals can display are strongly influenced by the lexical semantics of the verbs with which nominalizing suffixes merge.

In order to detect regular semantic patterns for the derivation and interpretation of R nominals, I will develop a detailed analysis of several classes of verbs, focusing on those LCS participants (i.e. syntactic and semantic arguments) that semantically correspond to the R interpretation of the derived nominal. Achieving this goal implies tackling the debated issue of the representation of verbs' lexical semantics. Therefore, some of the theories on verbs' semantics will be briefly reviewed in the course of this chapter, though I can in no way do justice to this vast and controversial issue here. In particular, the

fundamental assumptions that guide the spirit of the present research are the underlying principles of lexical-semantics proposed by Pustejovsky, Dowty and Levin & Rappaport Hovav concerning verbs and their temporal/aspectual properties. Some of their proposals are discussed and connected with nominals' semantics in this chapter, while only in Chapter 5 will they be integrated and formally translated into Lieber's (2004) lexical semantics model of word formation.

In the course of this analysis, the properties characterizing the R interpretations of derived nominals will be highlighted, and the detection of the relevant semantic constraints that R suffixes impose over their bases will shed light on the functioning of co-indexation in the derivation of these nominals.

4.2   On the representation of verb semantics

The denotative properties of R nominals have been analyzed in the previous chapter in order to find some common aspects in this semantically heterogeneous class; we have isolated the core semantic import of this class of nominals and distinguished it from other sub-classes usually grouped within the R category (cf. paradigmatic sense extensions). I hope to have demonstrated that the core interpretation of R nominals is that of ENTITY IN STATE, understood as a macro-class including PRODUCT and MEANS interpretations, among other types. Further, we have seen that these R nominals are both concrete and abstract situational nouns (= situational SUBSTANCES / THINGS / ESSENCES), which are characterized by a [-dynamic] feature. To this point, I would like to prove that the interpretation of these nominals is strongly influenced by the lexical semantics of the base verbs.

I have already explained that the abstract or concrete characterization of R nominals is established through co-indexation, where it is the [±material] feature of the base verb's co-indexed argument that determines the [±] value of the [material] feature of the suffix. Concerning the second feature of the skeleton of the R suffix (i.e. [-dynamic]), I have also pointed out that the aspectual/actional properties of the base verb are strictly associated with the R interpretation of a nominal. The relation between the actional values of the base and interpretation of the derived noun can be summarized as follows (cf. section 3.5.1.3):

a)   If an accomplishment value is detectable in the base verb, the R nominal typically denotes the product of the action, namely, the entity which is brought into a (resulting) state of existence.

b) If the base verb describes an achievement situation, the R nominal can refer to the (typically) inanimate entity participating in the resulting state.

c) If the base verb denotes a state, the R nominal refers the (non-Experiencer) entity in that state.

As hinted at in the previous chapter, the analysis above is based on a decompositional approach to verb semantics, and, more specifically, on the assumption that it is possible to break the event structure of verbs into smaller subparts, or subevents.

In the following section, I will tackle this crucial subject, taking into account Pustejovsky's (1991) analysis of event structure and connecting it to the interpretation of ENTITY IN STATE nominals. In section 4.2.2, I will compare Pustejovsky's analysis with Rappaport Hovav and Levin's examination of verb semantics, while I will deal with the PATH interpretation of deverbal nominals in section 4.2.3, focusing on Hay, Kennedy and Levin's analysis of verb scalar properties.

4.2.1 Pustejovsky's event structure

It has been pointed out in section 3.4.1.1 that *Aktionsart* is a defining lexical property of verbs and that, on its basis, situations can be divided into four fundamental classes. Specifically, the well-known Vendler-Dowty taxonomy isolates states and activities, which are inherently atelic, and accomplishments and achievements, giving rise to telic interpretations (the last two being comprehensively acknowledged in the literature as *events* in a narrow sense).[1] Concerning telicity, it is worthwhile reminding the reader that although this feature is not determined lexically but is a property of the whole VP or IP (see Bertinetto, 1992; Verkuyl, 1993; and Rothstein, 2004 among others), the verb's lexical specification still plays an important role in determining the telic/atelic aspectuality of the sentence.[2]

Pustejovsky (1989; 1991) acknowledges the Vendler-Dowty verbal taxonomy and assumes that verbs are lexically specified as pertaining to a default aspectual class (activities are called *processes* in his account). Moreover, following Dowty (1979), Pustejovsky proposes that aspectual classes are defined in terms of event structure

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[1] We have seen in section 3.4.1.1 that Smith (1991) has introduced a fifth aspectual type, the semelfactive type, but I will disregard this type in the following discussion, since only a restricted class of Italian verbs fall in this class.

[2] The verbs' default setting can be overruled in the syntax by other factors, such as the adjunction of adverbial phrases, non-obligatory complements and bare plurals:

(i)   I run to the store.
(ii)   John built houses.

In (i) the adjunction of a PP (*to the store*) corresponding to a bounded Path transforms the aspectual specification of the verb *run* from activity into accomplishment, while in (ii) it is the bare plural (*houses*) which is responsible for the accomplishment-to-activity shift of the verb *build*.

decomposition. Specifically, a state instantiates a single non-dynamic event (e.g. *love*, *know*, *believe*) and a process corresponds to a sequence of events identifying the same semantic expression (e.g. *run*, *push*, *drag*): [3]

(1) State: *know*

$$S$$
$$|$$
$$e$$

(2) Process (/activity): *run*

$$P$$

$$e_1 \ldots \ldots e_n$$
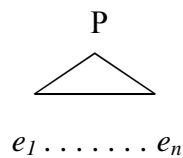
Conversely, accomplishments and achievements are grouped together under the label of *transition* (T in (3)), because they are characterized by the same structural and complex configuration. Transitions are categorized in terms of event opposition: one event, which individuates a certain semantic expression, is evaluated relative to its opposition. Among transitions, the distinction between accomplishments and achievements can be described as follows:

> When a verb makes reference both to a predicate opposition and the activity bringing about this change, then the resulting aspectual type is an accomplishment […]. When the verb makes no explicit reference to the activity being performed, the resulting aspectual type is an achievement […]. Configurationally, as event structures, the two classes are identical.
>
> Pustejovsky (1991: 59)

Let us take *open* as an instance of transition. According to Pustejovsky, this verb lexicalizes a transition from one state (¬opened) to a new one (opened). *Open*, like other lexical causatives (e.g. *break*) is lexically ambiguous, since it can appear in the causative-inchoative (or transitive/unaccusative) alternation:[4]

---

[3] P and S stand for Process and State, respectively.
[4] T stands for Transition in (3).

(3) a. The window opened. (*inchoative*)

ES: T
                                  /\
                                 P   S
                                 | |
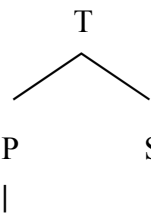
LCS^I: [¬opened (the-window)]   [opened (the-window)]
LCS: become ([opened (the-window)])

   b. Sarah opened the window. (*causative*)

ES: T
                                  /\
                                 P   S
                                 | |
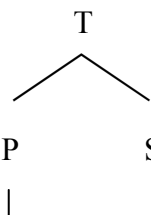
LCS^I: | [opened (the-window)]
          [act (j, the window)& ¬opened (the-window)]
LCS: cause ([act (j, the window)], become ([opened (the-window)]))

In (3)a. there is only a change of state, no information about an activity subevent prior to the culmination point. Therefore, Pustejovsky assigns the predicate to the achievement class. Only in the b. case does the verb indicate the presence of an activity subevent, prior to the final state, where the window opening performed by an Agent and the (non-final) state of the window are simultaneous. In this case, the author assigns the predicate to the accomplishment class. However, the presence of agency (whether represented by an external force or a human Agent) is not relevant at the level of event structure, where there is simply a transition from one state to another one. Pustejovsky follows Vendler and Dowty in assuming that aspectual classifications can only be captured on the basis of uniform temporal properties. The presence of an activity subpart is thus represented at the level Pustejovsky calls LCS^I (Lexical Conceptual Structure-first). Specifically, LCS^I is an interface level that, while maintaining event structure with a certain degree of transparency, also incorporates lexical semantics elements. The causal component, in turn, is only represented at the level of LCS, roughly corresponding to the *event structure template* proposed by Rappaport Hovav and Levin (cf. the next section) and predicate decomposition as proposed by Dowty (1979).

According to Pustejovsky, the agentive (/causal) distinction is useful for capturing the difference between accomplishments and achievements on other semantic levels, the event structure being the same for the two aspectual types.[5]

Concerning our nominalizations, I suggest that Pustejovsky's analysis of verb event structure can shed light on the situational character of R nominals, specifically, on the relation between the actional properties of the base verb and the interpretation of the corresponding R nominals.

We have already seen throughout our outline of the composite typology of R nominals that ENTITY IN STATE is a cover term grouping together all the core senses of R nominals which are the expression of one of the types clustered in a logically polysemous E·R deverbal nominal (or dot object). As suggested by the name chosen for this class, these R nominals pertain to the class of the situational SUBSTANCES / THINGS / ESSENCES (in terms of Lieber's analysis) that are characterized by a specific aspectual feature of verbal semantics, more precisely, by [-dynamic]. This feature is the second of the functions in the skeleton of R suffixes:

(4)   Skeleton of R suffixes: [±material, –dynamic ([   ]$_R$, <base>)]

The skeleton above implies that R nominals as ENTITY IN STATE describe entities participating in [–dynamic] SITUATIONS. It is therefore expected that nominals derived from state verbs, that is, [–dynamic] SITUATIONS, might also display an R (=ENTITY IN STATE) interpretation along with the basic transpositional (state) one (like *preferenza* 'preference', *conoscenza* 'knowledge/acquaintance', etc.).

However, as explained by Pustejovsky, a state component also characterizes the semantic template of transitions (i.e. accomplishments and achievements), whose complex event structures include a sub-eventual stative component. The R nominal can express the resulting entity that participates in this subevent (e.g. *costruzione* 'construction', *imitazione* 'imitation', *rinvenimento* 'discovery').

On the contrary, processes / activities, which lack a state component altogether, should not form nominals with ENTITY IN STATE interpretation.[6]

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[5] Traditionally, as explained in section 3.4.1.1, achievement predicates are taken to indicate instantaneous or punctual actions denoting a change of state, while accomplishment predicates make reference to actions taking a longer time. Pustejovsky's classification does not highlight these 'temporal' peculiarities and focuses instead on the presence of a change of state component, which is shared by the two classes. In (1995), Pustejovsky re-formulates the distinction between these two classes in terms of "event headedness": accomplishments are *left*-headed while achievements are *right*-headed.

[6] We will notice in the course of this chapter that such a prediction is too strong: actually, activity nominals that convey a PRODUCT reading can be found, and this proves that the aspectual characterization of the base verb can be overridden when the deep or idiosyncratic semantics of an activity predicate includes specific triggers allowing it (cf. section 4.4.1 for discussion on this point).

Concerning the PRODUCT reading, in particular, we should expect that only dynamic situations and, among these, the ones aspectually classified as transitions, hence characterized by a change of state in their template, could have corresponding derived nominals with PRODUCT interpretation. This is a rather intuitive/logical hypothesis, because, in order for a situation to have an associated result or to bring into being a by-product, it should not only be dynamic but also imply a change of state of some sort (cf. Asher's and Bierwisch's observations on this point in Chapter 2). The resulting product of this action is associated with the resulting state, which typically predicates the (coming into) existence of the new entity. However, since not all transition predicates give nominals with ambiguous E·R interpretations, we should understand whether there are other semantic triggers for the PRODUCT reading of a nominal, apart from actional ones: this subject will be faced later on, in section 4.3.

4.2.2 Rappaport Hovav and Levin: Templates and Roots

Along the same line of Pustejovsky's proposal, Rappaport Hovav and Levin (henceforth RH&L) (1998) offer an account of verb semantics partly based on the Vendler-Dowty taxonomy; again with Pustejovsky (and Dowty, 1979), they work out a classification of verbs based on the decomposition of their meaning.

RH&L suggest that the meaning of a predicate is fundamentally composed of two types of building blocks, the *structural* and the *idiosyncratic* components.[7] Namely, they define the former as *event structure template*, i.e. the grammatically relevant component, and the latter as *root*, i.e. the component which captures the more idiosyncratic meaning aspects of a predicate and gives it a name (since each root is associated with a *name*, i.e. a phonological string).[8]

The event structure template determines the structural aspects of verb meaning and classifies entire sets of verbs in that « it represents the ontological type of the event denoted by the verb » (Levin, 1999: 8). The event structure template is the grammatically relevant component of verb semantics because it determines a range of grammatical properties, including the realization of arguments (but, in general, its structure has reflections on both syntax and morphology). Event structure templates are defined on the basis of primitive predicates or *functions* (like ACT, BECOME, CAUSE, etc.) and arguments, i.e. participants whose syntactic realization is obligatory. Similar to

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[7] In this respect, RH&L agree with many other scholars working on lexical semantic representation (cf. Hale & Keyser, 1993, Grimshaw, 1993 and Jackendoff, 1990, among others).
[8] The original label of the idiosyncratic component of verb meaning was *constant* (in RH&L 1998): this terminological choice was due to the fact that this component is typically represented « as a fixed value filling an argument position in the decomposition of the predicate » (Levin 1999: 45). In more recent works, however, this term has been replaced by *root*, following Pesetsky (1995).

Pustejovsky's categorization, which basically captures event structure complexity, RH&L individuate event structure templates composed by just one subevent (like states and achievements) and others (like accomplishments and lexical causatives) composed by more than one subevent, cf. Table (6).[9]

While the template roughly corresponds to the aspectual classification, the root component captures the idiosyncratic semantic facets of the verb; although roots represent an open-ended set, RH&L argue that they can be grouped together in a small number of fixed arrays, classified by the same types of ontological categorization (e.g., manner, thing, state, place, instrument, etc.).[10] On the basis of their characterization, roots can be inserted into event structure templates (as modifiers or arguments) and the pairing of the two determines the basic verb meaning (see RH&L, 1998 for further explanation).

The representation of verbs' event structure template is in fact obtained through the integration of roots into fixed templates which characterize event types, in the form of function-argument relations through *canonical realization rules* (cf. RH&L, 1998), as illustrated in Table (6).

Table (6)   *Event Structure Templates (RH&L, 1998)*

EVENT STRUCTURE TEMPLATES	SITUATION TYPES
[x ACT $_{<MANNER>}$]	*ACTIVITY*
[x <*STATE*>]	*STATE*
[BECOME [x <*STATE*>]]	*ACHIEVEMENT*
[[x ACT $_{<MANNER>}$] CAUSE [BECOME [y <*STATE*>]]]	*ACCOMPLISHMENT-CAUSATIVE*

Examples of roots filling the templates in Table (6) are, respectively, *wipe*, *contain*, *die*, *build* (accomplishment) / *kill* (causative).

The salient difference between the Pustejovsky and RH&L proposals is that achievements approach accomplishments because of the change of state component in their event structure within Pustejovsky's account, while the two classes are distinguished within RH&L's solution on the basis of event complexity. However, with respect to our definition of R nominals as ENTITIES IN STATE, it is important to observe

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[9] The distinction between a structured and an idiosyncratic component in the lexical meaning is at the basis of the distinction Lieber (2004) marks out between the grammatical-semantic *skeleton* and the semantic-pragmatic *body*, respectively, of lexemes and affixes. Event structure templates, in particular, approach Lieber's skeleton, the major distinction lying in the interpretation of *state*: a state corresponds to a root element in the RH&L analysis and to a [-dynamic] function in the Lieber model.

[10] Manner roots typically characterize activity and semelfactive verbs.

that RH&L's analysis confirms the prediction that only certain classes of verbs can have nominals with R reading; specifically, the verbs with a template including a *<STATE>* root (i.e. aspectually: states, accomplishments and achievements). Crucially, these classes match up the same verb classes individuated on the basis of Pustejovsky's event structure in the previous section.

Further, it is important to stress that RH&L's templates approach but do not exactly match the Vendler-Dowty taxonomy of situation types. For instance, accomplishments have been usually identified with causatives, as suggested by Dowty (1979); however, L&RH (1999) introduce a fundamental difference between verbs like *eat, build, sing* (pure accomplishments) and verb like *open, break* and *kill* (lexical causatives). Although both verb classes involve events with duration and endpoint, only verbs like *eat, build, sing* are usually characterized by the presence of an incremental Theme, which stands in homomorphic relation with the event (cf. section 4.2.2). This means that in the case of *eat* the first subevent is temporally dependent on the second, and vice versa; in other words, the eating activity is inherently coextensive and necessarily temporally dependent on the process of food ingestion or disappearance. In such cases, the authors propose that two sub-events are "co-identified" in a single one, through a process L&RH (1999 and 2004) name "Event Co-identification".[11]

If L&RH's (1999) analysis of accomplishment predicates is construed to offer an account of argument realization and capture important syntactic generalizations, I suggest here that their proposal of an identical single-event template for activities like *push* and *administer* and accomplishments like *build* (*a house*), *eat* (*an apple*) fails to capture the important distinction in the default aspectual setting lexically associated with each verb. However, following L&RH (1999), I maintain that typical accomplishment events do involve an incremental change of state which is temporally dependent on the activity subevent (see further discussion on Event Co-identification in the next chapter).

Before turning to the correlation between verb semantics and PRODUCT nominals, I will investigate the notion of incrementality, anticipating that this semantic / aspectual property seems to characterize the interpretation of a relevant subset of R nominals.

4.2.3 Telicity, incrementality and PATH nominals

Some scholars working on verbs' lexical semantics have emphasized the centrality of the nature/structure of verb's NP arguments, in particular, the syntactic object or subject bearing the semantic role of Theme.

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[11] Cf. section 5.2.3 for further analysis of this phenomenon.

According to Dowty's analysis, in particular, telicity is defined in terms of a mapping from the structure of the incremental Theme argument onto the structure (of the time course) of the event:

> The meaning of a telic predicate is a homomorphism from its (structured) Theme argument denotations into a (structured) domain of events, modulo its other argument. (Dowty, 1991:567)[12]

In other words, an incremental Theme argument is involved in a homomorphic relation between the physical amount of its own referent and the time course of the event denoted by the predicate.

The notion of incremental Theme has played a central role in the literature on lexical and syntactic aspect; first originated by Dowty (1979), it received a formal and more thorough analysis in Krifka (1987, 1992). Furthermore, Tenny (1987; 1988; 1992; 1994) has basically exploited the same notion of incrementality under the proposal that certain NP verbs' arguments can "measure out" the event. As pointed out by Krifka (1998), telicity is a property that arises when incremental Theme arguments are quantized; a quantized argument can be a countable noun or a measure construction, e.g. *five apples*, *a glass of wine*.

> A predicate *P* is *quantized* if and only if no entity that is *P* can be subpart of another entity that is *P*. (Krifka 1998:200)

If telicity is a syntactic property, because it is established at a level of syntactic-semantic composition, incrementality is instead a lexical property, which characterizes the nature of certain verb arguments.

Incrementality typically characterizes objects of verbs of creation or consumption (such as *build* and *eat*), where incremental Themes are instantiated by effected and destroyed objects, respectively. However, as already noted in Dowty (1991), incrementality is a property that holds also in motion verbs; specifically, it holds between the time course of the motion event and the (spatial) path. (5), for instance, shows that manner of motion verbs, lexically denoting activities, acquire a telic reading in association with certain (oblique) PPs or (argument) NPs:

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[12] Dowty (1991:567) explains that: « […] a homomorphism is a function, from its domain to its range, which preserves some structural relation defined on its domain in a similar relation defined on the range ». Again, Dowty (1991:567) offers a good case with the predicate *mow the lawn*: « the homomorphism claim means that, because of the meaning of *mow*, the state of parts of the lawn and their part-whole relationship is reflected in the parts of the event of mowing and ITS part-whole relationship. »

(5)   a.   Walk from the bank to the post office

          b.   Run a mile

Again, a type of incrementality holds in so-called degree achievements (cf. Dowty, 1979 for such definition), such as *lengthen* and *shorten*, where this property is provided by the incrementally variable degree of the (gradable) adjective that functions as the base of the verb.

Let us now see how these verb classes can be analyzed from a new perspective. The correlation between telicity and incrementality has recently been reformulated in terms of *degree of change* in Hay, Kennedy and Levin (1999) and Kennedy and Levin (2002). Their analysis is based on the existence of a difference variable in accomplishment verbs whose nature can determine telicity; more precisely, the extent of an accomplishment event is measured by the extent of the difference. Kennedy and Levin (2002) establish a parallelism among the three verb classes mentioned above, because they all become (a)telic depending on the (un)boundedness of this difference variable (the degree of change). Starting from the creation/destruction class, they observe:

> In verbs of creation/destruction, telicity involves a mapping from the structure of the incremental Theme to the event *(change (in (volume/extent) of object).*   (Kennedy and Levin, 2002: 2)

(6)   Lucy ate rice for hours   →   atelic

       Lucy ate a bowl of rice in an hour   →   telic

It is commonly assumed that creation and destruction (or consumption) verbs are the prototypical examples of the accomplishment class; however, verbs of inherently directed motion can also give rise to telic reading:

> In verbs of directed motion, telicity involves a mapping from the location of the moving object on a Path to the event *(change in location).*
>   (Kennedy and Levin, 2002: 2)

(7)   a.   The balloon ascended for an hour.   →   atelic

          b.   The submarine ascended in an hour.   →   telic

              If a quantized Path argument is added, only the telic version is fine:

          c.   The submarine ascended 400 meters in an hour/*for an hour.

Both classes, however, in the absence of a DP or of a PP, result in being underspecified with respect to telicity.

Finally, degree predicates are classified by Dowty as a special type of achievements, consisting of a series of successive *teloi* which can go on indefinitely; therefore, they are also lexically underspecified with respect to (a)telicity. However, Hay, Kennedy and Levin (1999) and Kennedy and Levin (2002) maintain that this class exhibits the defining property of the accomplishment class:

> In degree achievements, telicity involves a mapping from a degree to which some property holds of the incremental Theme argument to the event *(change in property).* (Kennedy and Levin, 2002: 2)

(8)   a.   The water dripping off the roof lengthened the icicle for an hour   → atelic

       b.   The tailor lengthened my pants in an hour   → telic

          If a quantized Path argument is added, only the telic version is fine:

       c.   The workers widened the road by five meters in an hour/*for an hour

That is to say, the reason for grouping together these three verb classes lies in the fact that all these predicates denote actions of gradual change; therefore, they all contain, as part of their lexical content, gradable, scalar properties. More precisely, Kennedy and Levin (2002: 2) explain that:

> the aspectual behavior of these verbs is most generally and insightfully explained in terms of underlying scalar properties of the source verbs, in particular, the structure of this "degree of change", *d*.

Telicity is solely determined by the maximal value of the degree change argument, which remains to be specified in the syntax.[13]

Summing up, what Kennedy and Levin emphasize is that different verb classes, lexically underspecified with respect to telicity, are grouped together on the basis of a semantic component, let us call it *Path* (term corresponding to their *degree of change*), which displays a homomorphic relation with the structure of the time course of the event.[14] In other words, an *incremental Path* component of verbal meaning determines what I have defined as the lexical contribution to telicity (cf. section 3.4.1.1). Namely, the incremental Path is to be understood as an abstract component of verb semantics, which can be instantiated by the physical extent of the created / consumed object in the

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[13] Therefore, again, telicity emerges as a property to be specified at the (syntactic) level of the IP, and not at the lexical level. Kennedy and Levin, (2002: 13) explain in fact that: « Telicity and degree of change (our functional analogue of the traditional incremental Theme) are to some extent independent: a verb may have a degree of change without being telic ».

[14] I suggest replacing the notion of *degree* with the one of *Path* for reasons of coherence with Lieber's taxonomy of SITUATIONS, where the notion of Path qualifies as a relevant feature for distinguishing among SITUATIONS (cf. Chapter 5).

case of creation/destruction verbs and by the degree of the gradable property in the case of degree predicates. With verbs of motion, instead, the Path is a spatial one; in effect, it is not the internal object that bounds the event here, but a directional PP.

I now turn to the R interpretations of the deverbal nominals derived from the above-mentioned verbal classes to give an idea about the way they can be grouped together thanks to the notion of incremental Path.

We have seen in the last chapter that a group of nominals (the PATH nominals) can be identified, which refers to the Path (or extent or measure) which delimits an event. In particular, PATH nominals can be derived from the verbs explored in this section: degree achievements, verbs of directed motion, verbs of creation and consumption/destruction. That is, they are obtained from predicates having an intrinsic Path component of meaning in their semantics and lexically involving an underlying scalar structure.

Prolungamento 'extension/continuation', *discesa* 'descent/slope', *costruzione* 'construction', *consumazione* 'refreshments' are all cases of E·R nominalizations obtained from verbs of these classes. *Prolungare* 'extend/lengthen' represents a degree predicate (with a base adjective *lungo* 'long' which indicates an open scale of length values), *discendere* 'descend' is an inherently directed motion verb, *costruire* 'construct' is a creation verb, and *consumare* 'consume' is a consumption verb, respectively. Confining the analysis to the R reading, we argue that all these nominals instantiate the incremental Path delimiting the event denoted by the base verb.

We have already seen in section 3.5.1.4 that *prolungamento* can be conceived of as a PRODUCT nominal, because it can refer to the resulting object / effect of the corresponding event. Nonetheless, *prolungamento* does not necessarily need to be interpreted as an artifact, but can be viewed as the concrete entity that reifies the spatial Path, which incrementally measures out the extension event:

(9)   Il prolungamento di questa strada è di proprietà privata.
        'The continuation of this road is private property'

This insight is proved by the fact that the same nominal can also convey the abstract meaning of a spatial Path, with no need to refer to a specific concrete entity (in (10), no specific entity reifies the abstract Path):

(10)   Il prolungamento della strada ha superato i 5 chilometri previsti nel progetto
        iniziale.
        'The extension of the road exceeded the five kilometres estimated in the original
        project'

Similarly, *discesa* 'descent', which totally excludes a PRODUCT reading, can refer to a spatial Path, as shown in (11), where the nominal denotes the space covered by the motion event of the submarine.

(11)   La discesa del sottomarino ha ormai superato i 15 chilometri.
        'The descent of the submarine already exceeded 15 kilometers'

Besides, *discesa* has acquired a concrete meaning too, because it denotes the physical entity which typically instantiates the descending path itself, i.e., a slope:[15]

(12)   E' molto divertente percorrere questa discesa con la mountain-bike.
        'It is a lot of fun to go down this slope on a mountain-bike'

Finally, *costruzione* 'construction' indicates the entity resulting from the culmination of the corresponding event (cf. the *result-object* class in section 4.3.1) and *consumazione* refers to the object to be consumed (eaten or drunk):

(13)   Gianni ha fotografato una costruzione imponente.
        'John took a photo of a huge construction'

(14)   La tua consumazione è stata portata al tavolo.
        'Your refreshment has been brought to the table'

Interestingly, these nominals cannot refer to an abstract Path of meaning, because the effected / affected object corresponds to and instantiates the incremental Path in the case of creation / consumption verbs.

On the basis of the nominals presented in this section, it seems that the aspectual component of meaning of verb semantics (identified by an incremental Path) plays a relevant role in determining the R interpretation of the derived nominal. Further, it emerges from this analysis that PRODUCT nominals such as *costruzione* 'construction' can be considered as a special case of PATH nominals, since the objects they describe coincide with the incremental Paths delimiting the events of their bases.

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[15] Among these nominals, however, *discesa* represents a special case since it is derived by means of a nominalization process, the feminine of the past participle (or *-ata* suffix), that has intrinsic *Aktionsart* properties distinguishing it from mere default nominalizers (like *-mento* and *-zione*) (cf. Gaeta, 2002, among others). In general, unaccusative verbs are nominalized by means of this suffix: e.g. *entrata* 'entry/entrance', *uscita* 'exit', *salita* 'climb/steep street', *discesa* 'slope', *crescita* 'growth', etc.

4.2.4 Summary

With this synthetic overview of some influential decompositional approaches to verb semantics I hope that the reader has gotten a deeper understanding of the insight introduced in the previous chapter; namely, that only certain actional classes of predicates can form nominals with ENTITY IN STATE reading, or more precisely:

a) Only verbs that have a state component of meaning in their semantics can form E·R nominals, where the R type expresses an ENTITY IN STATE interpretation. These predicates are states and transitions, in the Pustejovsky account, and those with an event structure template characterized by a *<STATE>* root, in the RH&L analysis.

Further, the innovative standpoint on incrementality presented in section 4.2.3 has revealed that PATH nominals are sensitive to this aspectual property of the base verbs, or, more precisely:

b) Only dynamic verbs characterized by a scalar structure or, in other words, that contain an incremental Path component of meaning (roughly corresponding to the accomplishment class), can form nominals with PATH reading, where the Path is the incremental entity or measure phrase which delimits the event of the verb.

Finally, because PRODUCT nominals are mainly obtained from accomplishment predicates, which have an incremental Path component of meaning in their lexical semantics, we have pointed out that:

c) PRODUCT nominals typically (but not always) denote incremental entities; as such, they can be considered as a type of PATH nominals.

In the following sections, I will concentrate on the PRODUCT interpretation of deverbal nouns. In pursuing the leading hypothesis that verb semantics can influence nominal interpretation, I will examine several verb classes and point out that, to form nominals ambiguous between an E and a PRODUCT interpretation, it is not sufficient (nor necessary) for the base verb to have a Path component of meaning. We will see in fact that only creation verbs are likely to form nominals with PRODUCT interpretation. Since values such as creation (or destruction or consumption, etc.) are not directly encoded

into the event structure template of a predicate,[16] it follows that part of the information relevant to allowing the PRODUCT interpretation of the nominals is specified in the idiosyncratic component of verb semantics.

4.3   Towards a *PRODUCT*-oriented verb classification

To continue the analysis of the connection between verb semantics and interpretation of the derived nominals, I draw attention to the PRODUCT interpretation of R nominals, representing a sub-type of the ENTITY IN STATE reading. Specifically, I intend to show that only certain verb classes can have corresponding nominals with PRODUCT reading,[17] but that these classes cannot be reduced to the aspectual or templatic taxonomies discussed in the previous sections. I instead propose to isolate and classify the situations that are characterized by a specific semantic property; that is to say, the (potential) ability of putting into existence a *new* entity, i.e. the resulting product/artifact which is named by the derived (R) nominal.

Specifically, in order to obtain a nominal with PRODUCT interpretation, we expect that the base verb pertains to one of the following subclasses of verbs:

a) **Creation (/Result-Object) verbs**: the situation brings into being a new object/entity (e.g. *costruire* 'build')

b) **"Creation by representation" verbs**: the situation expresses the coming into being of an entity, which is a *representation* of the Source argument, typically mapped onto the direct object position (e.g. *tradurre* 'translate')

c) **"Creation by modification" verbs**: the situation describes a tangible/concrete (hence, Referential) modification, which is conceived again as a new entity, on/in an existing object/entity (e.g. *correggere* 'correct')

I contend that all the above-mentioned classes describe dynamic situations that can be understood as creation events (aspectually, they are mostly accomplishments and take incremental Theme or Path arguments). Nonetheless, they differ according to the mode by which the new object comes into existence.

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[16] In Chapter 5, however, I will attempt to encode such semantic values into the semantic-grammatical skeleton of situations. In particular, I will mark out a distinction between verbs of creation and verbs of destruction attempting a formal coding of the concepts of "existence" and "privation" that, since they appear to have grammatical consequences, might accordingly be included in the semantic-grammatical skeleton of the situation classes they define.

[17] The subject developed in these sections (4.3- 4.3.4) has been already presented in different versions in Melloni and Bisetto (forthcoming) and Bisetto and Melloni (forthcoming).

In the course of the following sections, I will also pay attention to the morpho-syntactic properties of derived nominals, both in the E and R interpretation, in order to highlight that the differences between the nominals obtained from these verb classes, which hinge on the semantic distinction among the base predicates, have also reflections on their morpho-syntactic behavior. Specifically, result-object in (a) and other creation verbs in (b, c) all put into existence new entities, but while the latter create new entities related to/besides the already existing ones, result-object verbs crucially lack an already existent entity. Accordingly, only nominals from the result-object class involve the suppression of the internal argument when expressing the PRODUCT interpretation, whereas PRODUCT nominals from the other classes usually allow the projection of the syntactic satellite corresponding to the verb internal argument.[18]

The analysis of these verbs and their derived nominals will prove that the root component, i.e. the idiosyncratic semantic block associated with verbs' semantics, seems to play a crucial role in the derivation of PRODUCT nominals, sometimes overriding the actional/aspectual classification of the base.

4.3.1 Creation or *result-object* verbs

Verbs of creation are the most obvious candidates for the formation of PRODUCT nominals. These predicates describe events in which an Agent causes an entity to come into existence. They differ from the more common Agent-Patient verbs because, despite both taking an Agent, creation verbs do not take a Patient or affected object (e.g. *wash a shirt*, *drive a car*), but what is traditionally called *effected object* or *object of result* (Hopper, 1985; Quirk et al., 1985: 749-750; Jespersen, 1924: 157; Visser, 1963: 412). An effected object does not qualify as being affected, changed, or modified in any way by the situation; an effected object is the one whose referent comes into existence as a result of the action described by the verb.

Effected objects are the most prototypical manifestation of incremental Themes or Paths, that is to say, those LCS participants which measure out or delimit the event described by the verb (cf. section 4.2.3). Aspectually, in fact, the verbs in this class tend to be accomplishments, and, because incremental Themes are typically linked to direct object position, they are mainly transitive predicates (with the Agent mapped onto subject position).

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[18] Furthermore, there is also a distinction between classes (b) and (c): the verbs in (b) leave the Source-object unaffected, while those in (c) affect/modify the object. While Source - unaffected argument are usually projected into syntax as modifiers of the R nominal by means of the preposition *di* 'of', affected arguments can take different prepositions (e.g. *di* 'of', *in* 'in', *su* 'on', etc.), depending on their thematic relation with the head nominal they modify: (b) *la traduzione del libro* 'the translation of the book' vs. (c) *le correzioni nel testo* 'the corrections in the text'. I will leave the latter question aside, because it is beside the point of the present analysis.

The nominals obtained by the result-object class usually display the E·R polysemy; in particular, their R nominals exhibit the PRODUCT interpretation, as they describe the effected entities of creation events. Consequently, such PRODUCT nominals semantically and syntactically bind the internal arguments that are linked to the direct object position.

We will see in the course of this descriptive analysis that the nominals obtained from the result-object class show a marked tendency to be formed by means of –*zione* suffix.

4.3.1.1   Verbs of creation or the *costruire* class

Ex: *comporre* 'make up', *coniare* 'coin', *costruire* 'build', *creare* 'create', *edificare* 'construct', *formare* 'form', *inventare* 'invent', *produrre* 'produce', *svolgere* (*un tema*) 'develop (a composition)', etc.

The verbs in this class are two-argument place predicates from the syntactic viewpoint, and are aspectually defined as accomplishments from the situation type viewpoint (or have transition event structure, according to Pustejovsky). To distinguish them from other creation verbs, we follow Levin (1993: 173) and name predicates in this class as *costruire* verbs (= Levin's *build verbs*).

Let us begin just with the predicate *costruire* 'build', which gives the name to the class. The object (an edifice, a house, etc.) which is obtained through the corresponding event does not exist before the beginning of the event itself. In this sense, *costruzione* 'construction' – the nominal derived from *costruire* – stands for the PRODUCT (i.e., the effected object) of the process, given that such an entity comes into existence through the accomplishment of the construction event. Furthermore, effected entities are the referents of incremental arguments; in the case of *construction*, the progress through the construction event is measured by the point in the construction (*edifice*) that the builder has attained. In this sense, $construction_R$ can be said to measure out and delimits $construction_E$.

The verbs involving the realization of an entity/object previously nonexistent, all belong to the result-object class, as can be seen considering another predicate, *creare* 'to create' and its related nominal *creazione* 'creation':

(15)   a.   La creazione di quella scultura (da parte dell'artista) fu lunga e difficoltosa.
             'The creation of that sculpture (by the artist) was long and troubled'

b. *Le creazioni di quelle sculture (da parte dell'artista) furono lunghe e difficoltose.

'The creations of those sculptures (by the artist) were long and troubled'

(16) Questa meravigliosa creazione rappresenta un esempio dell'architettura del XIX secolo.

'This wonderful creation represents an example of 19th C architecture'

Creazione in (15)a. is an E nominal: it describes a dynamic situation which has temporal duration. It cannot be pluralized (cf. b.) and is accompanied by its arguments (although the phrase expressing the external argument is always optional).[19] *Creazione* in (16) is an R nominal and stands for the concrete result of the corresponding action: it can be pluralized, is non-argument taking and can be – as it is in the example – accompanied by a demonstrative (*questa* 'this').[20] The addition of the internal argument (expressed in Italian with a *di*-phrase) to the nominal forces its E interpretation, as shown by the ungrammatical sentence in (17).

(17) La creazione (*della scultura) (di quel giovane artista) è molto originale.

'The creation (*of the sculpture) (of that young artist) is very original'

The ungrammaticality arises from the clash between the *di*-phrase, which forces the E reading, and the predicate (*è molto originale*), which elicits instead the R interpretation.

The fact that the verbs in this class can have corresponding nominals with ambiguous E·R interpretation does not imply that the nominals *must* always express the R interpretation. Actually, if nominals that convey an analogous interpretation obtained with other morphological means already exist in the lexicon, the access to this reading is usually blocked in the deverbal nominal. Instances of this kind of "semantic blocking"[21] are the interpretations of *edificazione* 'edifice' derived from *edificare* 'to build' and *fabbricazione* 'fabrication' from *fabbricare* 'to fabricate'. While the former nominal might express an R interpretation (but this is not a preferred one), the latter only conveys the E reading. However, both verbs are lexically related to nouns with meanings analogous to the PRODUCT interpretation, i.e. *edificio* and *fabbricato* respectively; the

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[19] In Italian, the agentive external argument is expressed by means of a *da parte di*-phrase, corresponding to the English *by*-phrase. For other diagnostics identifying E vs. R nominals, cf. Table (1) in section 2.2.1.1.

[20] According to the diagnostics produced by Grimshaw (1990), the genitive phrase of R nominals could exhibit a possessor interpretation. However, in *La creazione di Gianni è sul tavolo* 'John's creation is on the table', the *di*-phrase tends to disfavor the possessor interpretation, while it retains instead the Agent-oriented interpretation it expresses when in construction with the corresponding E nominal.

[21] Cf. Scalise (1984) on lexical blocking.

former is obtained by means of *-o* suffixation (but it is also interpretable as a case of conversion with assignment of default masculine gender), while the latter is a converted form of the past participle, which is a common roundabout strategy for the expression of affected objects / Patients in Italian.

Nominals in this class are primarily formed by means of *-zione* suffix, as shown by the examples below.

PRODUCTS OF CREATION:[22]

composizione 'composition', *coniazione* 'coinage', *costruzione* 'construction',[23] *creazione* 'creation', *formazione* 'formation (/team)', *produzione* 'production', etc. [24]

4.3.1.1.1 Image creation verbs

Image creation verbs (cf. Levin 1993: 169) represent a subclass of creation verbs because they describe the creation of images on a surface (e.g. *illustrare* 'illustrate', *incidere* 'inscribe'). Such verbs are syntactically peculiar because they might display a kind of syntactic alternation similar to the locative alternation of the well-known *spray/load* class. Let us consider the following instances with *incidere* 'inscribe':

(18)   a.   Il gioielliere ha inciso il nome di sua moglie sull'anello. (*locative variant*)
             'The jeweler inscribed his wife's name on the ring'
        b.   Il gioielliere ha inciso l'anello con il nome di sua moglie. *("with" variant)*
             'The jeweler inscribed the ring with his wife's name'

In a. the locative variant suggests that the internal object is somehow created or effected on a second object (realized as an oblique, namely a PP headed by *su* 'on'); in b., instead, the 'with variant' takes an object which is modified or affected (and not effected) by the action (the verbs in these latter configurations are understood as creation by modification verbs, cf. section 4.3.3.2). Despite the alternating syntactic configuration,

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[22] The English glosses reproduce the ambiguous sense of the corresponding Italian nominals, or only capture their PRODUCT interpretation. The same observation holds for the PRODUCT nominals in the next sections.

[23] PRODUCT nominals can acquire specialized meanings: while *creazione* can refer to many different objects (practically, all the entities that are created can be defined *creazioni*) a nominal like *costruzione* indicates (a class of) specific entities, prototypically buildings, edifices, but also theoretical (hence, abstract) constructions. Yet, a table, for example, though built, cannot be appropriately defined as *costruzione*. What this implies, then, is that in some non-predictable cases, the outcomes of such nominalizing processes undergo semantic drift or acquire specialized meanings; in particular, they tend to acquire the specific meanings expressed by the prototypical objects of the events named by the base verbs.

[24] Other nominals in this class are *allevamento* 'breeding' and *coltivazione* 'growing-crops': the base predicate can in fact be understood as taking (kinds of) effected objects. These nouns indicate a collection of entities and, as a result of a common sense extension, they are names of place as well.

which influences the semantic characterization of this verb, the corresponding R nominal (*incisione*) appears to capture just the creation value (i.e., the value in (18)a.), hence incorporating the verb internal argument and inheriting the modification of the locative PP:

(19)   L'incisione sull'anello
       'The inscription on the ring'

As it happens for other result-object nominals, the R nominal expressing the product of the action entirely "absorbs" (or semantically incorporates) the verb's internal argument, which corresponds to the object put into existence through the base verb's event.

4.3.2 Semantic constraints: incrementality, effectedness and Qualia

Before going on with the PRODUCT-oriented verb taxonomy, I intend to pay attention to the semantic constraints that characterize the PRODUCT interpretation of a deverbal noun.

On the basis of the verbs and corresponding nominals examined so far, it emerges that the PRODUCT interpretation of a deverbal nominal systematically corresponds to the entity put into existence by the dynamic situations of the base verb. It is commonly acknowledged that effected objects, which are the referents of our PRODUCT nominals, are the most prototypical examples of incremental Themes; to pose the question in the terms of Hay, Kennedy and Levin's proposal, the R interpretation of these nouns is strictly connected with the scalar property or degree of change (expressed by a Path argument) which is inherent in the semantics of their base verbs (cf. section 4.2.3).

Crucially, in the case of creation verbs, the Path or degree of change is inseparable from the effected object, because the former is instantiated by the volume/extent of the latter. Therefore, we can say that PRODUCT nominals instantiate the incremental Path (or the degree of change) implied by the lexical value of the verbal base and represented in the syntax trough the (Theme or Path) internal object.

On this basis, one could hypothesize that incrementality alone is a sufficient semantic requirement, which is capable of guiding the interpretation of PRODUCT nominals through the binding of the verb incremental argument by the R suffix in the co-indexation mechanism (the details of co-indexation will be developed in the next chapter). However, this is not true; in effect, there exist many incremental arguments that are not expressed by PRODUCT nominals. This is the case of the (incremental) PATH reading of the nominals analyzed in section 4.2.3 (e.g. *discesa* 'descent/slope'), but it is

also the case of the internal arguments of representation verbs (thematically, Source arguments) and modification verbs (thematically, affected Themes/Patients), as we will see in the next sections.

I argue instead that the formation of PRODUCT nominals relies on the existence of an *effected* argument in the base verb LCS; to put in another way, the relevant argument of the base verb – which semantically corresponds to the result or by-product of the event – must satisfy a semantic requirement of *effectedness* in order for co-indexation to successfully apply and obtain the PRODUCT interpretation of the R nominal.

That derivation is sensitive to semantic requirements is not new in the literature on derivational semantics. Lieber (2004: 61), who elaborates on Barkers' (1998) analysis of the English suffix -*ee*, explains that

> it appears that an affixal argument may sometimes impose specific
> semantic requirements on its co-indexed argument. In effect, the skeleton
> of the affixal argument and the base argument it is co-indexed with must
> be semantically compatible […]

Formally, I follow Lieber's account of -*ee* (which imposes semantic conditions of non-volitionality and sentience on its co-indexed argument), and put the semantic constraint of effectedness on the *R* argument of the suffix. However, it is important to notice that, although it is the suffix which selects its base, co-indexation works like a *key-and-lock* mechanism and that the chance of a nominal of conveying the PRODUCT interpretation is therefore strongly influenced by its base verb and by the participants/arguments in its semantic skeleton (comparable to Jackendoff's, 1990 and Pustejovsky's, 1991 LCS, or to RH&L's event structure template).[25]

Moreover, because effected entities are incrementally created, I propose that both incrementality and effectedness should characterize the non-thematic argument of the R suffix and, accordingly, this combination of semantic constraints should be able to determine which argument, among those of the base, will be co-indexed:

(20)   Skeleton of R suffixes: [$\pm$material, -dynamic ([$_{incremental,\ effected}$]$_R$, <base>)]

The skeleton above, when co-indexed with the argument of the base verb which satisfies both the incrementality and effectedness constraints (and determines the [$\pm$]

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[25] Furthermore, we cannot forget that our transpositional suffixes are inherently polysemous and that, if the R interpretation is not always obtainable, the E interpretation is the default option: this is explained because of the absence of semantic requirements which the E suffix imposes over its co-indexed *E* variable (the first non-thematic argument of the skeleton of any verbs, as I am going to explain in the next chapter).

value of [material]), represents the outermost layer of the skeleton of a PRODUCT nominal (e.g. *costruzione* 'construction').

The same skeleton, when co-indexed with the argument of the base verb, which only satisfies the incrementality constraint, represents the outermost layer of the skeleton of a PATH nominal (e.g. *discesa/salita* 'descent/ascent -slope').

What this implies is that, as put forward by Lieber (2004), violation of less blatant semantic requirements is possible in the derivational mechanism of co-indexation. However, because the PATH interpretation arises because of a constraint violation, this reading seems to be exclusively triggered in the absence of an effected argument in the base verb LCS or skeleton. In other words, the PATH reading is not the preferred interpretation of a derived E·R nominal and a PRODUCT reading is instead favored if there exists a participant in the base LCS which satisfies the effectedness requirement imposed by the R suffix.

Again, this explanation is reminiscent of Lieber's account of the *-ee* suffix; her solution, in fact, relies on the attribution of different 'strength' to the requirements of sentience and non-volitionality that this suffix imposes on its co-indexed argument. Lieber argues that, the majority of English *-ee* nouns express sentient and non-volitional entities (they typically are Patient nouns, like *employee* and *addressee*), but because being (non-)volitional implies being sentient, it is possible to assign different strength to the two constraints. Therefore, sentience is a strict requirement, while non-volitionality is a weak one. What this analysis implies, then, is that a weak requirement is violable in co-indexation, and this accounts for marginal word formation patterns exemplified by words such as *standee* and *escapee*, which can be ambiguously interpreted as non-volitional or volitional nouns (and, accordingly, they exhibit a subject-oriented interpretation).

As to our R nominals, because being effected implies also being an incremental argument (at least, in the case of accomplishment verbs or, in general, of those verbs which contain gradable properties as part of their lexical meaning), I follow Lieber and assign difference strength to the two constraints, to be formally represented as follows (underlying stands for weakness of the requirement):

(21)   *(Provisional) Skeleton of R suffixes:*
        [±material, -dynamic ([$_{incremental,\ \underline{effected}}$]$_R$, <base>)]

Although the present analysis of R suffixes approaches Lieber's analysis of *-ee*, there is an important distinction between the two explanations which hinges on the relation between the constraints that the suffix imposes on the co-indexed argument.

Specifically, I suggest that incrementality and effectedness can be, at least to a certain extent, independent constraints; specifically, incrementality is an aspectual condition, which applies if and only if there exists a Path (or Theme) argument in the base skeleton, which is able to satisfy it. On the other hand, if the base verb lacks this argument (and this means that it lacks a gradable property in its semantics), I maintain that it could nevertheless be conceived as expressing a creation event and taking a sort of effected argument. I will come back to this point in section 4.3.5, while discussing the case of R nominals from achievement predicates.

We have already discussed incrementality in a great detail, and explained that, because it is an aspectual notion, it can be encoded into a verbal skeleton. On the other hand, the question we should attend to now is how to capture the effectedness constraint, or, more precisely, where to search in our articulated system of lexical competence and semantic representation in order to detect such semantic trigger.

As I have already hinted at in the preceding sections, the causally connected values of creation and effectedness are intrinsic properties in the idiosyncratic module of the lexical-semantics of lexemes (of verbs and nouns, respectively): that is, the semantic-pragmatic body in Lieber's system or root in RH&L's account.[26] The linguistic literature does not provide us with a deep understanding of this idiosyncratic and only partially formalizable component of verb semantics. The most structured analysis of this semantic facet is provided by Pustejovsky (1995) with the development of the Qualia Structure (cf. section 3.5.3). However, concerning the creation value that is intrinsic in the base verbs of PRODUCT nominals, I propose that there could be a way to formally encode it in the semantic skeleton of the base verbs; however, I will discuss this point later on in Chapter 5, where I will develop the skeletons of the situations I descriptively introduce in the present chapter.[27]

With respect to R nominals, instead, I propose that *effectedness* is a semantic property that can be captured looking at the AGENTIVE quale of a deverbal nominal. As seen in the previous chapter, the AGENTIVE is the quale that expresses information about the coming into existence of an artifact. In particular, this quale has the following logical representation:[28]

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[26] Concerning –ee, Lieber explains that the semantic conditions of non-volitionality and sentience are inferable from the semantic-pragmatic body of the base lexemes selected by this suffix. The present proposal to search for effectedness in the qualia structure of nominals follows the same insight, that this information is not directly encoded in the grammatical skeleton.

[27] Concerning the creation value expressed by the *build* class, Pustejovsky (1995) observes that the verbs in this class are peculiar because at the level of their FORMAL quale there is a special predicate (*hold*) which expresses the relation between the (final/resulting) state and the object/artifact which exists in that state.

[28] Cf. the discussion about the qualia structure of E·R nominals in section 3.5.3.

(22)   AGENTIVE = R (e, y, x)

where R is a predicate (like *make*) expressing a creation value. According to Pustejovsky's explanation (1998: 8) of the AGENTIVE, « there is a *distinguished* event associated with the type such that it is responsible for the type's coming into being ».[29]

Thus far, I have only taken into account the narrow/literal sense of creation expressed by a fairly restricted class of verbs. Nonetheless, as I am going to show in the next sections, there are several senses – broader or metaphorical – by which a verb can be interpreted as describing a creation event. What counts for the derived nominal is that its base predicate can be conceived of as the predicate appearing in its AGENTIVE quale and explaining the mode by which the resulting artifact/product (described by the R nominal) is *created*.

4.3.3 Creation verbs by representation and modification

Other verbs expressing (non-prototypical) creation values by representation and modification are mainly transitive and they too, like those of the result-object class, describe events which bring into existence new entities. The difference between this and the result-object class of verbs is that the internal argument of such verbs denotes an already existing entity.

The dynamic situation expressed by these verbs can have two different outputs: it can leave unmodified the verbal object or can affect and modify it. In the first case, the situation expressed by the verbs - that we call *representation* verbs - creates a new object/entity (which is the product-outcome of the event) "besides" or "in relation with" the existing one. Examples in this class are *imitare* 'imitate' and *tradurre* 'translate'. In the second case, the action expressed by the verb creates a tangible/concrete modification (through breaking, addition or subtraction of material, for instance) in the existing object; instances of this class are *correggere* 'correct', *cambiare* 'change'. The name for this subclass is *modification* verbs.

Therefore, what counts for the identical behavior of these two subclasses of verbs with respect to nominalizations is not whether the referent of the direct object is or is not modified by the event, but that in both cases the event produces a result or by-product, which does not correspond to the entity denoted by the verbal object.

Aspectually, these predicates are mainly accomplishments/causatives (thus consisting of a sub-event of activity and a sub-event of change of state), as result-object verbs are.

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[29] Pustejovsky (1998: 8) explains that: « The sortal distinction between natural kinds and artifacts is a formal one, based on typing and explicit reference to the mode of coming into being ». In other words, the fact that PRODUCT nominals refer to artifacts, rather than natural types, depends on the presence of the AGENTIVE quale in their qualia, which natural types always lack.

Hence, since these verb classes are syntactically similar and exhibit the same aspectual classification, I put forward that it is the difference in the idiosyncratic meaning of the root between the two classes ('new creation' vs. 'creation besides') which is responsible for the different kind of derived nominals they give rise to.

4.3.3.1   Creation by representation

Ex: *copiare* 'copy', *falsificare* 'falsify', *imitare* 'imitate', *rappresentare* 'represent', *riscrivere* 're-write', *tradurre* 'translate', *trascrivere* 'transcribe', etc.

Like the verbs in the *costruire* class, the predicates in this class are transitive accomplishments characterized by (a manifestation of) incremental Themes. However, they differ from the previous class because their internal argument thematically corresponds to a Source and it is neither affected nor effected by the event; according to Dowty (1991), their verbal objects are *representation-source themes*, which act *de facto* as incremental Themes though being incremental only indirectly.

Let us consider *translating a poem*: the progress through this task is measured by the point in the poem that the translator has reached. In this sense, the poem can be said to measure out and delimit the event. Dowty (1991:569-570) explains:

> Since representations have parts which reflect the structures of the object they represent, an incompletely produced representation may well be a representation of a proper part of the object to be represented, so the structure of the source object can be **indirectly** [*emphasis added*] reflected in the event of producing the representation.

If the Source argument (mapped onto the direct object position) is incremental in an indirect way, what seems to me a directly incremental entity is the implied product or result of the event. A *translation$_E$* produces a *translation$_R$*, which is something new and different from the Source-object (the poem). Besides, following Krifka's analysis of incrementality, I argue that the coming into existence of this new entity stands in a homomorphic or proportional relation with the translating event. Acknowledging that the Source arguments of such predicates are equally incremental (even in an indirect way) and, thus, assigning incrementality both to the incremental Source and to the resulting entity coming out from this event, it emerges that effectedness is again a property which seems to play a relevant role in determining the meaning of the R nominal. In other words, it is the effectedness constraint that allows us to understand why a translation can never refer to the Source object, but to the created one. It is worth noting that *a*ffectedness is not relevant for characterizing the PRODUCT interpretation of a

deverbal noun; this property cannot be attributed neither to the Source argument (the poem to be translated), which is basically left unaltered by the translating process, nor to the effected object. Actually, effectedness (the defining property of PRODUCT nominals) typically implies non-affectedness.

The nominals obtained by these verbs admit the same semantic interpretations of those obtained from verbs of the *costruire* class, but differ with respect to their morpho-syntactic properties. I illustrate the point in (23), (24) and (25) with the nominal *traduzione*:

(23)   La traduzione di questo testo (da parte del filologo) è stata lenta e complessa.
        'The translation of this text (by the philologist) was slow and complicated'

The nominal in (23) is an E nominal and displays in fact the typical properties of E nouns: syntactically, it is argument taking and, semantically, is a temporal object (as the predicate *essere lenta* 'to be slow' can only modify the translating event and not the result). However, the nominal *traduzione* can appear in other environments and display different morpho-syntactic behaviors.

Consider the following example:

(24)   Ripetute traduzioni possono alterare il significato originale dei testi.
        'Repeated translations can alter the original meaning of the texts'

According to Grimshaw's diagnostics (cf. Table 1), the nominal in the sentence above, being plural and lacking an explicit argument structure,[30] should only be interpretable as the set of results of different translating events. However, the nominal in (24) is likely to convey an E interpretation. The chance of this nominal to appear in the plural form in the E reading becomes clearer by comparing the following examples:

(25)   a.   Le traduzioni della Bibbia (da parte di filologi e traduttori) si sono ripetute
              nei secoli.
              lit. translations of the Bible (by philologists and translators) recurred over the
              Centuries
              'The Bible was translated repeatedly over the Centuries'
        b.   Le traduzioni (degli antichi studiosi) sono spesso colme di errori ortografici.
              'The (/Ancient scholars') translations are often full of orthographic mistakes'

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[30] However, the internal argument of the base verb of the nominal is nonetheless recoverable in the sentence as the prepositional phrase *dei testi* 'of the texts'.

In (25)b. *traduzioni* can only refer to the (information-object) products of the corresponding events, but in (25)a. *traduzioni* can only signal, instead, that repeated translation events occurred; hence, although in the plural, this nominal should be interpreted as indicating a set of repeated events. It is important to stress that most E nominals in Romance can accept pluralization to a greater extent than English nominalizations (cf. Roodenburg , 2006 for a thorough analysis of this subject).[31]

Furthermore, as already seen in (25)b., *traduzione* can also convey a PRODUCT interpretation. Consider the example below:

(26)   La (sua) traduzione (di questo testo) è piena di errori grammaticali.
        'The (/his/her) translation (of this text) is full of grammatical mistakes'

In (26), *traduzione* unambiguously refers to the product of the translating event, as indicated by the predicate *è piena di errori grammaticali*, which only triggers the information-object sense of the nominal.

Let me briefly describe the morpho-syntactic behavior of this nominal and compare it with that of result-object nominals. First, as for result object-nominals, the phrase corresponding to the external argument of the base verb of the nominal is expressed by means of a possessive (*sua* in (26)) or by a *di*-phrase (*degli antichi studiosi* in (25)b.). However, the presence of the satellite corresponding to the verb internal argument (*di questo testo*) does not force the nominal *traduzione* to acquire an E reading, contrary to what happens to nominals from result-object verbs.

The syntactic construction in which the nominalization is accompanied by two *di*-phrases (one corresponding to the verb internal argument and the other one to the external argument) or by a *di*-phrase and a possessive is called "active construction", and characterizes representation nominals but is excluded by result-object nominals, which only allow the "passive construction" in the E interpretation:

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[31] The chance of pluralization of E nominals seems to be related to the *Aktionsart* properties of the base verb that are inherited from the derived nominal, as shown by Brinton (1995). In particular, since accomplishment and achievement predicates represent « those situations that can be directly or intrinsically counted » (Mourelatos, 1978: 429-30), E nominalizations obtained from them are more likely to allow pluralization. Namely, provided that default Italian nominalizers (-*zione*, in this specific case) do not modify the *Aktionsart* of the base verb, we should assume that creation verbs, which *per* default denote telic and countable events, should produce countable or pluralizable E nominals. Nonetheless, the possibility of pluralizing non-prototypical creation verbs distinguishes this class from the *costruire* class, though they are aspectually identical: the latter do not admit pluralization and behave instead as mass nouns in their E interpretation. When pluralized result-object nominals only convey an R reading:
(i)   ??Le creazioni di sculture (da parte del giovane artista) sono state rallentate dalla sua malattia.
         'The creations of sculptures (by the young artist) were held up by his illness'
(ii)   Le creazioni (del giovane artista) sono esposte nella prima sala.
         'The (/young artist's) creations are exposed in the first room'

(27) La traduzione di Gianni della poesia – La sua traduzione della poesia
      'John's translation of the poem – His/her translation of the poem'

(28) a. *La costruzione della casa dell'impresa / La tua costruzione della casa
          'The construction of the house of the company / Your construction of the house'
      b. La costruzione della casa da parte dell'impresa
          'The construction of the house by the company'

(27) shows that the active construction is available to the E·R nominals of representation verbs; in particular, in order to obtain the right semantic interpretation, the external argument is preferably realized by the argument linearly contiguous to the nominal, whilst the internal argument is expressed by the furthest *of*-phrase. In this case, therefore, the disambiguation of the sense is obtained by means of further predicative context.

Conversely, (28)a., since it is headed by a nominal of the result-object class, rules out the active construction, both in the E and in the R interpretation. In this case, the nominal cannot be an R one because the internal object is syntactically present. The E reading is also ruled out because the external argument must be expressed through a *da parte di*-phrase (corresponding to the English *by*-phrase), as shown by the correct phrase in (28)b. The first phrase in (28)a. is grammatical only if the embedded *di*-phrase *dell'impresa* is interpreted as the argument of the first *di*-phrase (*della casa*).

There is a last interpretation available to the nominals of *creation by representation* predicates: as it normally happens with information-object nominals (that is to say, nominals expressing an abstract content), *traduzione* can undergo metonymic displacement and convey the concrete interpretation of its container objects (a piece of paper, for instance, but its denotation can be only pragmatically or contextually determined):

(29) La (sua) traduzione è sul tavolo.
      'The (/his/her) translation is on the table'

To conclude, I emphasize that representation nominals basically exhibit the same semantic interpretations available to the result-object class, specifically, E and R (as PRODUCT), but they are different concerning the pluralization option of their E nominals and their syntactic complementation.

As in the case of result-object verbs, the derived nominal can ambiguously denote the E and the entity corresponding to the product or outcome of the event. Because such an

entity is brought into existence through the gradual accomplishment of the relevant event, it is also incrementally created.

Therefore, the R type of these nominals describes an incremental and effected entity, whose concrete or abstract characterization is established lexically, through the co-indexation mechanism in derivation (cf. Chapter 5 for the formal implementation of this process).

PRODUCTS OF REPRESENTATION:

citazione 'quotation', *copiatura* 'copy', *falsificazione* 'falsification', *imitazione* 'imitation', *rappresentazione* 'representation', *registrazione* 'registration', *ricopiatura* '(fair) copy', *ricostruzione* 'reconstruction', *rifacimento* 'remake', *riproduzione* 're-production', *riscrittura* 're-writing', *traduzione* 'translation', *trascrizione* 'transcription', etc.

4.3.3.1.1 *Performance verbs*

Ex: *battere (a macchina)* 'type', *cantare* 'sing', *dipingere* 'paint', *dimostrare* (*un teorema*) 'prove (a theorem)', *disegnare* 'draw', *esporre (oralmente)* 'explain', *illustrare* 'illustrate', *narrare* 'narrate', *raffigurare* 'represent', *recitare* 'recit', *scrivere* 'write', etc.

Other kinds of creation by representation verbs are those predicates expressing performances; all of these verbs take kinds of effected objects as internal argument. However, Dowty (1979) points out that performance predicates can ambiguously indicate a pure creation or a creation by representation (or "re-creation", as he defines it). With respect to the VPs *prove a theorem* and *sing a song*, Dowty (1979: 70) observes:

> If the theorem is being proved or the song sung for the very first time, then the theorem or song is created, just as in *build a house* though the object is abstract. But if a previously composed song is sung or a theorem in a textbook is proved, there is at most a "re-creation".

Overall, most performances are usually intended as representation events or re-creations of the Source argument and this has consequence on the syntactic behaviour of the R nominal, as I am going to demonstrate.

Let us now turn to a nominal obtained from a performance verb, *raffigurazione* 'depiction', in order to capture its semantic and morpho-syntactic properties.

As E noun, it appears in the passive construction (with the *by*-phrase), which forces the E reading (but, as E noun, it also accepts the active construction). Further, as E noun, it easily undergoes pluralization:

(30) a. La raffigurazione del paesaggio campestre (da parte di Gianni)
'The depiction of the countryside landscape (by John)'

    b. Le raffigurazioni del paesaggio campestre (da parte di Gianni)
'The depictions of the countryside landscape (by John)'

The R nominal may appear in the active construction and allow (but not require) the projection of the Source argument as a syntactic satellite introduced by *di* 'of'.

(31) Una minuziosa raffigurazione (del noto artista) (di un paesaggio campestre)
'A (famous artist's) detailed depiction (of a countryside landscape)'

Because the effected argument is a representation of the Source, this implies that the latter is free to be discharged in the syntax as an optional argument. Therefore, these nominals are syntactically and semantically equivalent to representation nominals, and represent a subset of that class.

PRODUCTS OF PERFORMANCE:

battitura 'typing/typed text', *esposizione (orale/scritta)* 'exposition', *narrazione* 'narrative', *raffigurazione* 'depiction/picture', *redazione* (*stesura*) 'writing', etc.

4.3.3.2   Creation by modification

Ex: *abbellire* 'embellish', *alterare* 'alter', *argentare* 'silver-plate', *collegare* 'link', *correggere* 'correct', *decorare* 'decorate', *deformare* 'deform', *incrostare* 'encrust', *migliorare* 'improve', *modificare* 'modify', *ornare* 'adorn', *ostruire* 'obstruct', *prolungare* 'extend', *ricoprire* 'cover', *riempire* 'fill', *rivestire* 'cover', *rompere* 'break', *spaccare* 'break', *tagliare* 'cut', *variare* 'vary', etc.

Verbs of modification, as the label itself suggests, describe changes of state, and, more precisely, events which affect and tangibly/physically modify the object, which therefore corresponds to an affected object. Examples of this heterogeneous class are verbs like *correggere* 'correct' or *modificare* 'modify'. Commonly, a concrete modification is also expressed by verbs indicating addition of material (e.g. *argentare* 'silver-plate', *ostruire* 'obstruct' *ricoprire* 'cover', *riempire* 'fill') or breaking or fracturing of the entity denoted by the verbal object (e.g. *rompere* 'break', *spaccare* 'break', *tagliare* 'cut'). Therefore, to this class pertain also degree achievements such as *prolungare* 'extend' and *accorciare* 'shorten' (cf. the analysis in section 4.3), because they concretely

affect and modify their Patient objects. Other verbs in this class are those that describe the transformation of an entity or its replacement (e.g. *trasformare* 'transform', *rimpiazzare* 'replace with', *sostituire* 'substitute'). [32]

All of the examples given belong to different verb classes, according to the classification of English verbs proposed by Levin (1993). For instance, verbs which indicate addition of material are usually defined as "putting verbs", where the verbal object specifies the location (or goal) and the verb's root can indicate just the action (e.g. *riempire* 'fill', *abbigliare/si* 'dress', *arredare* 'furnish') or also the object to be put somewhere (e.g. *argento* 'silver' in *argentare* 'silver-plate'), hence a Theme, in the traditional understanding of such thematic role. The (concrete) R interpretation of the corresponding derived nominals is the MEANS interpretation described in section 3.5.1.2 (e.g. *argentatura* 'silver-coat', *arredamento* 'furniture'). Concerning MEANS nominals, it is worth reminding the reader that the R interpretation of these nominals refers to material used to carry out the action, but crucially this material or means is here interpreted as the concrete result or product of the corresponding action.

Other verbs in this class are *rompere* 'break' and *tagliare* 'cut'. These predicates have been extensively studied in the literature as instances of opposite classes. The former is a pure change of state verb, which does not describe the way the change of state is brought about. The latter, instead, also specifies the manner in which a change of state is carried out in/on the object. However, both predicates imply a change of state in the object, while a verb like *colpire* 'hit' (or *toccare* 'touch'), for instance, does not make reference to any change in the object.[33] *Modificare* 'modify' and *correggere* 'correct' also indicate a change of state in the verbal object, behaving just like *break* in this respect.[34] The reasons for assigning these verbs to different classes concern the syntactic options and alternations they display (cf. Levin 1993). However, I propose here to class together these verbs with respect to their ability to have an associated product or result, expressed by their derived nominals alongside the E interpretation. In effect, these modification predicates share the property of creating a change of state in the verbal object; besides, this change is somehow associated with the creation of a new object / entity, corresponding again to the by-product of the event denoted by the verb. It is just this semantic characteristic which has consequences on the interpretation of their corresponding nominals.

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[32] Cf. the "verbs of exchange" in Croft (1991) and Levin (1993: 143).

[33] Interestingly, Levin (1993: 8) states: « *cut* and *break* […] have associated zero-related nominals with a similar interpretation: they refer to the result of the action. In contrast, the nominals zero-related to *hit* and *touch* do not allow this interpretation, but refer instead to the action itself. »

[34] In such cases, the corresponding R nominals are sometimes called "location nominals" since they refer to the point in/on which the change of state gets its concrete manifestation.

Furthermore, like result-object nominals, also the nominals from modification verbs are incrementally created when the base verb is an accomplishment verb; incrementality, instead, does not hold in the case of achievements like *rompere* 'break'.[35]

To illustrate the point, let us consider the nominal *correzione* 'correction' from *correggere* 'correct'. Because the event described by this verb results in a modification of the Patient object, its derived nominal can denote either the event or the product of the event performed on the direct object's referent. Nominals obtained from this subclass of verbs display the same syntactic properties of the *representation* class (cf. section 4.3.3.1). This similarity depends on the fact that both kinds of verbs describe the creation of a new entity that cannot be identified with the referent of the verb's internal object. On the other hand, this is the reason why representation and modification verbs, despite expressing a creation value, behave differently from result-object verbs. However, verbs of modification are not like representation verbs, because the former do not create a new object, but simply a modification in the object, which, in virtue of its concrete denotation, acquires its own referentiality as a new, autonomous entity.

The examples in (32)-(33) show that verbs of this sub-group can give rise to nominals of the same type as those of the *tradurre*-class:

(32)   a.   La correzione di questo documento (da parte della segretaria) è stata lunga
            e laboriosa.
            'The correction of this document (by the secretary) was long and troubled.'
       b.   Ripetute correzioni hanno profondamente modificato il testo originale.
            'Repeated corrections deeply modified the original text.'

(33)   a.   Questa correzione è errata.
            'This correction is wrong.'
       b.   Le correzioni sono sul tavolo.
            'The corrections are on the table.'

In (32)a. the nominal *correzione* is an E nominal, while (32)b. shows that the E nominal can appear in the plural. In (33)a. *correzione* is a non argument-taking nominal, since it indicates the product of the action denoted by the verb (*correggere*). Finally, the nominal in (33)b. denotes concrete objects; this further meaning is achieved through a metonymic displacement. Similarly to what happens with *traduzioni*, *correzioni* might stand for objects containing the corrections themselves.

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[35] I have shown in section 4.2.3 that incrementality is a property connected with a gradual change and it therefore implies duration of the event expressing this change. It follows that achievements, which denote punctual and atomic events (they do not have proper subparts), cannot take incremental arguments.

To conclude this section, it is worth stressing that PRODUCT nominals of modification verbs satisfy the same semantic constraints of creation verbs, that is to say, incrementality (if the base verb describes a gradual event) and effectedness.

The nominals in this class are numerous and are productively formed by means of -*mento*, -*zione* and -*tura* suffixes.

PRODUCTS OF MODIFICATION:

abbreviazione 'abbreviation', *accomodamento* 'adjustment', *accorciamento* '(word-)shortening', *accrescimento* 'enlargement', *affossamento* 'ditch', *alterazione* 'alteration', *ammaccatura* 'dent', *amplificazione/ampliamento* 'expansion', *argentatura* 'silver-coat', *cambiamento* 'change', *collegamento* 'link', *colorazione* 'coloring/color', *continuazione* 'continuation', *correzione* 'correction', *corrosione* 'corrosion', *decorazione* 'decoration', *deformazione* 'deformation', *grammaticalizzazione* 'grammaticalization', *ingrossamento* 'enlargement', *lacerazione* 'wound', *lavorazione* 'manufacture', *lessicalizzazione* 'lexicalization', *miglioramento* 'improvement', *mutamento/mutazione* 'change', *ostruzione* 'obstruction', *prolungamento* 'extension', *riparazione* 'reparation', *rivestimento* 'cover', *sostituzione* 'replacement', *spaccatura* 'break', *trasformazione* 'transformation', *variazione* 'change' , etc.

4.3.3.2.1 *Cooking verbs*

To conclude the analysis of modification verbs, I will turn to another interesting class of change of state predicates.

In principle, the class of cooking verbs (e.g., *arrostire* 'roast', *cucinare* 'cook', *lessare* 'boil') should (and do, in most cases) denote events that, though affecting the object towards which they are directed, cannot give rise to a modification conceivable as an new, autonomous entity. However, as suggested by Levin (1993: 244), some of these verbs can acquire the value of verbs of creation. Consider, in fact, the contrast between predicates like *cucinare un paio di uova* 'cook a couple of eggs' and *cucinare una frittata* 'cook an omelette'. Only in the latter case does the cooking verb assume the value of a creation verb, since the action is directed toward the putting into existence of a previously non-existent entity (i.e., the omelette).[36]

Let us consider the case of a nominal like *frittura* 'fried food', derived from the cooking verb *friggere* 'fry':

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[36] Cf. Pustejovsky (1995: 122-127) for interesting remarks on the polysemy of these verbs, which arises, in his view, from a generative mechanism of "co-composition"; specifically, it is the meaning of the internal argument, and more precisely, its qualia structure that triggers the creation value of the verb in the syntax.

(34) a. La frittura di questi gamberi mi ha impegnato per due ore.
          lit. the frying of these prawns took me for two hours
          'Frying these prawns took me two hours'
     b. Troppe fritture rovinano l'olio.
          lit. 'too many frying-PL spoil the oil
          'Too much frying spoils the oil'
     c. Anna adora la frittura (di pesce).
          lit. Anna loves the frying (of fish)
          'Anna loves fried fish.'

The sentences in (34) show the interpretations available to *frittura*; namely, it displays a singular E reading in (a.), a plural E interpretation in (b.), while (c.) shows that the nominal can acquire the concrete interpretation of an artifact obtained from a frying event (as an artifact, it can be interpreted as a collective noun).

If compared with the *costruire*-class, it must be noticed that the verbal object of the verb *friggere* does not precisely corresponds to the effected entity (the kilo of prawns already exists before the start of the frying event), and that precludes this verb belonging to the result-object class:

(35) a. Lucia ha fritto un chilogrammo di gamberi.
          'Lucy fried a kilo of prawns.'

However, it is worth highlighting that a quantized verbal object cannot modify the R nominal. The only modifier the R nominal may take is a bare plural or a mass noun that plays the role of a specifying complement and indicates the type of fried food:

(36) a. Una frittura di gamberi / di pesce
          lit. a frying of prawns / of fish
          'Fried prawns / fish'
     b. La frittura (*di un chilogrammo di gamberi) cucinata da Lucia
          lit. the frying (of a kilo of prawns) prepared by Lucy

While I leave the study of these nominals to further investigation, I suggest that the creation sense of cooking verbs could be a relevant factor for explaining the PRODUCT reading of *frittura*.

4.3.4 Summary

To conclude, I would like to review the main points of the verbal taxonomy described in the previous sections.

First, there are some semantic and morpho-syntactic properties that distinguish these classes of verbs and derived nouns. Crucially, the difference in the argument-taking properties of E and R nominals seem to be determined by the semantics of the base verbs. These differences can be summarized as follows:

- The result-object (or *costruire*) class can give rise to ambiguous E·R nominals, where the R type expresses a PRODUCT reading. PRODUCT nominals, which indicate the incrementally effected objects, cannot appear in the syntax accompanied by the internal argument of the base verb without changing their interpretations from PRODUCT to E. Furthermore, they cannot be pluralized in the E reading:

(37)   a. *Le numerose creazioni di nuovi modelli da parte di quel giovane stilista
         'The numerous creations of new models by that young stylist'
     b. Le numerose creazioni del giovane stilista
         'The numerous creations of/by the young stylist'

As shown in (37)a., pluralization is ruled out when the E nominal is accompanied by its arguments. On the other hand, when pluralized and / or when lacking argument structure such a nominal can only have a PRODUCT reading, cf. (37)b.

- Creation verbs by modification and representation can also form nominals with (pluralizable) E and PRODUCT interpretation (the latter can give rise to metonymic transpositions). Contrarily to what happens to object-result nominals, there is no shift in interpretation when the satellite corresponding to the verb internal argument is present, as the following examples illustrate:

(38)   a. La traduzione di questo testo è piena di errori.
         'The translation of this text is full of mistakes'
     b. La traduzione è piena di errori.
         'The translation is full of mistakes'

The presence of the phrase *di questo testo* does not alter the R interpretation of the nominal *traduzione*; the phrase appears to be optional as typically happens with 'modifier' phrases of R nominals (cf. Grimshaw, 1990).

More interestingly, the PRODUCT-oriented verb taxonomy hitherto outlined has shed light on the crucial semantic properties that characterize PRODUCT nominals:

a. **Incrementality**, an *Aktionsart* property, which can be expressed in terms of Path or degree of change. Because incrementality is grammatically relevant, it is directly encoded at the level of the verb skeleton (or event structure template or LCS);

b. **Effectedness**, a property which can be captured in the "idiosyncratic" building block of the lexical semantics of a nominal lexeme.

I have pointed out in section 4.3.2 that these two constraints differ in their strength; because being effected implies being incremental (or proportional with the time course of the event), it is possible to argue that effectedness is a weaker constraint with respect to incrementality. Since violation of less blatant semantic constraints is possible in co-indexation, we have an explanation for the PATH reading of these nominals, whose interpretation is the result of the lexical binding of an incremental argument.

However, it is important to stress that the non bi-univocal implication existing between incrementality and effectedness (i.e. effectedness implies incrementality but not vice versa) only holds in the case of accomplishment verbs. But it does not hold for achievement verbs, which, although lacking a scalar structure and corresponding Path arguments, can nevertheless have corresponding PRODUCT nominals. This is the case of several nominals in the modification class, like *spaccatura* 'crevice' *rottura* 'break', whose base verbs take participants (as semantic arguments) in their LCS corresponding to effects or products, that are not incremental, but holistic. Besides, we have noticed in section 3.5.1.3 that achievements like *rinvenire* 'find', *scoprire* 'discover' – despite lacking an incremental argument altogether – can form nominals with E·R interpretation; their R nominals *rinvenimento* 'found object', *scoperta* 'discovery', are very close in meaning to the PRODUCT reading, because they describe objects which are metaphorically brought into a new state of existence or are effectively created. Besides, also a prototypical creation predicate like *inventare* 'invent' can be considered as an achievement, since it is usually understood as describing an atomic and punctual event;

nonetheless, its derived nominal *invenzione* 'invention' undoubtedly conveys a PRODUCT reading.[37]

I leave the thorough study of these verbs and derived nominals to future investigation; however, I suggest that the nominals from this class share the same qualia structure of prototypical PRODUCT nominals (e.g. *costruzione* 'construction'). Specifically, they are characterized by the AGENTIVE role in their qualia; such a quale contains a predicate that can be understood as describing the *distinguished* event of (metaphorical) creation, through which the referent of the R nominal is brought into a resulting state. This predicate coincides with the base verb of the nominal. Therefore, we could represent the AGENTIVE role of some of the nominals obtained from achievements as follows (where e, x, y correspond to the *E* position, the Agent, and the Patient object expressed by the R nominal, in that order):

(39)   *scoperta* 'finding'

$$
\text{QUALIA} \left[\begin{array}{l} \text{event·product\_lcp} \\ \text{FORMAL} = R\,(e, y) \\ \textbf{AGENTIVE} = \textit{scoprire}\text{ 'find' } (e, x, \textbf{y}) \end{array} \right.
$$

These cases prove that the relation of implication between the two constraints of R suffixes holds only in the case of verbs containing a Path (or degree of change) in their semantics. Specifically, if the base verb does not express a gradual change but an atomic and punctual event, only the effectedness constraints can be satisfied, while the incrementality requirement is simply "overridden" because it is irrelevant for the base. I will tackle this question again in Chapter 5, while developing the details of co-indexation.

4.3.5 Appendix: Other non-prototypical creation verbs

In the following sections, I will briefly present other verb classes that describe non-prototypical creation events and that, because they may take sort of effected arguments, can form nominals with concomitant E and PRODUCT readings (in particular, I will focus on the R type, disregarding the morpho-syntax of the E type). These classes are treated separately from the previously outlined taxonomy, because they are syntactically and aspectually very heterogeneous.

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[37] Other achievements that form ambiguous nominals are verbs of contribution/giving: *gratificazione* 'gratification', *donazione* 'donation', *contribuzione* 'contribution', etc.

4.3.5.1   Verbs of assembling and combining

Ex: *accatastare* '(to) stockpile', *ammassare/si* 'amass', *assemblare/si* 'gather', *assembrare/si* 'gather', *associare/si* 'associate', *congregare/si* 'congregate', *federare/si* 'federate', *mescolare/si* 'mix', *organizzare/si* 'organize', *raccogliere/si* 'collect', *raggruppare/si* 'gather', *unir(si)* 'unite', etc.

The verbs in this class can ambiguously be transitive causative or intransitive inchoatives, depending on the argument (thematically, an Agent or a Theme) that is projected onto the subject position.[38] Semantically, these verbs describe situations of assembling / grouping / associating of animate and inanimate entities, and imply the gradual coming into existence of a resulting entity. Aspectually, they approach the accomplishment class, because the projection of a quantized Theme argument triggers the telic reading of the sentence:

(40)   Gianni ha accatastato numerosi arnesi alla rinfusa sul pavimento della sua stanza in pochi giorni.   → (TELIC) ACCOMPLISHMENT
'John accumulated several tools any which way on the floor of his room in a few days'

These predicates are very likely to have corresponding nominals with E and PRODUCT polysemous meaning; in effect, the events they describe can be understood as creation events, where the incremental Theme expresses the collection of entities that make up the product of the corresponding action. Hence, the collective reading of these PRODUCT nominals follows from the semantics of the base verb.

(41)   a.   L'accatastamento di arnesi (da parte di Gianni)   →   E
'The accumulation of tools (by John)'
        b.   L'accatastamento (di arnesi) sul pavimento   →   R=PRODUCT
'The pile (of tools) on the floor'

Nonetheless, in contrast with the nominals from the *costruire* class, the R nominal allows the projection of the internal argument of its base-verb. This argument is available for syntactic discharge because it represents the Theme (object/subject) of the base predicate, but, because the grouping of the entities it denotes makes up and

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[38] Cf. Levin and Rappaport Hovav (1995) and Reinhart (2000; 2002) for influential and contrasting analyses of the causative/inchoative alternation.

corresponds to the resulting product, this same argument can contemporarily be interpreted as referring to the product itself of the corresponding action.

PRODUCTS OF ASSEMBLING:

accatastamento 'pile', *ammassamento* 'accumulation/pile', *assemblaggio* 'assembly', *assembramento* 'gathering', *associazione* 'association', *federazione* 'federation', *mescolanza* 'mixture', *organizzazione* 'organization',[39] *raggruppamento* 'clustering', *unione* 'union', etc.

4.3.5.2   Speech act verbs

Ex: *affermare* 'state', *ammettere* 'admit', *asserire* 'assert', *comunicare* 'communicate', *confessare* 'confess', *dichiarare* 'declare', *insinuare* 'insinuate', *osservare* 'observe', *proclamare* 'proclaim', *suggerire* 'suggest', *testimoniare* 'testify', etc.

Speech act verbs are predicates that may take two arguments: the external one is a human Agent and the internal one is a proposition typically expressed by an embedded *that* clause or by a DP (e.g. *dichiarare il falso* 'to declare the untruth'). Such a proposition can be interpreted as the speech-artifact which is created through the accomplishment of the speech event (cf. Asher and Lascarides, 2001 for this analysis).

Because speech act verbs can be understood as creation predicates with the propositional content corresponding to an abstract product/artifact, it is expected that they are good candidates for the formation of E·R nominals (where R = PRODUCT, cf. (42)b.):

(42)   a.   La tua confessione (di essere l'unico colpevole) è avvenuta al momento
              giusto.   →   E
              'Your confession (to be the only one guilty) came about at the right time'
        b.   La tua confessione è falsa.   →   R
              'Your confession is false'

From this perspective, propositions are understood as information objects (cf. Pustejovsky, 1995) since they primarily express an abstract content, which can assume concrete manifestations (for instance, a statement can be oral or written). Such nominals

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[39] It is worth noticing that *organizzazione* also conveys the agentive-collective sense extension. In other words, this nominal can be employed to denote the group of people that intentionally organizes something, rather than the result of the organization. In this case, we deal with a collection of Agents instead of Themes. *Organizzazione* also displays a "result-state" reading (since it describes someone's/something's state of being organized); this interpretation is excluded from the present research, and left for further investigation.

can give rise to *metonymic displacements*, as it happens with *comunicazione* 'communication' in the following example:

(43)   Ho messo la tua comunicazione nella cartella sulla scrivania.
        'I put your communication in the folder on the desk'

In (43) *comunicazione* refers to the concrete container (a sheet, floppy disk, etc.); its precise reference can only be established on the basis of contextual information.

The deverbal nominals obtained by this class of verbs are usually formed by means of -*zione* suffix.

PRODUCTS OF SPEECH ACTS:

affermazione 'affirmation', *ammissione* 'admission', *anticipazione* 'anticipation', *asserzione* 'assertion', *comunicazione* 'communication', *confessione* 'confession', *considerazione* 'remark', *dichiarazione* 'declaration', *deposizione* 'deposition', *espressione* 'expression', *insinuazione* 'insinuation', *osservazione* 'observation', *rivelazione* 'revelation', *spiegazione* 'explanation', *suggerimento* 'suggestion', *testimonianza* 'testimony', etc.

4.3.5.3   Mental action verbs

Ex: *considerare* 'consider', *immaginare* 'imagine', *pensare* 'think', *ragionare* 'reason', *sognare* 'dream',[40] *valutare* 'evaluate', etc.

Verbs in this class are both transitive (e.g. *immaginare*) and intransitive (e.g. *pensare*) and they are usually classified as states (cf. (44), where the verb takes a proposition as internal argument) or as activities (cf. (45), where the verb lacks an internal argument):

(44)   a.   Gianni pensa di essere intelligente.   →   STATE
            'John thinks he is intelligent'

(45)   b.   Gianni rifletté lungamente sul problema.   →   ACTIVITY
            'John reflected for a long time on the problem'

However, some of them may take cognate objects as internal arguments and, in such a case, these verbs aspectually shift into accomplishments:

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[40] It is worth noting that *sognare* has a lexically related noun *sogno* 'dream': the latter is a simple event noun that is ambiguous between the EVENT and PRODUCT interpretation (like other mental action nominals derived through suffixation). As such, it is a cognate object and can aspectually bind (or measure out) the event expressed by the corresponding verb, cf. (46).

(46)   Gianni ha sognato un sogno fantastico e avventuroso.   → ACCOMPLISHMENT
        'John dreamt a fantastic and adventurous dream'

The corresponding derived nominals can express both the E and the PRODUCT interpretation; although the base predicate lacks an internal argument that is able to bind it aspectually and to trigger a telic reading in the syntax (as in the case of *riflettere* 'reflect'), nevertheless, the nominal can express the PRODUCT of the corresponding action (*riflessione* 'reflection').

(47)   a.   La riflessione di Gianni fu interrotta dall'arrivo della sorella. →   E
                'John's reflection was interrupted by his sister's arrival'
        b.   La riflessione di Gianni è giusta.   →   R
                'John's reflection is right'

The nominal in (47)b. refers to the abstract product of the corresponding event, and, as such, it is (incrementally) effected. Besides, as in the case of the speech act class, the referent of this PRODUCT nominal can be interpreted as expressing the abstract content of a proposition, an abstract artifact:

(48)   Gianni rifletté di essere stato scorretto con il collega.
        'John thought that he has been unkind with his colleague'

Therefore, it seems that there is a strong parallelism between mental actions and speech acts, which relies on the problematic notion of "proposition" and its grammatical and semantic conceptualization. In the present case, however, I tentatively put forward that propositions can be expressed by PRODUCT nominals because they can be conceived as creations of the human thinking (and, as such, they are also expressed as speech acts).

MENTAL ACT PRODUCTS:
considerazione 'consideration', *ragionamento* 'reasoning', *riflessione* 'reflection', *valutazione* 'evaluation', etc.

4.3.5.4   Verbs of emission

Ex: *balbettare* 'stammer', *cigolare* 'squeak',   *emanare* 'emanate', *emettere* 'emit', *eruttare* 'erupt', *esalare* 'exhalate', *fuoriuscire* 'pour out', *illuminare* 'light up', *irradiare* 'irradiate', *perdere* 'release', *secernere* 'secrete', etc.

Verbs in this class are syntactically and aspectually heterogeneous: they can be transitive (e.g. *emettere* 'emit') and intransitive – both unaccusative (*fuoriuscire* 'pour out') and especially unergative (e.g. *balbettare* 'stammer')[41] – and they can be either accomplishments, or achievements, or activities (e.g. *cigolare* 'squeak').

In contrast with prototypical creation verbs, verbs of emission can take as subject the inanimate substance which typically releases the substance, light, sound, etc. while the inanimate substance can be projected in the syntax or not:

(49)   a.   L'Etna ha eruttato (tonnellate di lava) stamane.
            'The Etna erupted this morning'
       b.   Questa lampada non illumina adeguatamente la mia scrivania.
            'This lamp does not adequately illuminate my desk'

Alternatively, the subject can be the emitted entity itself. In this case, we deal with an unaccusative verb (the subject is an internal argument):

(50)   Il petrolio fuoriesce in abbondanza dalla nave cisterna.
       'Oil copiously poured out of the tanker'

The verbs in this class describe dynamic situations of emission of light, sound and substances (verbs of smell emission tends to be non-dynamic, instead). An emission event can be understood as a type of creation to the extent that the emitted entity can be interpreted as an effected object.

The nominals derived from these predicates can ambiguously express the emission event and the entity which is released:

(51)   a.   La lenta fuoriuscita del petrolio dalla nave-cisterna.   →   E
            'The slow pouring out of the oil from the tanker'
       b.   C'è un'abbondante fuoriuscita <u>d'olio</u> sul selciato.   →   R
            'There is a copious leak of oil on the carpeting'

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[41] *Balbettare* 'stammer', which lexicalizes the manner of a sound emission event, may take a cognate object, *balbettare poche parole* 'stammer a few words'.

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(52)　a.　L'illuminazione delle strade comincia ogni sera alle 17:00.　　→　　E
　　　　　'The lighting of the streets starts every night at 5 p.m'
　　　b.　L'illuminazione in questa stanza non è sufficiente.　　　→　　R
　　　　　'The lighting in this room is not sufficient'

In contrast with result-object verbs, nominals from this class of verbs can allow the projection of the satellite corresponding to the internal object, if any (cf. (51)b. vs. (52)b.).

PRODUCTS OF SUBSTANCE AND LIGHT EMISSION:

emanazione 'emanation', *emissione* 'emission', *eruttamento / eruzione* 'eruption', *esalazione* 'exhalation', *espansione* 'expansion', *fuoriuscita* 'leak', *illuminamento* 'enlightenment', *illuminazione* 'enlightenment', *luccicamento* 'sparkle', *irradiazione* 'irradiation', *perdita* 'leak', *profumazione* 'perfume', *radiazione/i* 'radiation/s', *secrezione* 'secretion', etc.

N.B.　Nominals of sound and light emission are usually formed by means of *-ío* suffix, which preferably takes semelfactive verbs as their bases, but add to the base verb a repetition value (hence, it exhibits intrinsic aspectual properties). Correspondingly, in the case of the PRODUCT reading, *-ío* forms mass nouns.

PRODUCTS OF SOUND AND LIGHT EMISSION (iterative/frequentative reading):

abbaío 'barking', *balbettio* 'stammering', *brillio* 'glitter', *brontolio* 'muttering', *cigolio* 'squeak', *crepitio* 'crackling', *luccichio* 'sparkling', *mormorio* 'murmuring', *pigolio* 'peep', *ronzio* 'buzzing', *vocio* 'chatter', etc.

4.3.5.5　Verbs of appearance

Ex: *apparire* 'appear', *comparire* 'appear', *formarsi* 'form', *rivelarsi* 'reveal oneself', *manifestarsi* 'manifest /oneself', etc.

Verbs in this class are unaccusatives (or pronominal intransitives), which take as subject an internal argument (a Theme). Aspectually, they can be interpreted as accomplishment with the incremental Theme/Subject delimiting the event described by the verb:

(53)　Il fantasma apparve lentamente davanti ai miei occhi.
　　　'The ghost slowly appeared before my eyes'

Their derived nominals display the E·R polysemy:

(54) a. La lenta apparizione del fantasma davanti ai miei occhi → E
          'The slow appearance of the ghost before my eyes'
      b. La terribile apparizione mi terrorizzò. → R
          'The horrible apparition scared me'

It is worth noticing that the semantic opposite of this class, i.e. verbs of disappearance, can only form unambiguous E nominals, which lack the R interpretation (cf. *scomparsa* / *sparizione* 'disappearance' = E nominals).

APPEARANCE (R) NOMINALS:

apparizione 'apparition-ghost' (specialized meaning), *comparsa* 'extra' (specialized meaning), *formazione* 'formation', *materializzazione* 'materialization', etc.

4.4 Non *PRODUCT*-ive verbs

While in the previous sections we have examined and classified verbs which can have corresponding PRODUCT nominals, I now would like to call attention to those verb classes which should, in principle, disallow nominals with this interpretation.

Overall, very diverse sub-classes of verbs can be put together under the label "non PRODUCT-ive". However, this designation should not be taken too seriously, because it is just a cover-label useful to point out that, in principle, verbs belonging to this class should not form nominals with PRODUCT reading.

Namely, the following groups of predicates can be defined as non PRODUCT-ive. Because they lack a creation value and a corresponding effected argument, they should not be able to form nominals with a PRODUCT interpretation:

- State verbs, which describe non-dynamic situations, cannot have an LCS participant corresponding to the product or result;[42]
- Activity verbs, that do not contain a change of state component (hence structurally characterized as having a simple event structure template) (e.g. *amministrare* 'administrate');

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[42] Nominals in (a) can display the ENTITY IN STATE reading, while obviously ruling out the PRODUCT interpretation. This class will be analyzed later on in section 4.5.

- Directed motion verbs, describing situations that do not affect or modify the object that corresponds to a holistic Theme and implies a spatial Path (e.g. *salire* 'climb');
- Verbs describing (accomplishment and achievement) situations that have an affected Theme, but that do not bring into existence new entities or concrete / referential modifications (e.g. *asciugare* 'dry');
- Verbs describing (accomplishment and achievement) situations that "remove" the object (like verbs of killing, verbs of removal and verbs of disappearance, e.g. *uccidere* 'kill', *annullare* 'annull', *sparire* 'disappear').

This listing is certainly not exhaustive; there exist in fact many verb classes, which are not mentioned here, that display a similar behaviour with respect to their derived nominals.

Despite usually lacking a PRODUCT reading, the nominals from such predicates can have R nominals of the ENTITY IN STATE type or other non-eventive senses coming from paradigmatic sense extensions (cf. section 3.5.1.5). Further, we will see that some counterexamples of PRODUCT interpretation can be found among the nominals of this heterogeneous category. In what follows, I will try to give a unified account of these exceptional cases on the basis of the existing semantic constraints on the formation of PRODUCT nominals highlighted in section 4.3.2.

4.4.1 Activity verbs

As explained in sections 4.2.1 and 4.2.2, activity verbs have simple event structure templates; because their event structure lacks a state component altogether, we expect that the nominals from such predicates cannot display any of the ENTITY IN STATE interpretations. In other words, the processes they denote should not produce results, intended as either effected objects or modifications; nor could they display a PATH reading, because they lack an incremental Path component of meaning.

Verbs in this aspectual class are semantically very heterogeneous. The following list is representative of the class, though it is obviously not exhaustive:

- Verbs of ruling: *amministrare* 'administer', *dirigere* 'direct', *guidare* 'drive', etc.
- Instrument verbs: *frustare* 'whip', *vangare* 'dig', etc.
- Verbs of contact: *accarezzare* 'caress', *sfiorare* 'graze', *toccare* 'touch', *levigare* 'smooth down', etc.
- Verbs of making use of something: *sfruttare* 'exploit', *utilizzare* 'use', etc.

- Manner of motion verbs: *correre* 'run', *nuotare* 'swim', *camminare/passeggiare* 'walk', and the like.[43]

I will now examine the interpretations displayed by the nominals derived from some of these predicates in order to show that also activity verbs can form nominals with other readings than the E one.

Let us consider a verb in the first category, *amministrare*, and its derived nominal *amministrazione* 'administration', already discussed in section 3.5.1.5.1. All the possible interpretations of this nominal are illustrated in (55)-(56):

(55) a. L'amministrazione di questo podere (da parte del fattore) è stata efficiente.
          'The administration of this estate (by the bailiff) was efficient.'
      b. ??Le buone amministrazioni (di un'impresa) danno sempre risultati apprezzabili.
          lit. good administrationPL (of a company) always give good results

(56) a. Questa amministrazione è composta da persone esperte.
          'This administration is composed of proficient people'
      b. L'amministrazione è al primo piano.
          'The administration is on the first floor'

In (55) we find the default E reading with obligatory internal argument and an optional by-phrase corresponding to the external one. Note, however, that this nominal is scarcely grammatical if pluralized (cf. (55)b). The ungrammaticality of the plural form can sometimes characterize nominalizations obtained from activity verbs; they, in fact, are likely to rule out pluralization, hence behaving like mass nouns, in particular if obtained by means of affixes which do not modify the *Aktionsart* of the base verb. This behavior can be explained by the fact that activity verbs lack a telos (or change of state). Since activities are unbounded and homogeneous, nominals denoting them may display the same property. Consequently, boundedness and, hence, pluralization can be ruled out.

As we can see in (56), the concrete (hence Referential) interpretations *amministrazione* conveys do not correspond to the PRODUCT reading identified thus far; we find instead what I have defined in the previous chapter as the agentive-collective and the locative meanings (in (56)a. and (56)b., respectively). Despite being non-transpositional or "referential", I have previously explained (cf. section 3.5.1.5.1) that

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[43] Other activities have already been taken into account in the previous sections: cf. in particular, some of the mental action verbs and of the emission verbs (in sections 4.3.5.3 and 4.3.5.4).

the meanings in (56) arise as paradigmatic sense extensions of the core meaning of E·R suffixes. Agentive-collective and locative come about to answer a pragmatic need of naming concepts and by the concomitant lack of dedicated (systematic and productive) morphological means for the expression of these meanings. Following Lieber (2004), I have appealed to the notion of paradigmatic sense extension to explain the specific kind of collective meaning such nominals are likely to convey. Furthermore, about the locative reading, that there is a natural connection between names of place and collectives has frequently been acknowledged in the literature on polysemy: locatives typically display the collective sense, but also the contrary case holds, as shown by Lieber's (2004) analysis of collectivizing English affixes.

A completely different case is that of *frustata* 'lash' from *frustare* 'lash (with a whip)', derived from an instrument verb. First, this activity verb is nominalized by a peculiar suffix – let us call it *-ata* without entering the intricacies of its formal representation – which exhibits peculiar properties differentiating it by the other Italian default nominalizers. Following Mayo et al. (1995) and Gaeta (2002) among others, I point out that this suffix is able to select single bound events from unbounded homogenous activities (put differently, *-ata* tends to convey a semelfactive meaning). Let us see the readings this nominal can express:

(57)   Lo schiavo ricevette venti frustrate.
        'The slave received twenty lashes.'

(58)   La sua schiena era piena di frustate.
        'His/her back was full of lashes.'

Along with an E reading,[44] *frustata* can indicate the material traces/signs left by the whip on the skin of the whipped back (cf. (58)). This concrete interpretation refers to the concrete result of a whipping event, that is to say, the entity (the sign/trace) brought into existence and associated with the change of state undergone by the skin. In other words, *frustata* can be said to display a PRODUCT interpretation.

It is worth stressing that this PRODUCT-ive character of the predicate *frustare* is not grammatically encoded into its skeleton or event structure template, but can only be inferred on the basis of its idiosyncratic content. In other words, it is because of conceptual / world knowledge that we can associate the core meaning of *frustrare* 'to hit with a whip' with the creation of traces/marks on a surface. Importantly, its derived R nominal *frustata*, because it denotes the entity resulting from the event described by the base verb, satisfies the same effectedness constraint individuated for the other types of

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[44] As (57) shows, the E nominal can be pluralized, since instantiated, single events can be counted.

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PRODUCT nominals. This case proves that: 1) PRODUCT nominals do not always fill an argument place of the base verb; 2) the PRODUCT interpretation of a nominal can arise any time our system of conceptual and pragmatic knowledge detects a causally related by-product or effect associated with the event named by the verbal base.

A last group of predicates (and corresponding derived nominals) that is worth exploring is the class of verbs of (non directed) manner of motion, like *correre* 'run', *nuotare* 'swim', *passeggiare* 'walk', and the like. From the aspectual viewpoint, such verbs pertain to the category of unbounded, homogenous activities. Like other activities, they are also likely to form nominals expressing non-eventive readings when nominalized with *–ata* (or the feminine past participle). In this case, the semantic interpretation of the corresponding nominal is conceptualized as a single, instantiated event, because the suffix transforms the intrinsic verbal *Aktionsart* (cf. Gaeta, 2002 on the aspectual properties of this affix).

Manner of motion nominals in *-ata*, however, do not only refer to the bounded event (and manner of the event)[45], but also indicate the spatial Path covered in accomplishing such bounded activities (*corsa*, in the example below, is the feminine past participle or *-ata* nominal of *correre* 'run'):

(59)   La corsa degli adulti è più lunga di 12 chilometri rispetto a quella dei bambini.
        'The adult's run is 12 kilometres longer with respect to the children's run'

This regular ambiguity between an event and a spatial interpretation can sometimes lead to the formation of lexicalized items. *Passeggiata* 'walk/path' (from *passeggiare* 'walk'), for example, is the outcome of a semantic drift which leads to reify a prototypical (walking) path:

(60)   Questo paese è noto per la sua lunga passeggiata a mare.
        'This town is famous for its long walk/path by the sea.'

Nonetheless, it is worthwhile stressing that this lexicalization pattern is not exceptional, but derives from a regular semantic template.

Therefore, activity verbs do form many kinds of R nominals. With *amministrazione* the referential readings (collective-locative) come out from a paradigmatic extension of the core meaning of the suffix. With verbs like *frustare*, the PRODUCT interpretation of

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[45] Interestingly, manner of motion nominals in *-ata* regularly display a manner reading along with the event and the spatial ones: *nuotata* '(a) swim' conveys the peculiar reading of 'way in which one swims' and such a regular semantic pattern extends to *camminata* '(a) walk', *cavalcata* '(a) horseride', *passeggiata* '(a) walk' and the like.

derived nominals obtains because the actions expressed by their base predicates are causally related with the production of an effect or result.

Finally, nominals obtained from verbs of non-directed motion (suffixed with the appropriate *Aktionsart*-modifying suffix *-ata*), such as *nuotata* or *passeggiata*, can also display a non-eventive reading; specifically, this reading corresponds to the spatial Path covered by the motion event associated with the default interpretation of the nominal. Also with such nominals, therefore, the constraint defining the non-eventive reading is an aspectual one, and makes reference to an *incremental* Path component of meaning.

4.4.2 Directed motion verbs and PATH reading

To the second subset of non PRODUCT-ive verbs belong those which neither modify their objects nor create new entities besides or in relation with the existing one. Consequently, they do not have associated products or results.

Examples of such verbs are the causatives/inchoatives *trasferire/si* 'transfer' and *spostare/si* 'move', and the unaccusatives *salire* 'climb', *(di)scendere* 'go down', which indicate a change of location along a directed, spatial Path.

According to Dowty (1991), change of location verbs have holistic (=non-incremental) Themes. However, following the relevant literature, we have observed that an incremental or proportional relation holds between the time course of the event and a Path component (realized as a syntactically optional phrase):

(61)   L'isola di Sumatra si è spostata di 30 metri a causa dello Tsunami.
          'The island of Sumatra shifted 30 meters because of the Tsunami'

With the derived nominal *spostamento* 'shift-displacement', we find ambiguity between an E and a spatial PATH interpretation, since this nominal can be employed to refer not only to the event but also to the (incremental) spatial Path covered by the object (which is the Theme of the event itself):

(62)   a.   Lo spostamento dell'isola di Sumatra è avvenuto nel dicembre del 2004.
                'Sumatra's displacement/shift occurred in the December of 2004'
          b.   Lo spostamento dell'isola di Sumatra provocato dallo Tsunami misura circa trenta metri.
                'Sumatra's displacement/shift caused by the Tsunami measures about thirty meters'

As we have explained in section 4.3.2, to get the PATH interpretation, the effectedness constraint of the R suffix is violated. In fact, such verbs cannot be interpreted as creation verbs and lack an effected argument altogether. What seems relevant here instead is the extent of the spatial component of the verbal meaning, i.e. the incremental Path.

In a similar fashion, as already seen with *discesa* in section 4.2.3, (unaccusative) directed motion nominals are likely to be nominalized with *–ata*; like in the case of *spostamento*, they can refer to a spatial Path, as shown in (11)-(12) (here repeated as (63) and (64) for convenience):

(63) La discesa del sottomarino ha ormai superato i 15 chilometri.
      'The descent of the submarine already exceeded 15 kilometres'

Following a pattern similar to that of *passeggiata* in section 4.4.1, *discesa* comes to denote the physical entity which prototypically instantiates the descending path itself:

(64) E' molto divertente percorrere questa discesa con la mountain-bike.
      'It is a lot of fun to go down this slope on a mountain-bike.'

To sum up, directed motion verbs are very likely to indicate a non-eventive reading (along with their primary eventive one), corresponding to the directed Path covered by the moving entity (which is a Theme, in the traditional understanding of such thematic role).

4.4.3 Non PRODUCT-ive change of state verbs

The semantic property of not creating new objects (or tangible modifications) is what makes the hitherto described classes parallel with another class of predicates, represented by verbs such as *asciugare* 'dry', *lisciare* 'straighten' and *pulire* 'clean'.[46] These predicates are commonly transitive, and denote a change of state undergone by the internal argument (a Theme that can be projected onto the object or subject position,

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[46] It is worth noting that activity verbs (like *amministrare*) indicate processes that do not modify/affect the object. On the contrary, those of the *pulire* subclass are usually conceived as indicating events that produce a change of state in their objects. Nonetheless, consider the following sentences:
(i)   Ho pulito la mia stanza per ore ma è ancora sporca.
      'I have cleaned my room for hours but it is still dirty.'
                            vs.
(ii) *Ho pulito la mia stanza in un'ora ed è ancora sporca.
      'I have cleaned my room in an hour but it is still dirty.'
It seems to me that *pulire* can be aspectually classified as ambiguously pertaining to the activity and to the accomplishment class. Only if the accomplishment version is triggered, the change of state component becomes part of its lexical meaning. However, what really counts is that the change of state component does not cause the formation of a new entity, to be named by the PRODUCT nominal.

giving rise to the causative/inchoative alternation). However, such change is not associated with the creation of a concrete modification, interpretable as a new entity.

Let us consider the sentences in (65) with the nominal *pulitura* 'cleaning' derived from *pulire* 'clean'.

(65)   a.   La pulitura del disco solitamente dura mezz'ora.
             'Disk cleaning usually takes half an hour'
        b.   Frequenti puliture del disco giovano al computer.
             'Frequent disk cleanings are good for the computer'

The sentences in (65) show that *pulitura* is an unambiguous E nominal: it denotes an event in a. and a set of repeated events in b. This nominal cannot have a PRODUCT reading instead.

By and large, the nominals obtained by the predicates in this class also lack a PATH interpretation. I propose that this is due, again, to the semantics of the base verb. A predicate like *pulire* 'clean', for instance, does not have an open-scale adjective as base; that is to say, in contrast with degree predicates like *prolungare* 'lengthen' or *accorciare* 'shorten' having a base adjective (namely, *lungo* 'long' and *corto* 'short') that describes an open scale of values of the property, *pulire* only expresses the accomplishment of the final state and, because it is already "delimited" lexically, cannot project a Path or measure phrase in the syntax which binds it aspectually. On the other hand, *lisciare* 'straighten' has a base adjective (*liscio* 'straight'), but the latter implies a closed-scale of values of the corresponding property; or, more precisely, closed-scale adjectives already denote the maximal value of the scale, and, as a result, their derived verbs cannot project a Path or a measure phrase binding them aspectually.

In both cases, these verbs exclude a corresponding Path or measure phrase capable of measuring out the event and, consequently, they also lack the chance of a PATH nominal which expresses it.

4.4.4 Consumption/destruction verbs

Consumption/destruction verbs describe events that annul/consume the object affected by the relevant action. Therefore, they represent the semantic opposite of creation verbs of the *costruire* class. It is worth stressing that the source of the distinction between creation and consumption/destruction verbs lies in the idiosyncratic root component of verb semantics, while the two classes are basically characterized by the same event structure and display a similar, but not identical skeleton (cf. Chapter 5 on this point).

In effect, most of them pertain to the same aspectual class of creation verbs; this is the case, for instance, of verbs like *dissipare* 'dissipate', *scialacquare* 'squander', *dilapidare* 'waste', *distruggere* 'destroy', and *bere* 'drink', *consumare* 'consume', *mangiare* 'eat'. The internal arguments of such predicates are incrementally affected by the (gradual) change induced by the event; hence, once more, they correspond to incremental Theme or Path arguments (according to the definition given in section 4.3).

Annullare 'to cancel', *abolire* 'abolish', *annichilire* 'annihilate', *annientare* 'annihilate', *depennare* 'cross out', *revocare* 'revoke' are destruction verbs as well, but they are different aspectually, as they belong to the achievement class (they lack an underlying scalar structure).

Consider *abolizione* 'abolition' from *abolire* 'abolish':

(66)   L'abolizione della servitù della gleba in Russia è avvenuta nel 1867.
        'The abolition of serfdom in Russia occurred in 1867.'

Abolizione can only be an E nominal (and, as such, it allows pluralization). The absence of the PRODUCT interpretation follows from the semantics of its base predicate: since the verb removes a pre-existing object or an entity and does not create a new one, there can be neither absorption of the object (as in the case of result-object verb like *costruire* 'build'), nor creation of a new object (as in the case of representation verbs like *tradurre* 'translate') or a tangible modification (as in the case of modification verbs like *correggere* 'correct'). In other words, the state resulting from the completion of the event implies the complete removal of the object; consequently, when the action is accomplished there is nothing left for the R nominal to denote.

In short, because of the lack of an effected argument in their skeleton, consumption verbs should not form nominals with a PRODUCT reading.

However, with *annullamento* 'annulment' from *annullare* 'annullare', we find the first type of counterexample. For this nominal, the two following interpretations are obtainable:

(67)   a.   L'annullamento del nostro appuntamento è stato totalmente inaspettato.
              'The cancellation of our date was totally unexpected'
        b.   I continui annullamenti hanno ritardato l'anteprima dello spettacolo.
              'Repeated cancellations delayed the preview of the show'

(68)   a.   Questo annullamento (di matrimonio) contiene molte imprecisioni.
              'This (marriage) annulment contains many inaccuracies'

b.   Gli annullamenti sono sullo scaffale di destra.
'Annulments are on the right-hand shelf'

In (67)a. the nominal denotes an event; (67)b. shows that the same nominal allows pluralization in the E reading. The PRODUCT interpretation should be ruled out; however, we clearly find a referential reading in (68)b. where the nominal displays the non argument-taking behavior of a R noun as effect of a semantic shift. This shift is due to a metonymic displacement: *annullamenti* refers to the objects (sheets or folders, for instance) which contain the files of some bureaucratic annulments (like marriage annulments). In this case, the metonymic displacement is available because the predicate *annullare (un matrimonio*) 'to annul (a marriage)' has the semantic-pragmatic value of a creation verb; an annulment event is typically accompanied by a writing event producing an object (whose abstract content is a formal declaration) formally attesting the juridical act (cf. the more abstract meaning in (68)a.). As commonly happens with verbs associated with creation events, a PRODUCT interpretation is indeed available to their derived nominals and, in the present case, realized in the form of an 'information object' *à la* Pustejovsky, which can commonly undergo metonymic displacement.

Another striking counterexample in this class is *distruzione/i* 'destruction', which can convey a PRODUCT interpretation (especially when pluralized), although it is clearly derived from a destroying verb. The resulting entity produced by a destroying event is expressed by the R type of this nominal:

(69)   Le distruzioni causate dal terremoto sono ancora visibili.
       lit. the destructionPL caused by the earthquake are still visible
       'The destructionPL caused by the earthquake is still visible'

Once more, the PRODUCT interpretation of the nominal arises because of the idiosyncratic value of its base predicate. Since it is associated with prototypical objects like buildings, edifices, cities, etc., this verb assumes the valence of a verb which *transforms*, modifies the entities it affects, turning them into ruins, debris, etc. This insight is not new in the literature on verb semantics; Jackendoff (1990) observes that verbs of destruction could be interpreted as creation verbs because the destruction of an object can result in the production of a new one. While these verbs cannot express this new / resulting object in the syntax, it seems that this piece of semantic information might play a role in the interpretation of the derived nominals and it is therefore relevant for the semantic side of word formation.

Finally, we take into account a very specialized meaning of a typical consumption nominal *consumazione*, which, along with the eventive meaning of 'consumption', took

the rather specialized reading of refreshments (especially drinks) consumed in a public place.[47]

(70)   L'ingresso costa 8 euro, esclusa la consumazione.
        'Admission is 8 euros, exclusive of refreshments.'

Consumazione in this sentence refers to the prototypical entity that is incrementally affected (and not effected) by the base predicate. Because it is incremental, *consumazione* can be associated with the class of PATH nominals, whose interpretation relies on the violation of the effectedness constraint in the process of derivation/co-indexation.

Interestingly, such a violation of the effectedness constraints can be explained as the tendency of the derived lexicon to express the same type of inherent or logical polysemy characterizing the simple lexicon. Because morphologically simplex nouns that refer to food-consumption (e.g. *pranzo* 'lunch', *cena* 'dinner', *colazione* 'breakfast') are dot objects of the type Event · Physical-Object (food), it is expected that the derived nominal referring to a food consumption event can also refer to the consumed food.

4.4.5 Summary

In conclusion, I have shown that only a portion of those verbs provisionally defined as non PRODUCT-ive are truly characterized by the unavailability of PRODUCT nominals and that there are other readings that can be explained as violations of the normal co-indexation option of PRODUCT nominals.

In particular, we have seen that:

a)   Certain activity predicates can form R nominals as a result of paradigmatic sense extension (e.g. *amministrare* 'administer' / *amministrazione* 'administration');

b)   A PRODUCT reading can arise in the case of base verbs aspectually belonging to the activity type, which bring about effects/by-products (*frustare* 'lash' – *frustata* 'traces left by a whip'). Such interpretation emerges as a consequence of pragmatic / world knowledge, and cannot be directly encoded into the grammatically relevant block of verb semantics (in short, the skeleton). Similar

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[47] In this case, the nominalization selects a rather specific meaning of *consumare*, that is *to drink* or *eat* in pubs, discos, and the like. This nominal also conveys the E interpretation, as shown in the following example:
(i)   La consumazione di bevande alcoliche è proibita ai minori di 18 anni.
        'The consumption of alcoholic beverages is forbidden for those under 18 years of age'

observations hold in the case of destruction verbs (cf. the concrete interpretation of *annullamento* 'annulment' and *distruzione/i* 'destruction/s');

c)   Further, we have noted that other R readings (which can be generically subsumed under the PATH class) can arise if the base verbs of the nominals are associated with an incremental argument (i.e. a PATH) allowing directed motion verbs and verbs of consumption to form nominal with non-eventive / R interpretation. If such an aspectual component is not intrinsic in verb semantics (as we have seen with manner of motion verbs, lacking an incremental/directed Path component), it can be brought about by the *Aktionsart* property of a specific suffix (*-ata*), which will be object of future investigation.

4.5   State verbs and *entity in state* nominals

The verb class that concludes the analysis of the connections between nominal interpretation and base verb semantics is the class of state verbs.

State verbs are clearly non PRODUCT-ive: because they describe non-dynamic situations, they obviously lack both effected and incremental arguments in their skeleton. Nevertheless, their derived nominals can be ambiguous between the transpositional reading (STATE) and the ENTITY IN STATE one; in other words, their polysemy approaches the polysemy exhibited by PRODUCT and PATH nominals (it is worth reminding the reader that the latter are sub-types of the ENTITY IN STATE macro-category).

In effect, we have noticed in section 3.5.1.3 that some of the nominals derived from stative verbs, such as *preferenza(/e)* 'preference(/s)' and *conoscenza(/e)* 'knowledge(/PL)/acquaintance(/s)', do not only describe states but can also have an R interpretation:

(71)   Le sue molteplici conoscenze ci sono state molto utili.
       lit. his/her numerous knowledge-PL has been very useful to us
       a.   'His/her profound knowledge has been very useful to us'
       b.   'His/her numerous acquaintances have been very useful to us'

(72)   Le sue preferenze ci sorprendono sempre.
       'His/her preferences always surprise us'

Specifically, these nominals appear to bind the internal objects of their base verb from a syntactic viewpoint;[48] correspondingly, from a semantic viewpoint, they refer to those (animate and inanimate) entities associated with the states expressed by the underlying predicates.

Let us now consider other two representative classes of state verbs, in order to have a broader overview of this *Aktionsart* class and of their corresponding nominals.

4.5.1 Verbs of propositional attitude

Ex: *ambire* 'aim at', *aspirare (a)* 'aspire (to)', *credere* 'believe', *desiderare* 'wish', *dubitare* 'doubt', *preferire* 'prefer', *sapere* 'know', *sperare* 'hope', *temere* 'fear', *vagheggiare* 'desire/hope for', *volere* 'want' etc.

The verbs in this class describe a psychological state that takes a Subject Experiencer and may take a subordinate clause as its complement (usually headed by *che* 'that' Complementizer); such embedded *that*-clause semantically represents a proposition.

(73)   Gianni spera che tu parta con lui.[49]
        'John hopes that you leave with him'

The derived R nominal can never refer to the Subject-Experiencer, but can instead express the propositional content, as we have already noticed with the class of speech act and mental action verbs:

(74)   Non condivido la tua speranza.
        'I don't share your hope'

Assuming that propositions can be interpreted as abstract entities, this means that these R nominals refer to the abstract entity syntactically corresponding to the complement of the head nominal.

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[48] The projection of the verb internal argument usually triggers the E (=state) interpretation of the nominal:
(i)   La sua preferenza per il gelato al cioccolato è nota a tutti.
       'His/her preference for chocolate ice-cream is known by everyone'
[49] *Sperare* 'hope', like other verbs in this class, also allows the syntactic projection an oblique:
(i)   Gianni spera in te.
       lit. John hopes in you

ambizione 'ambition', *aspirazione* 'aspiration', *credenza* 'belief', *preferenza* 'preference', *speranza* 'hope', *vagheggiamento* 'desire', etc.

4.5.2 Verbs of existence and spatial configuration

Ex: *estendersi* 'extend',[50] *giacere* 'lay', *pendere* 'hang', *rimanere* 'remain', *sporgere* 'jut out', *stare* 'stay', [51] etc.

The verbs in this class are intransitive predicates that describe a particular state of the subject's existence or its spatial configuration. The subject can be either animate or inanimate, as shown by the following sentences:

(75)   a.   Gianni giacque immobile per ore fingendosi svenuto.
          'John laid still for hours pretending to have fainted'
      b.   Molte merci giacciono invendute nei magazzini.
          'Many goods lay unsold in the stores'

The nominals from these verbs may display a referential, subject-oriented interpretation along with the transpositional one; however, in this case, they can only refer to inanimate entities, and exclude the reference to an animate entity:

(76)   a.   Molte merci sono in giacenza nei magazzini.   →   E
          lit. many goods are in laying in the stores
          'Many goods lay unsold in the stores'
      b.   Le giacenze saranno vendute durante i saldi di fine-stagione. →   R
          'Unsold goods will be sold during the end-of-season sales'

Concerning their linking properties, it is worth stressing that the R nominals in this class correspond to the subject of their base verbs, instead of the object, like in the abovementioned case of *preferenza* 'preference' and *conoscenza* 'knowledge / acquaintance'.

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[50] *Estender(/si)* is usually interpreted as a degree achievement. However, along with a dynamic interpretation, *estendersi* also have a non -dynamic one:
(i)   La Germania si estende dal Mare del Nord alle Alpi.
        'Germany extends from the North Sea to the Alps'
[51] Other nominals, both derived from *stare* 'say', *stazione* 'station' and *stanza* 'room' are completely lexicalized and, in fact, they do not convey the transpositional interpretation.

Nominals in this class and, in general, nominals from all state verbs tend to be preferably formed by means of -(an/en)za.[52] Most of them, however, are fully lexicalized and have lost their transpositional interpretation.

ENTITY IN STATE NOMINALS:

giacenza 'unsold stock' (*lit.* 'laying'), *estensione* 'expanse', *pendenza* 'slope', *rientranza* 'nook', *rimanenza* 'unsold stock' (*lit.* 'remaining'), *sporgenza* 'protrusion', etc.

4.5.3 ENTITY IN STATE nominals and (non-)sentience

The question we must attend to now is how to account for the R interpretations of the nominals obtained from state verbs. In other words, we must attempt to isolate the semantic property/ies that characterize the R reading of these nominals, in particular, on account of the skeletal representation of the R suffix previously outlined.

As indicated by the name of the class, ENTITY IN STATE nominals describe entities participating in non-dynamic situations; it is therefore consistent that state verbs can form nominals that display this (referential) interpretation. However, it is not clear which participant in the state they correspond to and, consequently, syntactically and semantically bind in co-indexation. More precisely, the question we should attend to is how to determine the interpretation of R nominals derived from state verbs, especially on the basis of the principle of co-indexation (repeated below for convenience) and the skeleton of the R suffixes.

(77)   Principle of Co-indexation (Lieber, 2004: 61)

In a configuration in which semantic skeletons are composed, co-index the highest nonhead argument with the highest (preferably unindexed) head argument. **Indexing must be consistent with semantic conditions on the head argument, if any.** [*emphasis added*][53]

The descriptive account of several verb classes has revealed that the head argument of an R nominal does impose semantic conditions on its non-head argument; namely, the argument of the R suffix requires that the base verb co-indexed argument satisfies incrementality and/or effectedness (cf. (21), repeated below for convenience):

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[52] Cf. Gaeta (2002) for an interesting analysis of the selection properties of this suffix, both on a semantic and morpho-phonological basis.
[53] In other words, the co-indexing mechanism states that, in the absence of restrictions imposed by the head argument, there will always be co-indexation of the highest (or most external) argument of both head and non-head components.

(78)   Skeleton of R suffixes: $[\pm material, -dynamic\ ([_{incremental,\ \underline{effected}}\ ]_R, <base>)]$

Besides, I have proposed that the merger of the argument of the head and a requirement-compatible non-head argument in co-indexation give rise to either the PRODUCT or PATH reading of an R nominal.

As explained before, state verbs obviously lack both effected and incremental arguments in their skeleton. Therefore, how should we account for the fact that state nominals may have R readings, although they do not take such an argument?

Because the co-indexation principle can be violated in certain cases, we could argue that co-indexation in these derivations applies modulo the violation of both the constraints imposed by the R suffix over its co-indexed argument. If so, these R readings would represent marginal word formation patterns; on the other hand, state nominals frequently display such polysemy.

What I suggest, instead, is that the R interpretation of state nominals does not result from a violation of the semantic requirements of the head affix; incrementality and effectedness are not violated, but simply *overridden* by the co-indexed nonhead argument. Namely, these constraints are totally irrelevant for the arguments in the base verb's skeleton, when the base verb is a state, because both properties can only characterize the participants in dynamic situations. On the other hand, given the functioning of co-indexation (which is sensitive to semantic restrictions) and the fact that the *R* argument in the skeleton of R suffixes is specifically characterized from a semantic viewpoint, it is expected that the head argument will only co-index a non-head argument that is not semantically incompatible. Put differently, the head argument will co-index *the least incompatible argument* in the skeleton of the base verb.

Take for example *conoscenza(/e)* 'knowledge(/PL)/acquaintance(/s)', *vagheggiamento* 'desire', *sporgenza* 'protrusion': these R nominals can refer to both animate and inanimate and both abstract and concrete entities. Therefore, these nominals cannot be clustered because of animacy or concreteness; nonetheless, they do share a common property, since all of them describe non-sentient entities. I take s*entience* as a semantic property implying the relevance of a *mental state* or *mental disposition* of the participant in a situation. Abstract or concrete objects are non-sentient by definition, but animate entities (humans and animals) can be non-sentient, if their eventual mental state is not relevant in the situation described by the verb.[54] For example, the human entity described by *conoscenza* 'acquaintance' can have an associated mental state, but this is not

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[54] While sentience implies animacy, it does not imply volitionality. On the contrary, volitionality implies sentient (cf. Levin & Rappaport Hovav, 2005: 125-128, for discussion of these notions). These (non-)implicatures explain why an R nominal can refer to an animate entity, but cannot express a volitional Agent or an Experiencer. See discussion below.

grammatically relevant. Overall, sentience (or the grammatical relevance of a mental state) typically characterizes the Experiencer of a psych state, but not the objects (the Stimulus or Theme arguments) that are concerned by the mental predisposition at stake.

Crucially, all of the ENTITY IN STATE nominals lack sentience: artifacts, described by PRODUCT nominals, are non-sentient entities as well as the referents of PATH nominals. In other words, being effected and being incremental implies being non-sentient.

In short, in view of the fact that the referents of both PRODUCTS and PATH nominals are typically non-sentient entities, I propose that the least incompatible argument of a state verb, which may be co-indexed by the R suffix, must be a non-sentient argument (and this leaves out Experiencers from the range of those arguments that can be described by R nominals).[55]

In light of this discussion, I propose to implement the skeleton of R suffixes as follows:

(79)   Skeleton of R suffixes (*final*):

    [±material, -dynamic ([non-sentient, incremental, effected]R , <base>)]

The fact the "non-sentient" is not underlined implies that it is the only constraint which is non-violable in the derivation of R nominals, or, in simpler words, that an R nominal can never refer to an entity that is sentient, i.e. affected by a mental state.

Therefore, when the skeleton of the head is merged with the skeleton of the non-head, it is expected that it co-indexes the least incompatible argument with its requirements, i.e. the first non-sentient argument in the skeleton of a state verb.

Furthermore, the detection of such semantic property allows us to account for the fact that some of these nominals bind an argument mapped onto the object position (also an abstract one, like a proposition); others bind an oblique, and still others a Subject:

- In the case of verbs describing a mental state, the R nominal can exclusively describe the object towards which the Experiencer has this mental disposition (e.g. *speranza* 'hope', *preferenza* 'preference'). In general, all of SE psych verbs, because they map the Experiencer onto the Subject position, form R nominals associated with an argument realized as an oblique or direct object (cf. the psych stimulus denotation in section 3.5.1.3);
- In the case of verbs describing a propositional attitude, the R nominal can only refer to the proposition which is the predicative complement of the verb (e.g. *speranza* 'hope', *vagheggiamento* 'desire');

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[55] Experiencer arguments are usually expressed by *-ante/-ente* in Italian: e.g. *amante* 'lover', *credente* 'believer'.

- In the case of verbs describing a spatial configuration, the R nominals can solely denote the inanimate, hence non-sentient entities that are mapped onto the subject position (e.g. *giacenza* 'unsold stock', *sporgenza* 'protrusion').[56]

To conclude, it is worth stressing that the polysemy of these complex forms parallels the polysemy displayed by simplex nouns. Those underived lexemes that denote psych states (the simple event nouns explored in Chapter 3), such as *amore* 'love', *ansia* 'anxiety', may display the same polysemous interpretations, as they do not only describe states, but can also have R interpretations:

(80)   Gianni ha incontrato il suo primo amore ieri.
       'John met his first love yesterday'

(81)   Gianni ha avuto molte ansie quest'anno.
       'John had many anxieties this year'

The nominals in these sentences refer to the Stimulus of the psychological situations, and, crucially, the Stimulus of a psych state is always non-sentient, be it expressed by an animate or inanimate entity.

4.6   Concluding remarks

In this chapter, I have outlined an explanatory account of several verb classes and their derived nominals aimed at understanding what the semantic constraints are that limit the formation of R nominals (as ENTITIES IN STATE) with respect to E ones, which seem unconstrained from a semantic viewpoint.

In particular, I have shown that the PRODUCT interpretation of a deverbal noun depends on the existence of an *effected* participant in the base verb skeleton/LCS (or, in other words, on an argument which satisfies the requirement of effectedness imposed by the R suffix). This means that in order to have a nominal with polysemous E and PRODUCT reading, the base verb must be conceived of as describing a creation event. Most importantly, I hope to have demonstrated that a creation value is not only expressed by the verbs of the *costruire* class, which map their effected arguments onto the direct object position, but also by the verbs which describe a representation of the Source-Object and by verbs that concretely modify/affect the object (in particular, the

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[56] In general, an animate entity participating in a state is characterized by sentience, or, more precisely by a mental disposition of maintaining that state (cf. the animate subject in (75)a.).

verbs in the latter class may give rise to the MEANS interpretation). This implies that the co-indexation mechanism in the derivation of PRODUCT nominals does not only involve argument structure participants, but also take on semantic participants. Moreover, I have shown that most of these effected entities correspond to incremental arguments, because their coming into existence is gradual and is mapped directly or indirectly onto the time course of the corresponding accomplishment event.

The class of PATH nominals shows an interesting correlation with the PRODUCT class and this connection hinges on the aspectual properties of the base predicate, or, more precisely, on the presence of an incremental argument within its argument structure. PATH nominals describe the *degree of change* of the base verb that is syntactically expressed by the incremental (but not effected) Path argument in the base verb skeleton.

In sum, it appears that the formation of R nominals derived from dynamic verbs relies on the satisfaction of two semantic requirements by the non-head argument: an aspectual one, incrementality, and an idiosyncratic one, effectedness, because the latter depends on information that is not always syntactically relevant.

Finally, I have shown that nominals derived from non-dynamic verbs may give rise to an R interpretation as well, even if they lack either incremental or effected arguments; given the functioning of co-indexation, which is sensitive to the requirements imposed by the R suffix, we expect that the R argument of the latter co-indexes the least incompatible argument in the skeleton of the base verb. On the basis of some classes of state nominals, I have pointed out that the least incompatible (among the verbal arguments) with the skeleton of the R suffix is a non-sentient argument, that lacks a grammatically relevant mental state. The compatibility between the *R* argument of the suffix and a non-sentient argument of the base is confirmed by the fact that both incrementality and effectedness imply lack of sentience. In other words, all of the nominals with ENTITY IN STATE reading refer to entities lacking sentience.

All these points can be schematically summarized as follows (the semantic requirements are in boldface):

(82)   *R nominals' interpretations*

ENTITY IN STATE
non-sentient

PATH   PRODUCT
(**incremental**)   (incremental)+**effected**
by

(/MEANS)

creation   representation   modification
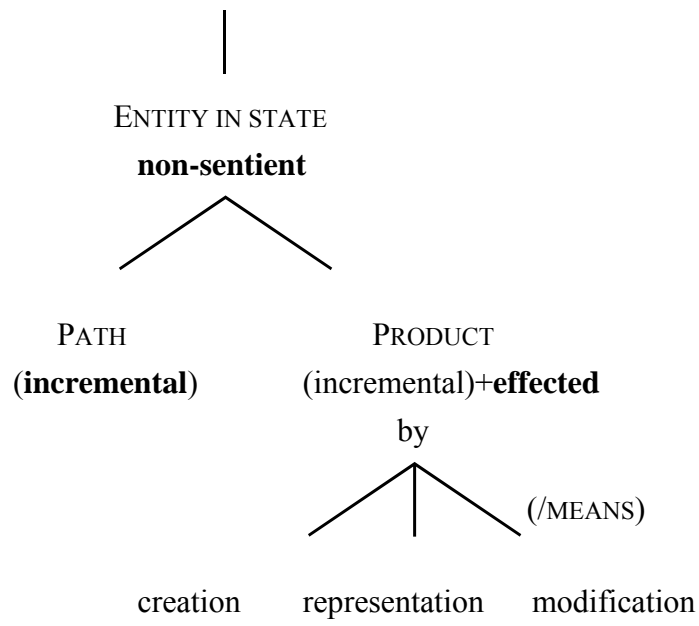
5 BASE VERBS AND CO-INDEXATION

5.1 Introduction

In this chapter, I finally tackle the co-indexation process that drives the derivation and semantic interpretation of inherently polysemous E·R nominals. However, to do so we first need to talk in some detail about the formal representation of the semantic skeleton of the verbs illustrated and classified in Chapter 4. Therefore, I will first present Lieber's (2004) taxonomy of verbs/situations and introduce a relevant feature, [IEPS], which allows us to isolate a specific aspectual class among them, i.e. accomplishments. Then, I will try to translate into her system the theoretical assumptions outlined at the outset of Chapter 4, applying some changes to Lieber's taxonomy that I believe necessary for an accurate categorization of situations. In particular, I will elaborate on L&RH's (1999) theory of *Event Co-identification*, and I will show in which way the relevant notions of incrementality and Path illustrated in the previous chapter can be included into Lieber's theoretical model.

Endowed with the formal apparatus for the representation of the skeletons of bases and affixes, I will first turn to the co-indexation of E nominals and I will focus on the role of the *E* variable, which qualifies as the co-indexed argument tying together the skeletons of the base and that of the nominal affix. Then, I will turn to the co-indexation of R nominals; in particular, I will show that given the unitary skeleton of the R affix, the different semantic interpretations and syntactic behaviours of R nominals can be accounted for in terms of different options of syntactic (or semantic) argument's binding.

In light of the fact that co-indexation applies between semantically compatible arguments, a crucial difference arises between the derivation of E with respect to R nominals. In effect, while the skeleton of E affixes does not impose constraints on the co-indexed argument in the verb skeleton, the skeleton of R affixes does impose semantic requirements; in particular, co-indexation of R nominals crucially relies on the (partial or complete) satisfaction of the set of constraints that the suffix's *R* argument imposes on the base's co-indexed argument.

5.2 The skeleton of situations

5.2.1 Situations in Lieber's system

To begin with, we must notice that the notion "Verb" is categorial/syntactic, and, since Lieber's framework only deals with conceptual/semantic classes, we should replace this notion with that of SITUATION. Importantly, the concepts expressed by this semantic and ontological category can be lexically encoded not only as verbs but also as adjectives, and this fact reveals the cross-categorial nature of the semantic/ontological categories and their corresponding semantic features. The major ontological feature that describes the class of SITUATION is [dynamic]; as explained in section 3.3.1, this feature should be understood as a primitive atom of meaning.

Lieber partitions SITUATIONS into two main classes, that is, STATES and EVENTS, as in (1). The former are characterized by a [–dynamic] feature and the latter by a [+dynamic] feature in the outermost layer of their skeleton. STATES, in particular, can be expressed by adjectives as well as verbs.

(1)   SITUATIONS

            STATES   EVENTS
          [–dynamic]   [+dynamic]
          know   ...
          happy
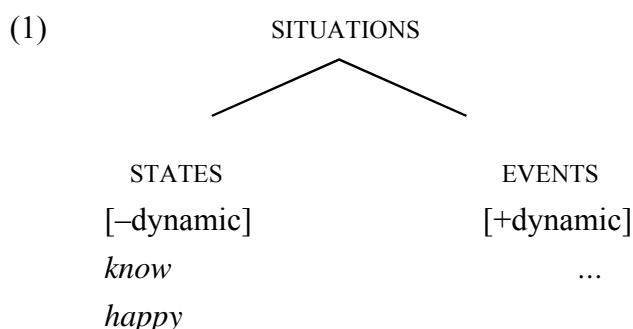
Accordingly, on the basis of this first partition, we can deduce that Lieber acknowledges as EVENTS the situations described by the *Aktionsart* classes of activities, accomplishments and achievements. However, Lieber does not follow the Vendler-Dowty taxonomy, and sketches out a fairly innovative classification of situations. While Vendler and Dowty elaborates on telicity as a value capable of discriminating activities, on the one hand, and accomplishments and achievements, on the other, Lieber follows instead Verkuyl's compositional approach to aspectuality, and with him she underlines that telicity does not arise in the lexicon but at a higher level of syntactic-semantic composition. Thus, since Lieber's system is designed to capture lexical facets, the only

distinction among EVENTS she marks out is between SIMPLE ACTIVITIES and events implying a CHANGE of position or state.[1]

To discriminate between the two classes, Lieber adds a novel feature that describes events of change, that is, [IEPS], Inferable Eventual Position or State;[2] this feature is used in an equipollent way in her system to differentiate UNACCUSATIVES/INCHOATIVES from MANNER OF CHANGE situations.

(2)   EVENTS
             [+dynamic]

    SIMPLE ACTIVITY   CHANGE
    [+dynamic]   [+dynamic, ±IEPS]

            UNACCUSATIVE   MANNER OF
            /INCHOATIVE   CHANGE
            [+dynamic, +IEPS]   [+dynamic, –IEPS]
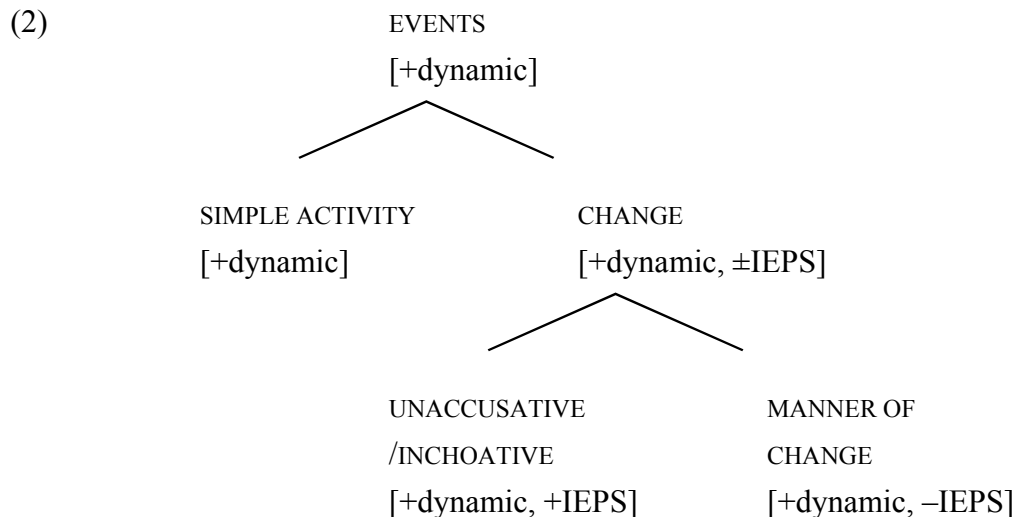
But what is the ultimate meaning of the [IEPS] feature? According to Lieber, [IEPS] implies the addition of a Path component of meaning in a semantic skeleton. Let us quote her formal explanation (Lieber, 2004: 29):

> Let Φ be a variable that ranges over States and Places, and x be the argument of Φ. Further, let *i* stand for the initial State or Place, *f* for the final State or Place, and, *j,…, k* for intermediate States/Places. Then the addition of the feature IEPS to the skeleton signals the addition of the semantic component in (3)[3]:

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[1] This separation recalls Pustejovsky's distinction between Processes and Transitions. It is worth reminding the reader that, in the latter class, Pustejovsky groups accomplishments and achievements on account of the fact that they both describe a change of state.

[2] The feature [IEPS] was first developed and justified in Lieber and Baayen (1997).

[3] (3) is (16) in Lieber's original passage.

(3) $\Phi_i (x), \Phi_j(x), \dots, \Phi_k (x), \Phi_f (x)$

In plain words, this means that dynamic situations with a Path component of meaning should be conceived of as a sequence of states or positions; conversely, simple activities do not include this state/position component. Moreover, the Path component can be directed or non-directed. Lieber (2004: 29) explains in fact that:

> (I)f [+IEPS] is present there will be a sequence of PLACES/STATES such that at any point between the initial and final PLACE/STATE, some progression will have taken place. If the [–IEPS] is present then we can make no inference about the progression of PLACES/STATES.

In other words, [+IEPS] verbs denote a change of state or position along a directed Path (as in the case of inherently directed motion verbs, or other inchoative/unaccusative verbs), while [–IEPS] verbs refer to dynamic situations associated with a random Path (as in the case of manner of motion verbs).

Lieber's taxonomy can be represented as follows (the diagram in (4) reproduces Lieber's, 2004 own schema, page 30):

(4)   SITUATIONS

          STATES   EVENTS
          [–dynamic]   [+dynamic]

                    SIMPLE ACTIVITY   CHANGE
                    [+dynamic]   [+dynamic, ±IEPS]

                                   UNACCUSATIVE   MANNER OF
                                   / INCHOATIVE   CHANGE
                                   [+dynamic, +IEPS]   [+dynamic, –IEPS]

          be   *eat*   *descend*   *walk*
          remain   *kiss*   *fall*   *run*
          own   *listen*   *go*   *amble*
          hear   *hold*   *evaporate*   *vary*
          cost   *yawn*   *forget*   *waver*
          know   *blink*[4]   *grow*   *fluctuate*
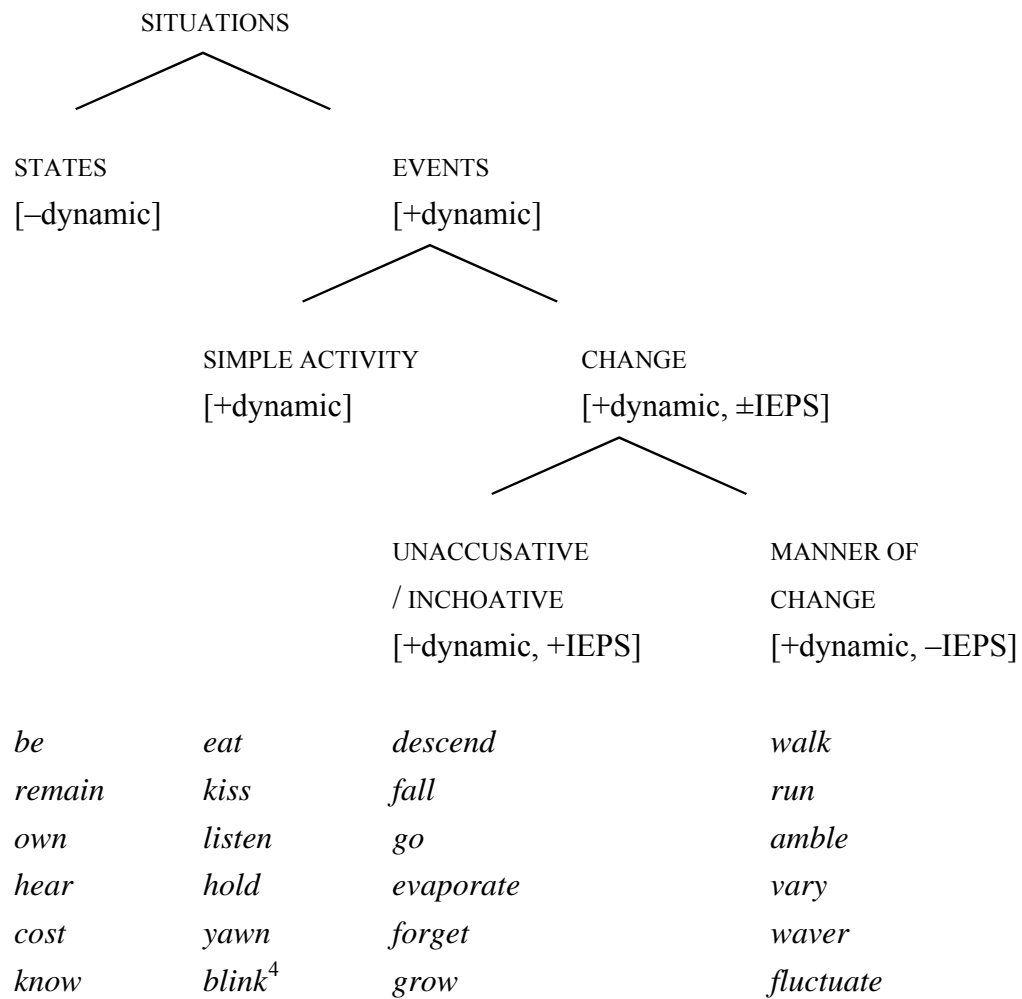
All of these situations take at least one participant corresponding to a syntactic argument. The skeleton of situations can vary not only with respect to the features, but also with respect to the number of arguments they take. For instance, while *remain* and *yawn* take one syntactic argument (they are intransitive), *hear* and *kiss* take two arguments (they are transitive):

(5)   *remain* [–dynamic ([ ])]   vs.   *hear*   [–dynamic ([ ], [ ])][5]
(6)   *yawn* [+dynamic ([ ])]   vs.   *kiss*   [+dynamic ([ ], [ ])]

Change of state verbs are instead usually intransitive, both unaccusatives and unergatives, but they always take an argument corresponding to a directed Path (D-Path), if they are [+IEPS], or random Path (R-Path), if they are [–IEPS].

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[4] It is worth observing that Lieber groups together, as simple activities, verbs like *kiss* and verbs like *eat*; contrary to the former, the latter is usually interpreted as an accomplishment (an event with duration and inherent endpoint). Cf. the next sections for discussion of this point.
[5] The highest argument in the skeleton of a situation always corresponds to the most external argument in its argument structure configuration, namely, an Experiencer in the case of *hear*.

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(7) *descend* [+dynamic, +IEPS ([ ], *[D-Path]*)]

(8) *run* [+dynamic, –IEPS ([ ], *[R-Path]*)]

Interestingly, the Path argument does not correspond to a true syntactic argument. In effect, the Path is an abbreviatory device for expressing the sequence of states or positions of the highest argument in the skeleton. However, I argue that it might be projected as a proper syntactic argument. In the following sentences, we notice that the Path argument can be left implicit or realized in the syntax as an optional adjunct:

(9) John is descending <u>the stairs</u>. / The balloon is gradually descending <u>Ø</u>.

(10) John ran <u>Ø</u> / <u>around the room</u>.[6]

In light of this fact, I formally represent the different nature of directed and random Path arguments (with respect to proper/obligatory arguments) by putting them in italics in the skeletons in (7) and (8).

A last category of situations, which is the object of an interesting case study developed in Lieber (2004), is that of lexical CAUSATIVES, like *break, change, grow, kill* etc. Causatives are not represented in the diagram in (4) because, in contrast with the situations illustrated so far, they do not have "simple" skeletons. In effect, we have already shown in section 4.2.2 that RH&L (1998), elaborating on Dowty (1979), suggest that causatives (but also accomplishments) have a complex event structure template:[7]

(11) [[x ACT *<MANNER>*] CAUSE [BECOME [y *<STATE>*]]]

Lieber follows this acknowledged insight and proposes that the skeleton of a causative situation is composed of an activity subevent and a causative subevent proper:

(12) LEXICAL CAUSATIVES (ex: *grow*)

[+dynamic ([$_i$], [$_j$])]; [+dynamic ([$_i$], [+dynamic, +IEPS ([$_j$], [D-Path])])]

x does something to y   the doing brings about some result

---

[6] Manner of motion verbs can take D-Path in the form of an adjunct and, accordingly, give rise to telic reading:

(i) John ran to the shop.

In this case, Lieber explains that the preposition *to* bears the feature [+IEPS], and this accounts for the compositional telicity that arises.

[7] An influential study of the lexical semantics of causative/unaccusative verbs is Levin and Rappaport Hovav (1995).

Let us take *grow*: the Agent (the grower) performs a certain activity which causes the growth of the Patient/Theme.

On the basis of (12), we observe that the bipartite skeleton of a causative is obtained by joining the skeleton of a SIMPLE ACTIVITY and that of an UNACCUSATIVE/INCHOATIVE by means of a CAUSE relation, which Lieber realizes as the outermost layer (a [+dynamic] feature) of the skeleton embedding the unaccusative skeleton (the BECOME subevent). The linking between the two skeletons is ensured by the first argument of the activity subevent which gets co-indexed with the first argument of the causative subevent (the grower). This co-indexation pattern accounts for the fact that the doer of the activity is also the causer of the resulting subevent.

It is acknowledged that causative verbs are likely to have an inchoative variant, i.e. they display the transitive/unaccusative alternation, which is consistently attested cross-linguistically. This alternation has been object of important studies; it is, however, beyond the goals of the present research to illustrate or compare them.

In short, these studies converge on the interpretation of the causative → inchoative alternation as the suppression of the external cause. L&RH (1995) point out that this suppression usually occurs in event descriptions that are "internally caused", that is, events that can come about spontaneously, without the intervention of a volitional Agent (like *break*). The same suppression and corresponding detransitivization cannot occur in the case of those events that need the intervention of a prototypical volitional Agent (like *murder*).

Since the Agent is also the Causer of the resulting change of state/position of the Patient/Theme, this suppression (expressed as *lexical binding* in L&RH, 1995) is formalized by Lieber with the deletion of the outermost layers of the skeleton containing the Agent-Causer:

(13)   *grow* (causative)

$$\underline{\text{[+dynamic ([}_i\text{], [}_j\text{])];}} \text{ [+dynamic ([}_i\text{], [+dynamic, +IEPS ([}_j\text{], [}_{\text{D-Path}}\text{])])]}$$
$$\downarrow$$
$$\varnothing$$

Therefore, the result of this operation is the skeleton of an unaccusative/inchoative verb of change, i.e. again, a simple skeleton.

To conclude, I call attention to the parallelism existing between Lieber's taxonomy of SITUATIONS and L&RH's (1998) classifications of event structure templates. If L&RH's taxonomy separates verbs with simple event and complex event structure templates, Lieber's categorization of situations crucially hinges on the distinction between simple skeletons, consisting of one subevent (or a sequence of subevents of the same type) and

complex skeletons, comprising of two distinct but causally related subevents, as shown in the table below:

Table (7)   *RH&L (1998) vs. Lieber (2004)*

Rappaport H. & Levin (1998)	Lieber (2004)
[x <*STATE*>]	STATE: [–dynamic ([ ], …)]
[x ACT _{<i>MANNER</i>}]	SIMPLE ACTIVITY: [+dynamic ([ ], …)]
	MANNER OF CHANGE: [+dynamic, -IEPS ([ ], $[_{R\text{-}Path}$ $])$]
[BECOME [x <*STATE*>]]	UNACCUSATIVE/INCHOATIVE: [+dynamic, +IEPS ([ ], $[_{D\text{-}Path}$ $])$]
[[x ACT _{<i>MANNER</i>}] CAUSE [BECOME [y <*STATE*>]]]	CAUSATIVE: [+dynamic ($[_i$], $[_j$])]; [+dynamic ($[_i$], [+dynamic, ±IEPS ($[_j$], $[_{D\text{-}Path}$])])]

On the other hand, despite this similitude, RH&L's account of event structures lacks the notion of Path, which plays a crucial role in Lieber's taxonomy. Therefore, manner of change verbs (like *run*, *fluctuate*, etc.) are taken to parallel with simple activities rather than change verbs in RH&L's solution.

In the next section, I will further discuss the notion of Path, especially focusing on the concept of Directed Path and revealing its correlation with the notion of incrementality.

5.2.2 Implementing Lieber's taxonomy: D-Path arguments…

It must be noticed that Lieber's taxonomy of situations can accommodate Italian data without difficulty. Her categorization, for instance, correctly predicts the distinction among VERBS OF CHANGE, as pertaining to different syntactic and semantic classes: [–IEPS] verbs of change are usually unergatives, while [+IEPS] tend to be unaccusative, as confirmed by the difference in auxiliary selection in Italian exhibited by the corresponding verbs (e.g. *aver corso* 'have+run' vs. *essere andato* 'be+gone').

 However, I would like to add some modifications/implementations to her system that I believe useful for capturing the complexity of the deverbal nominalizations under analysis in this study. In my view, there is in fact a drawback in the categorization in (4) that hinges on the class of what Lieber acknowledges as simple activities, and, namely, on the ascription of verbs like *eat* and *build* to this class. Aspectually, verbs such as these are accomplishments, because they can easily give rise to telic readings when they are composed in syntax with an appropriate internal argument. It is acknowledged in fact

that when *mangiare* 'eat', for instance, is composed with an incremental Theme in the syntax, its quantization determines the telicity of the sentence:[8]

(14)   Gianni ha mangiato un panino in pochi minuti.[9]
         'John ate a sandwich in a few minutes'

We have seen in section 4.2.3 that incrementality is a property of those arguments (or adjuncts) capable of measuring out the event; namely, incrementality defines a homomorphic relation between the Theme/Patient and the degree of change described by the verb (cf. Tenny, 1987 and 1994, for interesting insight on incrementality and event description). In (14), in effect, the sandwich measures out and delimits the eating event and its own disappearance in one's stomach.

Simple activities, instead, do not describe any change of state; they neither take incremental arguments nor convey a telic reading, even when governing a quantized internal argument:

(15)   Gianni ha amministrato l'azienda del padre per pochi mesi/*in pochi mesi.
         'John administered his father's business for a few months/*in a few months'

Lieber, however, does not directly encode this distinction in the skeleton of situations, because, following Verkuyl's line of research on aspect, she proposes that this difference is just a matter of syntactic composition.[10] Accordingly, Lieber suggests that all simple activities are characterized by the lack of the [IEPS] feature and a corresponding degree of change or Path.

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[8] Aspectually, consumption verbs are defined as activities shifting into accomplishments depending on the type of object they take. In the activity version they take indefinite (/non-quantized) noun phrases (bare or mass nouns), whereas in the accomplishment version they take definite objects. Moreover, these verbs can easily drop their unspecified object (cf. Mittwoch, 1982, among others, for insightful remarks on the interplay of aspectual and lexical properties of verbs concerning the interpretation of unspecified objects.):
(i)   John ate/drank (for hours).
Another consumption verb, *devour*, instead does not allow for direct-object drop, and is unambiguously classified as accomplishment (it has an inherent endpoint). Nonetheless, I claim that *devour* and *eat* share a similar skeleton, and only differ in the obligatoriness of the internal argument (cf. also Jackendoff, 1990: 253 for similar remarks on the LCS of *eat* and *devour*). Conversely, *eat* and *devour* have a different LCS or skeleton with respect to activities such as *touch* or *administer*, and, in my view, this difference relies on the inherent degree of change expressed by *eat* and *devour,* but not by *touch* or *administer*.
[9] This sentence expresses the meaning that the sandwich has been completely eaten. Pure activities patterns differently in this respect:
(i)   *Gianni ha baciato Lucia in un minuto
         'John kissed Lucy in a minute'
This sentence is only acceptable in the inchoative reading, that is, 'it took a minute to John before he kissed Lucy'.
[10] Actually, Lieber acknowledges the difference existing between verbs such as *eat* and *push*, and correctly hints at the crucial notion of incrementality; nonetheless, this issue is left open in her book (cf. Lieber, 2004: 143-144).

On the contrary, I maintain that composition alone cannot account for the distinction between the verb in (14) and that in (15), and that this difference is instead lexically based; while verbs like *amministrare* describe a sequence of events of the same kind, others like *mangiare* describes a progression of subsequent states undergone by the object. This property can be extended to creation verbs as well. If *eat* lexicalizes the disappearance/ingestion of the object, *build*, likewise, describes the gradual coming into existence of an object. Because creation/consumption verbs and many other accomplishments describe a gradual change of state along a directed Path, verbs such as these are therefore similar to the class of unaccusatives / inchoatives. Accordingly, they should have the [+IEPS] feature in the outermost layer of their skeleton:

(16)   (Provisional) Skeleton of *mangiare* 'eat':   [+dynamic, +IEPS ([   ], [$_{D\text{-}Path}$])]

In the skeleton of *mangiare*, the directed Path is syntactically realized by the incremental Theme/Patient object. To this point, it should be clear why I have proposed the notion of *Path* as a cover term for what Hay, Kennedy and Levin (1999) and Kennedy and Levin (2002) define as *degree of change*; more precisely, verbs that describe a degree of change (obligatorily or optionally) take an incremental/directed Path argument which might be associated with a measuring scale, and when it is quantized, it can trigger telicity.[11] In other words, as suggested in section 4.2.3, the notion of (directed) Path serves the purpose of cross-classifying all those situations that denote a gradual degree of change and, accordingly, can take incremental arguments, such as *costruire* 'build', *tradurre* 'translate', *argentare* 'silver-plate', etc. Others, like unaccusatives/inchoatives and causatives (e.g. *salire* 'climb', *prolungare/si* 'lenghten', *crescere* 'grow', etc.) might also project the intrinsic D-Path in the form of an adjunct. Let us consider the following examples of telic sentences, as proved by compatibility with the *in-x-time* adverbial:

(17)   a.   mangiare un panino in pochi minuti
             'eat a sandwich in a few minutes'
       b.   costruire una casa in pochi mesi
             'build a house in a few months'

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[11] As explained by Lieber (2004: 31), [+IEPS] does not imply telicity nor boundedness of the situation it defines; however, my implicit claim here is that a directed Path can correspond to an incremental argument when it is syntactically projected. Its quantization can determine the telicity of the sentence. In other words, a D-Path component of meaning might correspond to the lexical contribution to telicity. However, the discussion of this crucial and vastly debated issue is certainly beyond the goals of the present investigation.

     c.   scendere le scale in pochi minuti

          'descend the stairs in a few minutes'

     d.   prolungare la strada di quindici metri in pochi giorni

          'extend the road by fifteen meters in a few days'

In the sentences above, we find quantized arguments (*a sandwich*, *a house*, *the stairs*) and adjuncts (*by fifteen meters*) that are associated with measuring scales, and they therefore determine the culminating point of the corresponding event. My proposal is that all of these quantized arguments/adjuncts in (17) measure out the corresponding event, because they syntactically express and quantize the degree of change undergone by the object (a subject in c.) along a directed Path.

While verbs of consumption/creation (and in general the *Aktionsart* class of accomplishments) resemble unaccusatives/inchoatives concerning their scalar properties, they are generally taken to pattern like causatives with respect to their complex event structure template. I'll discuss the point in the next section.

5.2.3 … and Event Co-identification

Although the skeleton of *mangiare* 'eat' produced in (16) includes the notion of Path and gradual change, it could be argued that it does not satisfactorily account for creation/destruction and other accomplishment events. There is in fact an accepted understanding of accomplishments as amenable to a complex event structure analysis. This insight, originating in Dowty (1979),[12] has been followed by RH&L (1998), who offer the same template for both accomplishments and causatives (cf. (11)). In effect, contrary to unaccusatives/inchoatives, these situations project Agents, rather than Themes, onto the Subject position. The Agents, or more precisely, the activities they perform, are the direct cause of the change (consumption or creation) undergone by their Patient/Effected objects.[13]

More precisely, because *mangiare* and *costruire* involves an Agent and a Patient/Theme undergoing a change, they are usually taken to involve the concept of causation, and, like causatives, they should have a complex event structure template. Jackendoff (1990:253), for instance, proposes that *eat* has the following LCS:

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[12] Many scholars have adopted the causative analysis of accomplishments presented in Chapter 2 of Dowty (1979), including Foley and Van Valin (1984), Van Valin (1990; 1993), Slabakova (1997), Sybesma (1992), Erteschik-Shir and Rapoport (2000). But see Van Valin and LaPolla 1997 for a different, insightful analysis.

[13] A relation of direct causation is the one where « there is no intervening event in the causal chain between the causing subevent and the result subevent » (L&RH, 1999: 213). Cf. McCawley (1978), Pinker (1989), Shibatani (1976) among the relevant literature on this subject.

(18)   [CAUSE([thing]$^\alpha$ A ,[GO ([thing] <A>, [TO [IN [MOUTH-OF [α]]]])])]

However, L&RH (1999 and 2004) introduce a fundamental difference between verbs like *eat*, *build*, *translate* (accomplishments) and others like *open*, *break* and *kill* (lexical causatives). This distinction relies again on the notion of incrementality. Both verb classes describe events with a culmination / endpoint and with a causing and a result subevent; nevertheless, only verbs like *eat*, *build, sing, translate* are usually characterized by the presence of an incremental Theme, which expresses the intrinsic directed Path in the event semantics and stands in homomorphic/proportional relation with the time course of the event. For these predicates, the authors propose that the two sub-events (activity and result) are identified in a single event, through a process L&RH (1999 and 2004) name "Event Co-identification". Specifically, L&RH (1999: 213) isolate a couple of conditions required for Event Co-identification to take place:

(19)   a. The subevents must have the same location and must necessarily be
            temporally dependent.
        b. One subevent must have a property that serves to measure out that
            subevent in time; this property is predicated of an entity that is
            necessarily a participant in both subevents.

The first condition states that only events that share spatial and temporal properties can be identified. However, common spatiotemporal properties are not sufficient for Event Co-identification to apply. The second condition implies that co-identified events must be temporally dependent on each other, that is, they must *unfold at the same rate*.[14] L&RH (1999: 213) explains that:

> […] what is crucial to characterizing the temporal unfolding of an event is the existence of property of a participant in the event which reflects the temporal progress of the event as a whole, recognizing that the nature of this property is dependent on the type of event. For motion events, the property is the path of motion; for change of state events, the property is a gradable property related to the state itself; for events of consumption and creation, the property is the spatial extent of the created or consumed object. […] Given the nature of such resultatives this property is predicated of a participant in both subevents, and we propose that it is by virtue of this shared participant that the subevents are temporally dependent.

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[14] Cf. Rothstein (2004) for similar remarks concerning the temporal properties of accomplishments.

This means that in the case of a creation verb like *costruire* 'build', for instance, the first subevent is temporally dependent on the second, and vice versa; the building activity is inherently coextensive and necessarily temporally dependent on the process of coming into being of the effected object. Therefore, the two subevents of the *costruire* class and of all verbs taking incremental arguments are to be co-identified and their skeleton or event structure template turns from complex into simplex.[15]

There is yet another set of accomplishments that do not seem amenable to a complex event analysis and that parallel with simple activities as to the lack of a subeventual analysis by virtue of Event Co-identification. These are verbs of representation such as *leggere* 'read', *copiare* 'copy', *memorizzare* 'memorize', *tradurre* 'translate', and other performance verbs such as *narrare* 'narrate', *recitare* 'recit', *studiare* 'study', etc. As explained in section 4.3.3.1, these verbs take as direct objects what Dowty (1991: 569-570) calls Representation-Source Themes (see also Dowty, 1979: 69-70). The Source objects taken by these predicates are not in any way affected by the corresponding action, but are instead "internalized" by the Agent who produces a representation of the source in the form of a mental / abstract object (the latter can also assume a concrete manifestation, as in the case of a written translation). Like the verbs of consumption/creation, representation verbs have incremental Theme objects and are telic when they are found with quantized NP objects. Concerning these verbs, L&RH (2004: 490) state:

> The events they denote could be said to involve two subevents conceptually; for the verb *read*, for example, an event of scanning the text and an event of forming a mental representation of it. Yet, these subevents would be temporally dependent; in reading, for example, the mental representation is formed as the text is scanned. Thus, the events that these verbs denote would not be considered complex events.[16]

Therefore, like creation/consumption verbs, representation verbs display a bipartite skeleton, which is reduced to a simple skeleton because of Event Co-identification.

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[15] Since at least one syntactic argument must be associated with each subevent in the syntax (cf. the *Argument-Per-Subevent Condition*, L&RH 1999:202; RH&L 2001:779), this phenomenon should explain why an accomplishment like *eat*, consisting basically of just one subevent in virtue of Event Co-identification, patterns like activity verbs in allowing object omission and appearing in the conative alternation (cf. Melloni, 2005 for further explanation).

[16] According to L&RH (2004), strong evidence that incremental-Theme verbs are consistent with a simple event analysis is their syntactic pattern. Like verbs of consumption, and contrary to change of state verbs, these verbs can be used intransitively, because the argument that qualifies as the incremental Theme needs not be expressed. Italian along with English incremental-Theme verbs exhibits the same syntactic pattern:

(i)   Ganni ha letto / ha studiato / ha tradotto.
        'John read / studied / translated'

5.2.4 The skeleton of situations in the present study

We are now at the point of formalizing the assumptions outlined in the previous sections; therefore, I will tentatively produce the skeletons of a representative sample of the verbs which are the base of E·R nominals. In doing so, I will call attention to the points where the present proposal diverges from Lieber's analysis of SITUATIONS.

a. At first, it is worth reminding the reader that the present proposal is different from Lieber's system in an important respect; I have in fact suggested in section 3.6.1 that, as SUBSTANCES / THINGS / ESSENCES (i.e. nouns) have a dedicated non-thematic variable (i.e. *R*), SITUATIONS should also contain a semantic function role,[17] namely, an *E* (event) role. Now, I explicitly propose that this *E* role is contained in the skeleton of all types of situations, in accordance with scholars, like Higginbotham (1983; 1985), Parsons (1990) and Pustejovsky (1995), who extend this *E* position to states. Further, I assume that this *E* role is the highest (i.e. most external) argument in the skeleton of a situation (this move will be justified in section 5.4.1, while developing the co-indexation of E nominalization).

As a result, I propose the following skeletal representations for states and simple activities, which differ from Lieber's version only in the inclusion of the *E* variable:

(20)   *conoscere* 'know'
       [–dynamic ([   ]$_E$, [   ] , [   ])]

(21)   *amministrare* 'administer'
       [+dynamic [   ]$_E$, [   ] , [   ])]

a. Further, following the accepted analysis of accomplishments/causatives, I assume that these aspectual classes of situations have complex event structure templates, expressed in Lieber's framework as complex/bipartite skeletons. Accordingly, they should have a double *E* position: E_1 for the activity subevent, and E_2 for the change of state subevent (cf. also Pustejovsky's analysis of accomplishments in section 4.2.1).[18] I illustrate the skeleton of an accomplishment (*costruire* 'build') and that of a lexical causative (*cambiare* 'change') as follows:

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[17] Cf. Spencer (1999) for this definition.
[18] Cf. in particular Higginbotham (2000) for interesting remarks on the subeventual structure of accomplishments.

(22) *costruire* 'build'

[+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([ ]$_{E2}$, [D-Path-$_k$])])]

      j does something to *k*   the doing brings about *k*

(23) *cambiare* 'change'

[+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([ ]$_{E2}$, [$_k$], *[D-Path]*)])]

        j does something to *k*   the doing brings about some result related to *k*

It is worthwhile observing that the [+dynamic] function expressing the direct causation of the change of state subevent does not have its own independent *E* position. Since it is conceived as a relation between the first and the second subevents, I suggest it takes E_1 as the highest argument in its skeleton, along with the causer (co-indexed with *j* in (22)-(23)) and the unaccusative/inchoative skeleton including E_2 (the second subevent).

In sum, the assumption of a double event position allows us to isolate and coherently represent a relevant subset of those events that are indistinctively accounted for as SIMPLE ACTIVITIES in Lieber's categorization. In effect, a double event position, along with the extension of [+IEPS] to their skeleton, is what distinguishes accomplishments such as *costruire* 'build/construct' or *tradurre* 'translate' from simple activities (characterized by a single event position) like *amministrare* 'administer', *toccare* 'touch', etc.

a. Concerning the skeleton of this consistent subset of accomplishments, which are characterized by incremental Themes, I propose that the Event Co-identification process takes place if and only if the two subevents share temporal properties and unfold at the same rate, or, more precisely, *iff* the first activity subevent is temporally dependent on the second change of state subevent by virtue of a shared incremental argument. Specifically, I propose that Event Co-identification is obtained through co-indexation of the (non-thematic) E_1 and E_2 arguments in their skeletal representation. Therefore, the complex skeleton of an accomplishment verb such as *costruire* 'build' can be simplified as follows:

(24) *costruire* 'build'

a. [+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([$_i$]$_{E2}$, [D-Path-$_k$])])]

               EVENT CO-IDENTIFICATION →

b. [+dynamic, +IEPS ([ ]$_{E1=E2}$, [ ], [D-Path])]

The simple skeleton in (24)b. does not only accommodate the class of result-object verbs (cf. section 4.3.1), but it also captures the skeleton of creation by representation verbs (section 4.3.3.1). The latter, like the former, take in fact an incremental argument (the Source) which participates in both subevents of the bipartite skeleton, and it is by virtue of this shared participant that the bipartite skeleton becomes simple:

(25)   *tradurre* 'translate'

a.   [+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([$_i$]$_{E2}$, [$_{D\text{-Path-}k}$])])]

                                EVENT CO-IDENTIFICATION →

b.   [+dynamic, +IEPS ([   ]$_{E1=E2}$, [   ], [$_{D\text{-Path}}$])]

Interestingly, the Source object of a representation verb is not affected or modified by the corresponding action. Although it does not undergo any change, the Source is the D-Path that measures out the progression of the representation event through its own extent.

5.3   Co-indexation: Towards a formal representation

In the following sections, I will attempt to formalize the derivation of a representative sample of the deverbal nominals illustrated in the course of this study; that is to say, I will develop the co-indexation of logically polysemous E·R nominals.

In Italian, the head suffixes of E·R nominals are numerous and differ concerning their formal and stylistic preferences of selection; nevertheless, they fall within the same paradigm cell of semantic derivation. As such, nominal affixes share a similar skeleton and are semantically interchangeable, although each of them is (idiosyncratically) associated with a verbal base. Among these suffixes, *-mento* and *-zione* characterize the more consistent group of nominals, but others (like *-ata, -tura*) are also productive (cf. section 3.2.1 for an outline of Italian nominalizing affixes).

In the course of Chapter 3, I have worked out the basic skeleton of E·R suffixes, which have been accounted for as an instance of affixal inherent polysemy which reproduces the same kind of polysemy of the simple lexicon. As such, I have argued that, despite qualifying as a single lexical entry, these affixes display a polysemous skeleton, which is in both cases the head of a situational noun:

(26)   Skeleton of E suffixes: [–material, ± dynamic ([   ]$_E$, <base>)]
(27)   Skeleton of R suffixes: [±material, –dynamic([$_{<...>}$]$_R$, <base>)]

The skeletons above are co-indexed with the skeletons of SITUATIONS to form (abstract or concrete) situational SUBSTANCES / THINGS / ESSENCES, as suggested by the combination of the two major ontological features. However, E·R skeletons are asymmetric with respect to the diacritics which define the values of the features. Specifically, E suffixes are lexically underspecified with respect to the value of [dynamic], and they inherit this specification through co-indexation of the base E variable. Conversely, R suffixes are unspecified with respect to the value of [material], which gets in turn its plus or minus value in co-indexation. They also differ concerning the non-thematic arguments they take. The R argument (or semantic function role) simply indicates the nouns' property of referring to entities in the world; hence, the skeleton of a lexeme taking an R variable as its highest argument does not imply (nor exclude) the presence of any other syntactic argument in its syntactic configuration. The E semantic function role, instead, characterizes the skeleton of SITUATIONS but also a class of SUBSTANCES / THINGS / ESSENCES (simple event nouns and corresponding E affixes), which presuppose the presence of (at least) one participant.[19]

5.3.1 Co-indexation in E nominalizations

We are now at the point of formalizing the derivational process leading to the formation of E nominals. The following discussion will prove the relevance of the introduction of the E non-thematic variable in the skeleton of situations. In order to strengthen my argument, I will start from Lieber's (2004) proposal concerning co-indexation in E nominals, whose flaw depends just on the lack of this non-thematic argument.

Let us quote again the principle of co-indexation as stated by Lieber (2004: 61):

> In a configuration in which semantic skeletons are composed, co-index
> the highest nonhead argument with the highest (preferably unindexed)
> head argument. Indexing must be consistent with semantic conditions on
> the head argument, if any.

According to a co-indexing mechanism working like this, in absence of restrictions imposed by the head argument, there would always be co-indexation of the highest argument of both head and non-head components. Since the suffix is the head of a

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derived word, in the case of E suffixes, this implies that the non-thematic argument of the suffix must be co-indexed with the highest argument of the verb.

It is worth reminding the reader that, because Lieber's system does not include an *E* argument, the highest (or most external) nonhead argument of a situation generally corresponds to an Agent/Experiencer (the argument projected onto the subject position). Therefore, Lieber proposes that co-indexation of E nominals (what she calls *complex event nominals*, following Grimshaw, 1990) involves binding the Agent of the base verb and the R argument of the suffix. This indeed is the only option available to Lieber, who offers the following skeletal representation for *containment* (cf. Lieber, 2004: 56):[20]

(28)   [–material, dynamic ([$_i$],   [–dynamic ([$_i$], [   ])])]
         -ment   *contain*

However, I believe that this proposal has some shortcomings that deserve discussion. First of all, we should notice that co-indexation in (28) ties together arguments of the head and the nonhead that are semantically incompatible: the featural content of the affixal skeleton defines an abstract *R* argument, while the co-indexed base argument (i.e. the verb's external argument) typically corresponds to a concrete entity (i.e. the container). This is not a big issue for Lieber's system, because according to her, co-indexation can tie incompatible arguments in the absence of head's semantic requirements.

Let us yet compare the skeletal composition in (28) with the representation of the nominal *container* in (29). Here, co-indexation applies between semantically compatible arguments. The co-indexed argument in the nonhead skeleton matches the featural characterization of the head *R* argument, because both arguments are concrete and dynamic (the following skeleton is produced in accordance with Lieber's, 2004 formalism):

(29)   [+material, dynamic ([$_i$],   [–dynamic ([$_i$], [   ])])]
         -er   *contain*

The comparison between the two skeletons shows that the co-indexing mechanism cannot work in (28) as it (correctly) works in (29). Co-indexation in (28) ought to work

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[20] The skeleton of derived words is composed through hierarchic subordination of functions, as indicated by Jackendoff's (1990) machinery:
(i)   [αF$_1$ ([   ], ßF$_2$ ([   ])])]
Therefore, the skeleton of the head constituent (in this case, the suffix) subordinates the skeleton of the nonhead constituent (the base verb), independently of the linear ordering of the constituents in the complex lexeme. This implies that the outermost function in the skeleton of a derived word is the one that determines its syntactic category.

on a different verbal argument, which is compatible with the semantic features of the head.

Moreover, a further problem arises when we compare the different syntactic properties displayed by the nominals *containment* and *container*. We again quote Lieber (2004: 45) to point out that:

> Co-indexation is a device we need in order to tie together the arguments that come with different parts of a complex word to yield only those arguments that are syntactically active.

If co-indexation links the highest argument blocking its discharge in the syntax in (29), the same thing does not happen for the nominal in (28). As Grimshaw (1990) points out, the internal argument of the verb must be syntactically projected with her complex event nominals, whereas the external argument (the highest argument in Lieber's terms) can appear as an adjunct expressed with a *by*-phrase. Therefore, I maintain that the skeletal composition in (28) cannot correctly account for the derivation of E nominals, which can appear in the syntax with full argument structure.

It will be apparent now that the introduction of the *E* argument characterizing both the skeleton of situations and transpositional suffixes plays a crucial role in the co-indexing mechanism of E nominals. Starting from simple-skeleton situations, I propose to illustrate the derivations obtained from states and simple activities by means of transpositional suffixes as follows:

(30)   *conoscenza* 'knowledge/acquaintance'
       $[-\text{mat}, \pm\text{dyn} \; ([_i \;\;]_E, \quad [-\text{dyn} \; ([_i \;\;]_E, [\;\;], [\;\;])])]$
       -zione$_E$ *conoscere* 'know'

(31)   *amministrazione* 'administration'
       $[-\text{mat}, \pm\text{dyn} \; ([_i \;\;]_E, \quad [+\text{dyn} \; ([_i \;\;]_E, [\;\;], [\;\;])])]$
       -zione$_E$ *amministrare* 'administer'

Co-indexation ties together the non-thematic arguments of the head and the nonhead, which are the highest in both skeletons and are semantically compatible, as specified by the principle previously quoted in this section. Besides, this binding allows establishing the [+] or [−] value of [dynamic], which is left unspecified in the skeleton of the E suffix. That is, the [−dynamic] specification of *conoscere* is inherited by the suffix through the co-indexation of its *E* argument by the *E* argument of the suffix in (30).

Similar observations hold for *amministrazione* in (31) (cf. section 3.4.1.2 for an explanatory account of this fact).

It is important to emphasize that the plus or minus value of [dynamic] implies a lexical underspecification of the affix with respect to this feature, which remains to be specified in the derivation process. In other words, the value of [dynamic] can be determined lexically, through co-indexation, on the basis on the nonhead skeleton, which obviously contains a [+] or [–] value of this feature. What is more, the binding of the *E* argument implies the inheritance of the entire event structure of the base verb, intended as the complex of features in the outermost layer of the nonhead skeleton. Therefore, if a verbal skeleton contains [+IEPS] (or other features), it is expected that the corresponding nominal will preserve the content of this featural specification. Let us now consider the derivation of an E nominal from an accomplishment verb of creation:

(32) *costruzione* 'construction'
      [–mat, ±dyn ([$_i$]$_E$, [+dynamic, +IEPS ([$_i$]$_{E1=E2}$, [   ], [$_{D\text{-PATH}}$])])]
      -zione$_E$ *costruire*

Costruzione as E nominal expresses an intrinsic degree of change; obviously, this lexical semantic specification is not intrinsic in the suffix, but it is inherited through the binding of the *E* variable of the base.

Another crucial point is the presence of arguments in the E nominal configuration; since no true syntactic argument is co-indexed and lexically bound in the co-indexation of E nominals, but all of them can be projected (or discharged) into syntax, we have an explanation why E nominals usually preserve verb argument structure:

(33) a. L'impresa ha costruito questa casa.
          'The company built this house'
      b. La costruzione di questa casa da parte dell'impresa
          'The construction of this house by the company'

I therefore suggest that the binding of the *E* argument does not only imply the inheritance of the event structure of the base verbs, but also the preservation of its argument structure, or, more precisely, of its thematic structure. Actually, while the internal argument remains obligatory, the external argument changes its status from argument to adjunct, as it does in passive constructions (cf. Grimshaw, 1990). However, its thematic relation with the base verb is preserved in the nominal (and in the passive) construction:

(34) a. La costruzione di questa casa (<u>da parte dell'impresa</u>)
          'The construction of this house (by the company)'
      b. Questa casa è stata costruita l'anno scorso (<u>dall'impresa</u>).
          'This house was built last year (by the company)'

Moreover, I argue that the co-indexation of the nonhead *E* variable explains the different argument-taking properties of E derived nominals with respect to simple event nouns, like *festa* 'party', *processo* 'trial', etc. Simple event nouns take an external *E* argument, but nonetheless they are not amenable to an event structure analysis, as confirmed by the impossibility of aspectual modification (**il processo di Gianni in tre ore/per tre ore* 'John's trial in three hours/for three hours'). Derived E nominals, instead, inherit event structure specification from their base verb and are therefore amenable to an event structure analysis by virtue of the binding of the nonhead *E* variable. As mentioned above concerning *costruzione*, the binding of this semantic function role involves inheriting all the features that define it (also the [±IEPS] or quantitative features like [±B] or [±CI], if any).[21] This is confirmed by compatibility of E derived nominals with aspectual modifiers (e.g. *La costruzione della casa in due anni* 'the construction of the house in two years'). Therefore, I follow Grimshaw (1990) in assuming that the capability of taking argument structure participants derives from the presence of event structure, which simple events lack, while derived E nouns inherit it from the *E* variable of the base verb through co-indexation.[22]

Furthermore, the fact that the (double) *E* variables of *costruire* are already co-indexed by virtue of Event Co-identification nicely accounts for the fact that creation verbs do not allow for a change of state or resulting-state reading (*costruzione* cannot refer to the

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[21] [B] and [CI] are other semantic features that Lieber (2004:136-143) introduces for capturing the quantificational characteristics of simple lexical items (cf. Jackendoff 1991 and 1996 for the use of similar, but not analogous features). [B] stands for "Bounded", and predicates the relevance of intrinsic temporal or spatial boundaries in the meaning of a lexical item. [CI] stands for "Composed of Individuals" and signals the relevance of temporal or spatial units in the meaning of the item. [B] and [CI] can be applied both to the category of SITUATIONS and SUBSTANCES /THINGS /ESSENCES. In the case of situations, in particular, [B] could be used to isolate the aspectual class of achievements, because they are punctual (and therefore temporally bounded). [+CI] characterizes instead verbs like *borbottare* 'mumble', *piagnucolare* 'moan', since they indicate repeated events of the same sort. Because I do not analyze these verb classes, I prefer to leave these features out from the present account.

[22] Grimshaw (1990) explains that what she calls complex event nominals only have an associated event structure and are thus capable of licensing arguments. Result and simple event nouns usually lack it. Consequently, they also do not take arguments, but can instead licence modifiers and complements respectively. While result and simple event nouns are referential because they select an *R* argument, complex event nominals instead select *Ev* as their external argument, and this fact directly accounts for their interpretation as well. In Grimshaw's account, simple event nouns are like result nouns, because, lacking *Ev* and an associated event structure analysis, they are not able to license argument structure. In my account, instead, simple event nouns behave similar to R nouns because, despite taking *E*, they do not inherit event and argument structure from the *E* variable of the base verb. Cf. sections 2.2.1.1 and 2.2.1.2 for further discussion of Grimshaw's account of deverbal nouns.

coming into existence of a house or to the house's state of being built). These readings are instead available to nominals obtained by some lexical causatives (like the already mentioned *cambiare* 'change', *isolare* 'isolate' or *civilizzare* 'civilize'). Let us take *cambiare* 'change' as an instance of causative/inchoative alternation. In the following examples, we find the causative version of the verb and its corresponding nominal (along with its full argument structure):

(35) a. Questo governo ha cambiato il nostro paese.
          'This government has changed our country'
      b. Il cambiamento del paese (da parte del governo)
          'Our country's change (by the government)'

If (36)a. represents the skeleton of the causative version of the verb, (36)b. represents the co-indexation producing the corresponding nominal by means of –*mento$_R$*:

(36) a. *cambiare* 'change' (causative/transitive)
          [+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([ ]$_{E2}$, [$_k$], [$_{D\text{-}Path}$])])]

      b. *cambiamento* 'change'
          [−mat, ±dyn ([$_\underline{i}$]$_E$,
              mento$_E$
          [+dyn ([$_\underline{i}$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_\underline{i}$]$_{E1}$, [$_j$], [+dyn, +IEPS ([ ]$_{E2}$, [$_k$], [$_{D\text{-}Path}$])])])]
              cambiare

In the configuration of skeletons in b., the first E argument (E_1) of the nonhead – which is already tied through co-indexation with the causing subevent – is co-indexed with the non-thematic E argument of the suffix (relevant indexes are underlined in the configuration in b. for transparency). Because the skeleton of the unaccusative subevent, containing E_2 as its highest argument, is embedded in the skeleton of the causing subevent, the E nominal will not only refer to the causing but also to the result subevent.

In the following examples, we instead observe the inchoative version of the verb and its corresponding nominal (as proved by the lack of external causation):

(37) a. Il nostro paese sta lentamente cambiando.
          'Our country is slowly changing'
      b. Il lento cambiamento del nostro paese
          'The slow change of our country'

As explained in section 5.2.1, the detransitivization of the lexical causative can be formally represented as the deletion of the outermost layer of the bipartite skeleton (this operation formally represents the suppression of the external cause):

(38)   *cambiare* 'change' (inchoative/unaccusative)
$$\underline{[\text{+dyn} ([_i\ ]_{E1}, [_j\ ], [_k\ ])]; [\text{+dyn} ([_i\ ]_{E1}, [_j\ ],} \quad [\text{+dyn}, \text{+IEPS} ([\ ]_{E2}, [_k\ ], [_{D\text{-}Path}\ ])])]$$
$$\downarrow$$
$$\emptyset$$

In this case, the skeleton of the nominal affix gets composed with the inchoative skeleton of *cambiare* (syntactically, an unuccasative), which, in virtue of suppression of the external cause, becomes a simple skeleton. Therefore, when *-mento*$_E$ merges with the unaccusative version of *cambiare*, the co-indexation mechanism will bind the *E* argument of the suffix with the single *E* argument of the base:

(39) $[\text{–mat}, \pm\text{dyn} ([_i\ ]_E, \quad [\text{+dyn}, \text{+IEPS} ([_i\ ]_E, [\ ], [_{D\text{-}Path}\ ])])]$
        -mento$_E$ *cambiare*

To conclude, with this analysis of the co-indexation of E nominals I hope to have demonstrated that their interpretation along with their thematic and argument structure properties can be nicely accounted for on account of the introduction of the *E* variable in the skeleton of verbs and affixes.

5.3.2 Co-indexation in R nominalizations

In the course of Chapter 4, I have taken into account several classes of verbs and investigated their derived nominal interpretations; in doing so, I have pointed out that the formation of R nominals is constrained according to three semantic requirements, which the *R* argument of the suffix imposes over its base.

Among these, the only inviolable, and, therefore, strongest requirement is the lack of sentience:[23]

(40)   R suffixes: $[\pm\text{material}, \text{–dynamic} ([_{\text{non-sentient, incremental, effected}}\ ]_R, <\text{base}>)]$

This skeleton is the head of the R nominals that, from the interpretative viewpoint, can be defined as ENTITIES IN STATE. Such R suffixes form in fact abstract or concrete

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[23] Recall that sentience is the prototypical semantic property characterizing both Agent and Experiencer arguments.

SUBSTANCES / THINGS / ESSENCES, which participate in stative events or subevents, as indicated by the [–] value of [dynamic]. R nominals are therefore not only likely to be formed by stative situations, but also by those situations including a Path component, because the Path implies a sequence of states (or positions).

Finally, recall that, as indicated by the co-indexation principle, in co-indexing a base argument with the affixal argument, the semantic conditions of the latter should match as closely as possible with those of the base. However, because "incrementality" and "effectedness" are constraints that can be both violated or overridden in co-indexation, I argue that the different interpretations displayed by R nominals (PRODUCT/MEANS, PATH, etc.) are the consequence of the complete or partial matching of the head's set of constraints with the semantic properties of the relevant base argument.

5.3.2.1   PRODUCT interpretation

As seen in sections 4.3 through 4.3.4, the PRODUCT interpretation of a deverbal nominal relies on the satisfaction of a specific constraint imposed by the R suffix, i.e. effectedness, hence, on the presence of an effected argument in the base skeleton (we have also noticed that, in the case of durative situations implying an endpoint, i.e. accomplishments, effectedness usually implies incrementality). Accordingly, I have shown that the PRODUCT interpretation can be obtained by merging the skeleton of an R suffix with that of several predicates, which I have classified in three groups: namely, prototypical creation verbs (or the result-object class), representation verbs and modification verbs. All these verbs can be regarded as describing creation events, because they predicate the coming into existence of a new/effected participant. I have also argued that semantic values such as creation (for the verbs) and effectedness (for the nouns) are usually expressed in the *body*, i.e. in the more idiosyncratic building block of the lexical semantic meaning of a lexeme. Concerning PRODUCT nominals and their body, which I have tentatively represented as a structured qualia (following Pustejovsky, 1995), I have suggested that an effected entity has the AGENTIVE role as its most prominent quale. Now, before tackling the co-indexation of R nominals, I would like to propose that there could be a way to encode the creation value in the grammatical-semantic skeleton of a situation.

### 5.3.2.1.1   [+Loc] and the effectedness constraint

There is a last feature I would like to examine before presenting the co-indexation of PRODUCT nominals. The feature in question is [Loc], and it is introduced by Lieber (2004) mainly to define the class of adpositions, in particular, those indicating location

in space/time. Let us directly quote Lieber's explanation of the meaning and use of this feature:

> The presence of the feature [Loc] in a skeleton asserts the relevance of position in space to the lexical item. If the feature is absent, position or place is irrelevant to the meaning of the lexical item. If the feature is present, however, the plus value asserts position or place and the minus value denies position in space or time; in effect, it signals lack or privation.
>
> <div align="right">(Lieber, 2004:100)</div>

On the basis of this explanation, Lieber suggests that the equipollent use of [Loc] can be combined with the class of [–dynamic] situations, and serves the purpose of isolating, among stative situations, those that indicate existence or privation (the diagram below is from Lieber, 2004: 100):

(41)

STATES
[–dynamic]

[Loc]

EXISTENCE	PRIVATION	
[+Loc]	[–Loc]	
dwell	*lack*	*know*
stay	*miss*	*hear*
remain	*absent*	*like*
exist		*happy*
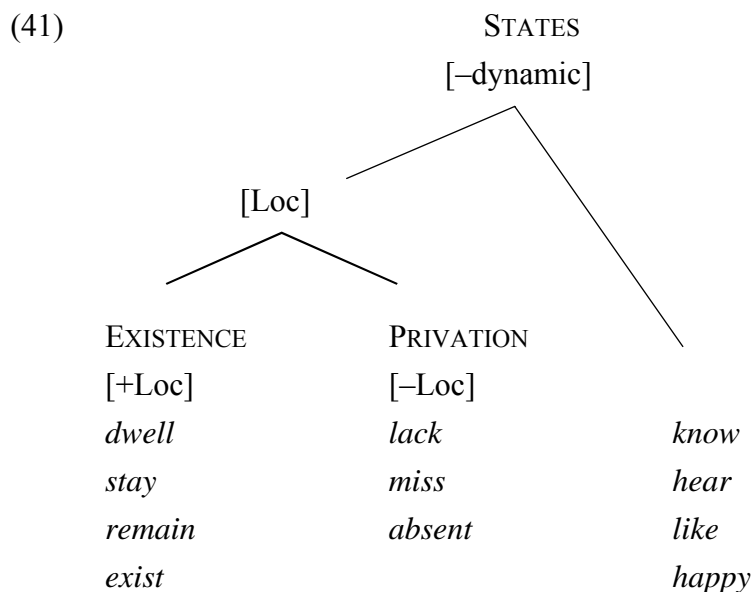
The categorization in (41) shows that STATES (expressed by verbs and adjectives) usually lack the feature [Loc] altogether (e.g. *know*, *hear*, *happy*, etc.); however, a subset of STATES can be found that are characterized by a positive or negative value of this feature. In particular, [+Loc] STATES are verbs of existence or spatial location, since to

be located in a certain position means to exist (a kind of state) in that position. [–Loc] STATES are verbs (or adjectives) of non-existence or privation of location.[24]

Therefore, on the basis of this additional function, Italian verbs like *giacere* 'lay' or *rimanere* 'remain' have the following skeleton:

(42) *giacere* 'lay' / *rimanere* 'remain'
      [–dynamic, +Loc ([ ]$_E$, [ ])]

If [+Loc] can be successfully combined with STATES to indicate the concept of existence, I tentatively suggest that it could be extended to the skeleton of those EVENTS (i.e. [+dynamic] situations) that describe the coming into existence of an entity.[25] As a result, creation verbs could be represented as follows, with [+Loc] taking the incremental Theme as its argument to indicate the gradual progression of states of existence of this argument's referent:

(43) CREATION VERBS: *costruire* 'build'
      [+dynamic, +IEPS ([ ]$_{E1=E2}$, [ ], [+Loc ([$_{D-Path}$])])]

Similarly, appearance verbs (like *apparire* 'appear') should take [+Loc], because they describe the (metaphorical) coming into being of the Theme/Subject. Since they are unaccusative and take just one syntactic argument, the [+Loc] function is directly combined with [+dynamic] and [+IEPS] in the outermost layer of the skeleton.

(44) APPEARANCE VERBS: *apparire* 'appear'
      [+dynamic, +IEPS, +Loc ([ ]$_E$, [ ], *[$_{D-Path}$])*]

On the contrary, verbs that describe the gradual destruction or disappearance of an object could be represented with a minus value of [Loc]:

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[24] The reason for adding this feature to the skeleton of stative situations is based on a syntactic difference displayed by a subset of state verbs. Specifically, Levin (1993) points out that a restricted subset of English stative verbs differ syntactically from other statives in being able to occur in context of "There-Insertion" (the examples below are from Lieber, 2004: 100):
(i)   There remained three survivors in the city.
(ii)   *There knew a man three solution.
Crucially, some Italian stative verbs show a similar behaviour in this respect:
(i)   <u>Ci</u> sono rimasti tre gelati in freezer.
          'There remained three ice creams in the freezer'
Therefore, I maintain that the introduction of [Loc] in the featural system grounds on a syntactic variation that Italian states also display, alongside English ones.
[25] I gratefully acknowledge R. Lieber for pointing out to me this possibility offered by her framework.

(45)   DESTRUCTION VERBS: *demolire* 'demolish'

[+dynamic, +IEPS ([   ]$_{E1=E2}$, [   ], [−Loc ([$_{D\text{-}Path}$])])]

(46)   DISAPPEARANCE VERBS: *scomparire* 'disappear'

[+dynamic, +IEPS, −Loc ([   ]$_{E2}$, [   ], *[$_{D\text{-}Path}$]*)]

Given that the presence of [+Loc] in the skeleton of a situation is able to signal the creation value of that situation, I propose that the R suffix, by virtue of the effectedness requirement it imposes, should be sensitive to the presence of this feature in the skeleton of a situation; or, more precisely, the R argument of the suffix should be co-indexed with the base argument defined by this function. In other words, I propose that the R suffix will preferably be co-indexed with a base argument predicated of the [+Loc] function, because the referent of this argument is an effected entity, when the base verb describes an EVENT. In this case, obviously, the R nominal has a PRODUCT reading.

Conversely, verbs of destruction are much less likely to form PRODUCT nominals. Even if they take an incremental argument, this argument is usually introduced by a [−Loc] function and co-indexation would apply modulo violation of the effectedness constraint.

5.3.2.1.2   *Creation or result-object nominals*

Let us start with the most common example of PRODUCT nominal, *costruzione* 'construction', which is derived from a creation or result-object predicate. On the basis of the verb skeleton in (43), the configuration of the co-indexed skeletons should appear as follows:

(47)   *costruzione*
[± mat, −dyn ([$_{non\text{-}sentient,\ \underline{incremental,\ effected}\ \text{-}\mathbf{i}}$]$_R$, [+dyn, +IEPS ([   ]$_{E1=E2}$, [   ], [+Loc ([$_{D\text{-}PATH\text{-}\mathbf{i}}$])])])]
        -zione$_R$ *costruire* 'build'

First, we should notice that there is no incompatibility between the [−] value of [dynamic] of the R suffix and the outermost layer of the base. Recall in fact that when [+dynamic] is combined with [+IEPS] in a skeleton, the corresponding situation expresses a sequence of STATES. This fact ensures that the R nominal can refer to an entity which participates in (that sequence of) STATES.[26]

In (47), what determines the linking between the two skeletons is the whole set of semantic properties, among which the strongest is the lack of sentience, and the weakest

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[26] It is worth reminding the reader that PRODUCT nominals, expressing artifacts or outcomes of events, qualify as a specific subtype of the macro-type that I have defined ENTITY IN STATE.

are incremental and effected. In effect, these semantic requirements of the head are entirely satisfied by one of the participants in the skeleton of the base verb; namely, the second thematic argument of the base, introduced by [+Loc], and typically projected onto the direct object position (the first argument is an Event, therefore, *per* definition incompatible with the *R* argument of the suffix, and the second one is an Agent, hence a sentient argument). Specifically, *costruzione* describes a non-sentient entity and corresponds to the incrementally effected object brought about by the corresponding event. As explained in section 4.3.1, all result-object verbs take incremental and effected internal arguments; it is therefore expected that the R suffix binds this argument, and the PRODUCT interpretation of the R nominal follows.

Interestingly, the fact that the incremental Theme named by the R nominal comes into existence gradually, through the progression of the corresponding event, explains why the nominal *costruzione* might refer to an edifice that has not been completed (and the accomplishment event have not culminated), as pointed out in section 2.3.2.1:[27]

(48)   All'imponente costruzione mancavano il tetto e alcune pareti interne.
        'The huge construction lacked the roof and some inside walls'

Moreover, like in the case of E nouns, the [±] (underspecified) value of the outermost feature of the R skeleton is set through co-indexation. In other words, it is the [+] or [–] specification of the [material] feature of the verb internal argument that establishes the abstract or concrete characterization of the R nominal. *Costruzione* typically refers to an edifice/building, because *costruire* takes such objects as the prototypical referents of its internal argument. Nevertheless, since abstract objects might also be (metaphorically) constructed, the nominal can also refer to these abstract entities, which are the mental/abstract products of a construction event.

Finally, a co-indexation mechanism working in this manner allows us to account for the syntactic behavior of R nominals:

(49)   L'imponente costruzione (*della casa / dell'impresa)
        'The huge construction (*of the house / of the company)'

Co-indexation links the internal argument of the verb, ensuring that it cannot be projected; as a result, only the external argument can be discharged into syntax. However, the thematic role of the external argument is not preserved in the phrase headed by the nominal. In (49) *dell'impresa* can be interpreted as a possessor, rather than

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[27] Cf. similar remarks on this point in Mani (1997).

an Agent; in other words, it is not a true syntactic argument but a modifier, as pointed out by Grimshaw (1990). This implies that the binding of a syntactic participant of the base crucially differs from the binding of the verb *E* variable, which preserves the thematic grid of the base verb.

5.3.2.1.3   *Creation by representation nominals*

R nominals obtained from representation verbs are a more challenging case. Like result-object verbs, representation verbs also take an incremental argument, expressed in the form of a directed Path in their skeleton (cf. (25)). Nonetheless, this argument is not involved in the co-indexation process, contrary to what happens instead with result-object verbs. Consider *traduzione* 'translation': this nominal cannot refer to the Source object, but only to the effected entity resulting from the event. Therefore, in R nominalizations obtained from representation verbs the nominal affix triggers the binding of a "semantic argument", i.e. an argument that is not projected into syntax.

Lieber (2004) does not include such arguments in the grammatical-semantic skeleton, which only contains information that is relevant at the morpho-syntactic level.[28] However, I propose that these arguments, which seem to play a role in the co-indexation option of R nominals, could also be inserted into the skeleton. This is to say that there is semantic information which, despite originating from the idiosyncratic properties of the verb (contained in the 'root' or 'body'), is also expressed in its skeletal representation. On the other hand, there are interesting cases that prove that these semantic participants might play a role at the aspectual-syntactic level. Consider *descrivere* 'describe' (which has a corresponding E·R nominal *descrizione* 'description'):

(50)   Gianni ha descritto Lucia per alcuni minuti/in alcuni minuti.
       'John described Lucy for a few minutes/in a few minutes'

Descrivere lacks a syntactic argument capable of measuring out the event; the Source object it takes (*Lucia*) cannot measure out the corresponding event, and the description event can go on indefinitely, independently of the extent of the Source. However, as it happens with traditional accomplishments, the verb is compatible with *in-* and *for-x-time* adverbials. Again, similar to accomplishments, there is an obvious inference in (50): the *for*-adverbial conveys an uncompleted event reading, while the *in*-adverbial conveys a completed event reading. The Source being holistic rather than incremental, I argue that what measures out the description event is not the Source's extent, but the extent of the

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[28] As a result, the only arguments that are directly encoded in the skeleton of a verb are argument structure participants. Lieber makes an exception for the *R* variable, which is the most external argument in the skeleton of SUBSTANCES / THINGS / ESSENCES and all affixes.

resulting description (as information-object), although the latter is a semantic argument. In sum, the fact that certain semantic/implied participants can trigger perfective or imperfective values means that they should be encoded in the grammatical-semantic skeleton.

In the light of this assumption, then, we can produce a more elaborate skeleton for representation verbs with respect to that offered in (25). Representation predicates obviously share a similar event structure with respect to result-object verbs; they in fact are accomplishment events taking incremental Themes. Moreover, they both indicate the coming into existence of an object.

Therefore, because a *translation*$_E$ implies the creation of a *translation*$_R$, I propose that the skeleton of a representation verb like *tradurre* 'translate' does not only contain an Agent and a Source argument, but also implies the presence of a semantic argument predicated of an implied [+Loc] function, which captures the creation value of the verb (semantic or implied arguments and corresponding function are italicized in the following skeletons):

(51)   representation verbs: *tradurre*
         [+dynamic, +IEPS ([   ]$_{E1=E2}$, [   ], [$_{D\text{-}Path}$] , *[+Loc ([$_{D\text{-}Path}$])]*)]

Among the arguments in the above skeleton, only two are projected as argument-structure participants: namely, the second argument, i.e. the Agent, and the third one, i.e. a Representation Source Theme.

The formation of the corresponding PRODUCT nominal (obtained through the hierarchical composition of the skeleton of the suffix with that of the base) relies on this semantic participant:

(52)   *traduzione* 'translation'
[± mat, –dyn ([$_{non\text{-}sentient, \ incremental, \ effected\text{-}\mathbf{i}}$]$_R$, [+dyn, +IEPS ([   ]$_{E1=E2}$, [   ], [   ], *[+Loc ([$_{\mathbf{i}}$])]*)])]
         -zione$_R$ *tradurre* / *correggere*

In (52) co-indexation applies between the *non-syntactic* argument of the base and the *R* argument of the suffix. As with result-object nominals, the co-indexed *R* argument of the base satisfies the whole set of requirements imposed by the *R* argument of the suffix. On the basis of its concrete or abstract characterization, the incremental and effected participant in the non-head skeleton will specify the [+/-] value of the outermost [material] feature of the suffix.

Because co-indexation does not link any syntactic argument, but only a semantic one, both internal and external arguments are available for syntactic discharge, as shown by the active construction of *traduzione$_R$* in the example below:

(53)   La traduzione di Gianni del testo
        'John's translation of the text'

This co-indexation option accounts thus for the fact that, contrary to result-object nominals, representation nominals typically are relational nouns, which allow (but not require) the projection of the satellite expressing the Source.

5.3.2.1.4   *Creation by modification nominals*

There is another class of nominals with PRODUCT interpretation that we have not yet discussed. These specifically are the nominals derived from modification verbs, i.e. verbs describing an event of change, hence taking affected objects. As shown in the descriptive account of this class in section 4.3.3.2, these verbs are heterogeneous. They can describe the addition / subtraction of material to / from an object or indicate its physical alteration, its replacement, etc. (*argentare* 'silver-plate', *alterare* 'alter', *rimpiazzare* 'substitute', etc.).[29] Overall, the verbs in this class are mainly causatives/inchoatives and do not take incremental Themes. In contrast with verbs like *asciugare* 'dry', *detergere* 'wash', *igenizzare* 'sanitize', *pulire* 'clean', which also affect their objects, the events described by modification verbs can be conceived of as creation events, since the change they describe comes about as a new, effected entity related with the verb's affected object (e.g. *alterazione* 'alteration', *argentatura* 'silver-coat', *cambiamento* 'change', *modificazione* 'modification', *sostituzione* 'substitution', etc.).

In what follows, I shall concentrate on the representation of the skeleton of a single verb, *cambiare* 'change'. As we have already seen in section 5.3.1, because it is a causative, *cambiare* displays a bipartite skeleton. Like many causatives, it can detransitivize and become unaccusative (the deletion of the external cause can take place because in order for a change to take place there is no need of the intervention of a volitional agent, as pointed out by L&RH, 1995 and Reinhart 2000; 2002).

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[29] Verbs describing the addition or use of materials/means to the object are likely to form R nominals with MEANS interpretation. However, because the means can be interpreted as the product of the action, this reading can be said to be a specific subtype of the PRODUCT reading. Moreover, I will show in section 5.3.2.4 that a MEANS interpretation can also arise in the case of R nominals obtained from verbs that ambiguously allow for stative and eventive uses.

As in the case of representation verbs, I suggest representing this creation value with an implied semantic function, [+Loc], which formally captures the coming into existence of a third semantic participant, along with the external Causer and the Theme/Patient:

(54)   *cambiare* 'change'

[+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([ ]$_{E2}$, [$_k$], *[+Loc ([$_{D\text{-}Path}$])])])]

$\downarrow$

Ø

Because the *change*$_R$ comes about (gradually) throughout the progression of the corresponding event, I suggest that it can be represented in the form of the directed Path argument of the second subevent (the presence of the causing subevent is totally irrelevant, because a change can come about spontaneously, without an external force or agent which causes it).

For perspicuity, I will consider the co-indexation merging the unaccusative skeleton of *cambiare* with the skeleton of the R suffix:

(55)   *cambiamento* 'change'

[± mat, –dyn ([$_{\text{nonsentient, incremental, effected-}i}$]$_R$, [+dyn, +IEPS ([ ]$_E$, [ ], *[+Loc ([$_{D\text{-}Path\text{-}i}$])])])]

-mento$_R$ *cambiare* 'change'

In this case, the R nominal is formed modulo the satisfaction of the whole set of semantic requirements of the head and this accounts for the PRODUCT interpretation of the nominal.

5.3.2.1.5   *By way of summary*

A co-indexation mechanism working in this manner allows us to account for the interpretation and different syntactic behaviors of these subsets of PRODUCT nominals. Where co-indexation links the internal argument of the verb, only the external one can be discharged in syntax (cf. result-object verbs). Conversely, where co-indexation does not link any syntactic argument but only a semantic one, both internal and external arguments are available for syntactic discharge (cf. representation and modification verbs). However, in order to account properly for the syntactic peculiarities of R nominals with respect to E nominals, we should assume that the base verb arguments become optional (they are modifiers, in Grimshaw's terms), and that it is the linking of a (Referential) participant in the nonhead skeleton that induces such modification in the status of the nominals' satellites (conversely, we have seen that the binding of the *E* variable preserves the "argument" status of the satellite corresponding to the base verb's internal argument).

5.3.2.1.6 Difficult cases: Violating the Co-indexation Principle

In Chapter 4 (cf. in particular sections 4.4.1 and 4.4.5), I have shown that there exist irregular cases of R nominals obtained from simple activity and destruction verbs. The predicates in the former class should not form R nominals because, though describing dynamic events, they do not indicate the creation of an entity, nor lexicalize a change of state. However, I have already drawn attention to two types of counterexamples that challenge this prediction: namely, the agentive-collective and locative meanings of *amministrazione* 'administration', and the PRODUCT interpretation of *frustata* 'lash', as the concrete mark left by a whip on a surface.

I have already discussed in detail the meaning conveyed by words such as *amministrazione* in Chapter 3, where I have characterized their polysemy as the result of paradigmatic sense extension. In particular, I have shown that Italian, despite having other morphological devices for expressing the collective meaning, lacks dedicated affixes for expressing the combination of agentivity and collectivity (recall that R nominals might express a collective PRODUCT interpretation, as in the case of *produzione* 'production'). Similar remarks have been extended to the case of locative sense extension. Therefore, following Booij and Lieber (2004), I have suggested that a common strategy adopted by speakers in order to express concepts for which they do not have dedicated morphological means is to use the most productive and semantically closest affixes in the language. Among Italian affixes, E·R suffixes are good candidates for this sense extension; not only are they productive, but they are semantically underspecified with respect to concreteness / abstractness and lack an inherent quantitative specification (they can form collective and singulative nouns). Further, E·R suffixes are situational, that is, they are employed to derive the name of concepts associated with the situation described by the base verb. I therefore propose that the skeleton of these dot object affixes can be "extended" to the expression of agentive-collective and locative meanings, also considering that there exists a strong connection between these two concepts that explains the triple polysemy of *amministrazione*, as 1) an Event 2) collection of Agents and 3) a place.

As for the concrete reading of *frustata*, I would like to put forward a different explanation. First, for the purposes of the present discussion I will assume that -*ata* behaves as other transpositional suffixes with respect to inherent polysemy and that it accordingly displays a double skeleton, although this suffix could be characterized in a slightly different way (I leave the in depth analysis of –*ata* for future investigation). *Frustata* can denote a single (or bounded) event of *frustare* '(to) whip', or can have a concrete meaning, as shown by the sentence below (repeated from Chapter 4):

(56)   La sua schiena era piena di frustate.
       'His/her back was full of lashes'

In this case, the referential properties of the nominal correspond to the PRODUCT meaning discussed so far, and this semantic interpretation matches the requirements imposed by the R suffix. In fact, *frustata*$_R$ denotes the effected entity causally created by a whipping event.

However, cases like these qualify as violations of the co-indexation principle because, contrary to what the principle indicates, co-indexation does not bind an argument in the nonhead skeleton. The latter in fact only takes an Agent and an affected Patient as external and internal arguments (cf. the skeleton of *frustare* below, formally matching the skeleton of a simple activity):

(57)   *frustare* 'whip'
       [+dynamic ([   ]$_E$, [   ] , [   ])]

In effect, there is nothing in the lexical meaning of *frustrare* 'whip' that explicitly predicates of the causation (or coming into being) of a resulting effect/product. This piece of semantic information, which we associate with the event description *frustare*, originates instead from our knowledge of the world, and has no grammatical implication.

In this case, following Asher's (1993) proposal, I maintain that the R suffix introduces or adds an extra argument to those in the base skeleton. The referential properties of the R nominal are determined by the semantic condition of effectedness (which implies the lack of sentience) associated with the R suffix, independently on the absence of this argument in the base skeleton:

(58)   *frustata*
       [± mat, −dyn ([nonsentient, incremental, effected   ]$_R$, [+dynamic [   ]$_E$, [   ] , [   ])])]
       -ata$_R$ *frustare*

Despite being a deviation from the normal co-indexation option, we should expect that this type of violation is not totally unproductive. Conversely, any time there is the pragmatic world-need to "name" the output of an event, independently of the intrinsic aspectual type of the base, the speaker will use the R suffix to name this concept, even if the latter does not correspond to a syntactic or semantic participant in the skeleton of the base verb. On the other side, it is certainly less frequent for simple activities with respect to events of change to have associated effects / results, and this explains the marginality of *frustata* and other similar cases (e.g. *schiacciamento* as the concrete effect of a

crushing/smashing event, *trivellazione* as the concrete effect of drilling, etc.). In the domain of simple lexemes, we can find analogous examples of polysemy. Let us take for instance the word *bacio* 'kiss', a simple event noun that primarily denotes a (kissing) event. Like *frustata*, *bacio* can be used to indicate the trace/sign left by the corresponding action, usually, in the form of the traces left by a lipstick (e.g. *Gianni ha tre baci sulla guancia* 'John has got three kisses on his cheek'). Again, cases such as this prove that the derived lexicon, because it expands the simple lexicon, is likely to display the same effect of polysemy of the simple lexicon.

I now take into account verbs of destruction (e.g. *abbattere* 'demolish', *abolire* 'abolish', *annichilire* 'annihilate', *cancellare* 'cancel', *delapidare* 'waste', etc.). Like simple activity verbs, the verbs in this class should not have corresponding R nominals, but only E ones. In effect, although they describe an event of change, this change is not associated with the coming into existence of a new entity, but, on the contrary, specifies the complete removal or destruction of the Patient-object. For destruction verbs I have in fact proposed the skeleton in (45) (repeated below as (59)), where the affected object is introduced by a [–Loc] function that predicates its gradual destruction (recall that [–Loc] signals privation when included in the skeleton of a state verb):

(59)   [+dyn, +IEPS ([   ]$_{E1=E2}$ [   ], [–Loc ([$_{D\text{-}Path}$])])]

Since there are no effected but destroyed arguments in the base skeleton, the derivation of the R nominal is usually ruled out, as shown by *abbattimento* 'demolition', *abolizione* 'abolition', *cancellazione* 'cancellation'[30], and the like, which are E nouns only.

However, there are cases of PRODUCT nominals obtained by this class as well. Let us consider the concrete reading conveyed by *annullamento (di matrimonio)* '(marriage) annulment' (I repeat the example below from Chapter 4):

(60)   Questo <u>annullamento</u> (di matrimonio) contiene molte imprecisioni.
        'This (marriage) annulment contains many inaccuracies'

In (60) *annullamento* is used to indicate the document created/put into existence in order to attest that a formal procedure has been accomplished.

Again, like for *frustata*, I claim that there is no information in the grammatical-semantic skeleton of the item that predicates of the coming into existence of a resulting

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[30] Note that in English *cancellation* has an R interpretation: it refers to the mark that the post office puts on stamps (on envelops, postcard, etc.). In this case, the R suffix can be said to select the creation value actually expressed by the verb *cancel*, as 'to put a mark on a stamp'.

entity. When the R skeleton of the nominal affix and that of the base are composed as in (61), the semantic interpretation of the complex item cannot be accounted for in terms of argument binding, but it arises from information associated with the pragmatic *body* of the verb and not straightforwardly inferable from its core decompositional meaning.

(61)   *annullamento* 'annullment'
$$[\pm \text{mat}, \text{-dyn} ([_{<\ldots>,\ \underline{\text{effected}}}]_R\ ,\ [\text{+dyn}, \text{+IEPS} ([\quad]_{E1=E2} [\quad], \text{[-Loc} ([_{D\text{-Path}}])])])]$$
        -mento_R   *annullare*

It is by virtue of encyclopaedic knowledge only that we can conceive of *annullare* 'annul' as describing a creation event, and, therefore, we can assign a PRODUCT reading to the derived nominal.

Interestingly, even if destruction verbs have affected objects that qualify as both non-sentient and – if they are durative – incremental, these objects are never co-indexed by the R affix. I suggest that co-indexation never binds the Patient argument, because this binding would imply violating the effectedness constraint in a strong sense. Being effected implies in fact being non-affected by the action; and, what is more, in this case the verbal object is not only affected, but destroyed by the action (the semantic opposite of effected). Hence, co-indexation of the verbal object, i.e. a maximally affected entity, would lead to a clash between the semantic requirement of the R suffix and the semantic property of the R suffix.[31]

5.3.2.2   Path interpretation

I will now take into account other nominals, which I have labelled as PATH nominals, since they describe the Path or measure scale associated with the lexical meaning of the verb. These nominals are obtained by verbs such as degree predicates that do not express a *stricto sensu* creation value, but describe a definite change in the object.

Typical instances of this class are *accorciare* 'shorten' and *allungare* 'lenghten', which have a complex/bipartite skeleton because they are causatives, and they are derived from (open-scale) adjectives, i.e. *corto* 'short' and *lungo* 'long', respectively. Specifically, they

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[31] As for nominals from destruction verbs, an alternative explanation on the basis of pragmatic considerations has been given in Bisetto and Melloni (forthcoming): « Since co-indexation is a mechanism based on the fusion of the referential properties of one of the base arguments and the *R* argument of the affix, co-indexation cannot bind the relevant argument of verbs like *annullare* with the *R* argument of result-forming suffix in cases of nominals like *annullamento* […]. Co-indexation is blocked, indeed, because the relevant argument of the base – which would satisfy the requirement imposed by the *R* argument of the suffix – has null reference ». Now, with the introduction of [-Loc] to indicate the non-existence of the argument it defines I have provided a formal account for the lack of R interpretations of most destruction nominals.

take an Agent (subject) and an affected Patient (direct object). Further, they can express the Path as an optional adjunct (cf. the measure phrase in the sentence below):

(62)   Gli operai anno accorciato la strada (di 5 metri).
         'The workers shortened the road (by five meters)'

   The verb *accorciare* 'shorten' lacks an effected argument in its skeleton; hence, its corresponding nominal cannot have the PRODUCT reading. Nevertheless, it has an R nominal with PATH interpretation, which defines the measure or extent of the corresponding E nominal:

(63)   L'accorciamento della strada ha superato i 5 chilometri previsti nel progetto iniziale.
         'The shortening of the road exceeded the five kilometres estimated in the original project'

   Therefore, as for *accorciamento* 'shortening', the R argument of the head co-indexes the only semantically-compatible nonhead argument, corresponding to the non-sentient and incremental directed Path (recall that the internal argument of a shortening event, co-indexed with *k* in the skeleton below, is affected, but is neither incremental nor effected):

(64)   *accorciamento* 'shortening'
         $[\pm \text{mat}, -\text{dyn} ([_{\text{nonsentient, incremental, effected-}l}]_R , [+\text{dyn} ([_i]_{E1}, [_j], [_k])]; [+\text{dyn} ([_i]_{E1}, [_j],$
                                        $[+\text{dyn}, +\text{IEPS} ([\quad]_{E2}, [_k], [_{\text{D-Path-}l}])])])]^{32}$
         -mento$_R$ *accorciare*

   Because the Agent/Causer (co-indexed with *j*) is sentient and the Patient is affected (and non incremental), the most compatible nonhead argument that is bound in this derivational process is the directed Path, which can be optionally expressed as an adjunct at the syntactic level, but that is always implicitly present at the lexical semantic level. As an adjunct, in effect, the Path defines the measuring scale associated with the property of the internal object (in the case at stake, a scale of *shortness*).

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[32] To simplify the configuration of combined skeletons, I take the skeleton of *accorciare* 'shorten' as that of an underived causative. However, since this verb is a deadjectival parasynthetic, its skeleton should be more perspicuously represented as hierarchically composed by the skeleton of the head prefix and that of the base adjective (if one accepts this interpretation of parasynthetic verbs as taking transcategorizing prefixes; see Scalise, 1984 for a different solution). Cf. Chapter 3 of Lieber (2004) for a thorough analysis of derived causatives.

Concerning *accorciamento*, however, we have noticed that it can have another (rather specialized) meaning. This noun can in fact describe the product/outcome of a word shortening, i.e. an abbreviation/contraction. This semantic option shows that when there is a pragmatic need to name the concrete result of a shortening event, the R suffix is employed with its full semantic properties to trigger the required PRODUCT interpretation. Interestingly this interpretation does not lead to ambiguity; *accorciamento* in the PATH reading is an abstract measure, while it denotes a definite entity in the PRODUCT reading.

Interestingly, not all of degree predicates can form PATH nominals. As shown in section 4.4.3, change of state verbs, like *asciugare* 'dry' or *pulire* 'clean', name actions that affect the referents of their objects. As in the case of *accorciare* 'shorten', this change cannot be associated with a new entity or semantic participant; however, contrary to *accorciamento*, *asciugatura* 'drying' and *pulitura* 'cleaning' cannot have a PATH reading.

As hinted at in Chapter 4, the Path / degree of change of these verbs is specified according to a scale or degree of dryness / cleanness that cannot be measured or quantized by a corresponding argument/adjunct in the syntax, and is therefore only implicitly present in the verb skeleton, in the form of a sequence of states directed towards the final, target state (being dry / being clean).[33] I propose to represent the skeleton of this verb with an implicit directed Path (in the skeleton below, italicization of the Path argument signals that it cannot be discharged in syntax, but that it is implicitly present at the lexical semantic level):

(65) *pulire* 'clean' / *asciugare* 'dry'
     [+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$], [+dyn, +IEPS ([ ]$_{E2}$, [$_k$], *[$_{D\text{-}Path}$]*)])])]

Let us now consider the merger of the causative skeleton of *pulire* with that of the R affix:

(66) *pulitura* 'cleaning' / *asciugatura* 'drying'
     [± mat, –dyn ([$_{non\text{-}sentient,\ incremental,\ effected}$]$_R$, [+dyn ([$_i$]$_{E1}$, [$_j$], [$_k$])]; [+dyn ([$_i$]$_{E1}$, [$_j$],
                                                              [+dyn, +IEPS ([ ]$_{E2}$, [$_k$], *[$_{D\text{-}Path}$]*)])])])]
     -tura$_R$ *pulire / asciugare*

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[33] In other words, although these verbs imply a scale of subsequent states along a directed Path, the progression of the event through the scale cannot be explicitly measured or quantized by a measure/Path phrase in the syntax. The culminating point of the event is instead indicated by the final state expressed by the *root* meaning. This is particular evident in the case of the equivalent English verbs, *(to) clean* and *(to) dry,* which are derived from closed-scale adjectives lexicalizing the target state of the event.

Because the base verbs lack both effected and incremental arguments, co-indexation with the R affix does not take place, and these nominals only have E readings.

Other verbs that, instead, might have corresponding PATH nominals are inherently directed motion verbs, such as *discendere* 'descend', *salire* 'climb', or unaccusatives such as *crescere* 'grow', etc. These verbs have holistic Themes/objects, but can take incremental spatial Paths. Hence, as seen in the case of *accorciare* 'shorten', their Path arguments can be co-indexed with the *R* argument of the suffix because they are incremental and lack sentience.

(67) $[\pm \text{mat}, -\text{dyn}$ ($[_{\text{nonsentient, incremental, effected-}\textbf{i}}$ $]_R$, $[+\text{dyn}, +\text{IEPS}$ ($[$ $]_E$, $[$ $]$, $[_{\text{D-Path-}\textbf{i}}$ $])])]$
        -ata$_R$ (/feminine past participle)   *discendere*

Since the D-Path taken by these verbs can be defined as an abstract measure, we have an explanation of why *discesa* can refer to an abstract value, i.e. a measure phrase which defines the incremental and directed Path measuring the event, as shown by the following example (repeated from Chapter 4):

(68)   La <u>discesa</u> del sottomarino ha ormai superato i 15 chilometri.
        'The descent of the submarine already exceeded 15 kilometres'

If *discesa$_R$* describes an abstract Path of meaning in (68), this nominal can also describe the prototypical descending path and assume the concrete characterization of a slope:

(69)   E' molto divertente percorrere questa <u>discesa</u> con la mountain-bike.
        'It is a lot of fun to go down this slope on a mountain-bike'

To conclude, both in the case of (causative/inchoative) degree predicates and (unaccusative) directed motion verb, the PATH interpretation is obtained *modulo* the violation of the effectedness condition; the formation of the R nominal, however, relies on the satisfaction of the "non-sentience" and "incrementality" constraints by the relevant base argument.

5.3.2.3   Entity in state interpretation

There is an important class that I have not yet discussed, namely, the heterogeneous class of R nominals expressing ENTITY IN STATE interpretations, and especially those derived from state verbs. I have already pointed out in Chapters 3-4 that these nouns

might display both subject-like (e.g. *giacenza* 'unsold stock', *lit.* 'laying') and object-like interpretations (e.g. *conoscenza* 'knowledge / acquaintance'). Let us now see how co-indexation plays with the composed skeleton of heads and nonheads to trigger such effects of variation in the argument binding options of these R nouns.

First, it is worth emphasizing that, in the case of stative bases, the requirements of incrementality and effectedness of the R suffix qualify as totally irrelevant for the base arguments; the base verb, describing a non-dynamic situation, cannot take incremental or effected arguments. Thus, I argue that co-indexing a state verb's skeleton with the R affix's skeleton should imply overriding the semantic constraints of the *R* argument in the skeleton of the latter, with the exception of the stronger "non-sentience" constraint, because states can take both sentient and non-sentient arguments.[34]

I start with the co-indexation of the E·R (with R=ENTITY IN STATE) nominal *conoscenza* 'knowledge/acquaintance', derived from *conoscere* 'know', which expresses a mental state/condition.

In this case, co-indexation links the highest argument in the verb skeleton that is compatible with the non-sentience constraint imposed by the *R* argument of the suffix:

(70)　*conoscenza* 'knowledge/acquaintance'

　　　[± mat, –dyn ([nonsentient, incremental, effected-**i**]$_R$,　[–dyn ([　]$_E$, [　], [**i**　])])]
　　　　-*(en)za*$_R$　　　　　　　　　　　　　　　*conoscere*

While the Experiencer of *conoscere* is sentient, therefore incompatible with the R suffix, the known object or person is non-sentient. Therefore, the co-indexed argument is the second syntactic argument in the skeleton of *conoscere*, a Theme, which is mapped onto the object position.

With a verb of spatial configuration like *giacere* 'lay', instead, we can find a non-sentient entity in subject position (recall that, expressing a state of spatial configuration, the skeleton of *giacere* takes a [+Loc] function). The derived R nominal denotes the entity or the collection of entities in that state (although the meaning of *giacenza* is very specialized):

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[34] Following Lieber (2004), I assume that being "strong" for a semantic constraint means that it cannot be violated in co-indexing with a base. As for R suffixes, this implies that no R nominals can be found that refer to sentient entities. The only exception is represented by the agentive-collective meaning of *amministrazione* 'administration', which has been accounted for as a case of paradigmatic sense extension.

(71)   *giacenza* 'unsold stock'

[± mat, –dyn ([nonsentient, incremental, effected-**i**   ]R ,   [–dyn, +Loc ([   ]E, [**i**])])]

  *-(en)za*R   *giacere*

Thus, we have an explanation for the subject-like interpretation of this R nominal, and for the fact that it usually refers to inanimate entities (animate entities staying in a position might do it volitionally, and, in this case, they are sentient, hence incompatible with the R suffix).

Interestingly, nominals obtained by verbs of privation do not refer to the entity being in that state of privation. Let us consider *mancanza* 'missing', or *assenza* 'absence',[35] that unambiguously indicate states, and cannot refer to the entity in that state. Again, I propose that this might be due to strong incompatibility between the semantic condition of effectedness imposed by the R affix, which is crucially related to the concept of existence, and the referential property of the only non-sentient argument in the base skeleton, which, being introduced by a [–Loc] function, qualifies as being nonexistent, hence, strongly incompatible with the semantic property of the head affix.

(72)   *mancanza* 'missing'

[± mat, –dyn ([nonsentient, incremental, effected   ]R , [–dyn, –Loc ([   ]E, [   ])])]

The lack of R interpretation for these state nominals seems to prove that, although the requirements of the R affix can be ignored when they are irrelevant for the base arguments, co-indexation cannot apply in presence of real semantic mismatch between the head and nonhead arguments.

5.3.2.4   MEANS and PSYCH STIMULUS as ENTITIES IN STATE

I conclude this overview of the co-indexation patterns displayed by R nominals with the analysis of two classes of deverbal nouns that I have already drawn attention to in this research, but that deserves further attention.

In Chapter 3, I have briefly introduced a class of R nominals which can ambiguously be interpreted as the product as well as the means used to perform the underlying events: *ostruzione* 'obstruction', *collegamento* 'connection', *isolamento* 'insulation', *decorazione* 'decoration', *impedimento* 'impediment', *rivestimento* 'cover', etc. are only a small sample of these frequent cases. These nominals have base verbs that project the Agent into

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[35] Notice that *assenza* 'absence' is derived from an adjective, rather than a verb. This fact does not make any difference because verbs and adjectives both qualify as STATIVE SITUATIONS in Lieber's system; as a result, the adjective *assente* 'absent' displays the same skeleton of the state verb *mancare* 'miss/lack'.

subject position and the Patient into object position, and optionally project the means or material as an adjunct-argument.

(73)   Gianni ha ostruito l'entrata del retro con scatole e vecchi arnesi.
        'John obstructed the entrance to the backroom with boxes and old tools'

Obtained from the verb in the sentence above, *ostruzione*$_R$ can refer to the means (expressed as an adjunct-argument) employed to perform the corresponding action, or, more precisely, to the obtained product. Therefore, these nominals' base verbs bear a resemblance to the class of modification verbs, which have corresponding R nominals with PRODUCT/MEANS interpretation.

However, I have also shown that contrary to MEANS (e.g. *argentatura* 'silver-coat') and PRODUCT nouns (e.g. *costruzione* 'construction'), these R nominals might be derived through the binding of Subject arguments. More precisely, the examples below (repeated from Chapter 3) show that R nominals like *ostruzione* and *collegamento* might exhibit a subject-like interpretation, whilst other MEANS nominals such as *argentatura* cannot. However, when such a linking option is realized, the base verb does not portray a dynamic but a stative situation:

(74)   a.   Occorre rimuovere l'<u>ostruzione</u> di questa valvola.
              'It is necessary to remove the obstruction of/in this valve'
        b.   <u>Detriti</u> ostruiscono questa valvola.
              'Fragments obstruct this valve'

(75)   a.   I <u>collegamenti</u> fra Roma e Milano sono stati ristabiliti.
              'Connections between Rome and Milan have been re-established'
        b.   <u>Questa via</u> collega due punti opposti della città.
              'This way connects two opposite points of the town'

The (b) sentences demonstrate that there is no need to postulate an obstructing or a connecting event caused by an external force or a volitional Agent in order to have a resulting state of obstruction or connection, respectively. Further, the nominals in the (a) sentences refer to the concrete entity participating in those states. Therefore, *collegamento* and *ostruzione* are ambiguous at two levels: as E nouns, they are ambiguous between an EVENT and a STATE reading, while as R nouns, they are ambiguous between a PRODUCT/MEANS and an ENTITY IN STATE interpretation.

In effect, the base verbs of these nominals can be interpreted aspectually as (accomplishment) events or as states, and this implies that, as pointed out in Kratzer

(2000: 394), they are peculiar in taking a « Davidsonian argument [*that*] has to be able to range over events (proper) as well as states ». In particular, in the stative interpretation we usually find inanimate and non-agentive subjects (as shown by (74)b.–(75) b.), rather than volitional agents or instrumentals. However, even in the absence of dynamicity, what remains unvaried in the verbal LCS of the verb is the presence of a causal relation. Specifically, concerning *obstruct*, Kratzer (2000:394) explains that:

> When the Davidsonian argument denotes an event, we are talking about a causal relation between that event and a state of obstruction. When it denotes a state, the causal relation is between two states […]

Interestingly, Kratzer clearly makes a clear-cut distinction between the concepts of causation and dynamicity-stativity: the latter are *Aktionsart* features which are independent of the concept of causation (although causation has been commonly taken to imply dynamicity in the literature; cf. Grimshaw, 1990, for instance, for this position). Concerning *ostruire* in (74)b., the causing state of the target state (being obstructed) is the spatial configuration of the fragments, that is, their being in a specific state or position.

Therefore, let us assume that *ostruire* 'obstruct' has two skeletons, i.e. that of a dynamic causative, and that of a stative causative. In accordance with the representation of lexical causatives proposed in this research, I tentatively produce the following skeletons of *ostruire* 'obstruct':

(76)   *ostruire* 'obstruct'
   a. $[\text{+dyn}([_i\ ]_{E1}, [_j\ ], [_k\ ])];\ [\text{+dyn}([_i\ ]_{E1}, [_j\ ], [\text{+dyn}, \text{+IEPS}([\ ]_{E2}, [_k\ ], [_{Path}\ ])])]$
         j does something to *k* →   the doing brings about the target state of *k*
   b. $[\text{--dyn}, \text{+Loc}([_i\ ]_{E1}, [_j\ ])];\ [\text{--dyn}([_i\ ]_{E1}, [_j\ ], [\text{--dyn}([\ ]_{E2}, [\ ])])]^{36}$
         the state/spatial configuration of *j* → causes the target state (=E$_2$) of the Theme

In the (a) skeleton, the activity/causing subevent is dynamic, and presupposes the intervention of a prototypical and volitional agent or an external force projected into subject position (the argument co-indexed with *j* in the (a) skeleton).

In the (b) skeleton, the state or spatial configuration of the Subject (e.g. *the fragments* in (74)b.) is the direct cause of the target state of the Theme-object (e.g. *the valve*). Therefore, the *E₁* arguments and the first *R* arguments in the outermost layers of the

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[36] Note that the causal relation is expressed by a [+dynamic] function in the (a) skeleton, and by a [–dynamic] function in the (b) skeleton. This implies that causal relations are not inherently eventive or stative, but, as they relate sub-eventual parts, they preserve the overall dynamic or non-dynamic characterization of the situation.

bipartite skeleton are already coindexed (with *i* and *j,* respectively) to express the direct relation between the causing state and the result state.

Because these two states are strictly temporally dependent, that is to say that the target state, being obstructed, is coextensive with the causing entity being in a specific state/position, I propose to simplify the bipartite skeleton applying the same process of Event Co-identification proposed by L&RH (1999) for incremental-Theme verbs:

(77)   *ostruire* 'obstruct' (stative-causative skeleton)
   a.   [–dyn, +Loc ([$_i$]$_{E1}$, [$_j$])]; [–dyn ([$_i$]$_{E1}$, [$_j$], [–dyn ([$_i$]$_{E2}$, [ ])])]
         EVENT CO-IDENTIFICATION →
   b.   [–dynamic ([ ]$_{E1=E2}$, [ ], [ ])])]

In (77) Event Co-identification works like co-indexation, and links E_1 in the causing state's skeleton to E_2 in the target state's skeleton. Hence, the complex skeleton in (a) can be simplified as in (b), which reproduces the simple skeleton of a stative situation.

This explains why *ostruzione* 'obstruction' can get the interpretation of a state and that of the (highest) non-sentient argument that participates in that state:

(78)   [–material, ±dynamic ([$_i$]$_E$, [–dynamic ([$_i$]$_E$, [ ], [ ])])]
         -zione$_E$ *ostruire*

(79)   [±material, –dynamic ([$_{nonsentient, <...>-i}$]$_R$, [–dynamic ([ ]$_E$, [$_i$], [ ])])]
         -zione$_R$ *ostruire*

In the case of the R nominal, in particular, the highest argument of the nonhead that matches the "non-sentience" requirement of the head is the argument in Subject position. In effect, only a non-sentient entity can be the outermost *R* argument of the stative skeleton of *ostruire*, and can accordingly be defined as *ostruzione* 'obstruction'.[37] Otherwise, if Italian speakers want to refer to a volitional Agent or to the instrument used to perform the corresponding action, they have to use a specific Agent suffix (e.g. *ostruttore* 'obstructer' or *ostruente* 'obstruent': both words are attested, but with very specific meanings).

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[37] In Chapter 3, I have explained that these nominals cannot be interpreted as the instruments/tools that perform, or are used to perform dynamic situations. Compare *collegamento* 'connection' or *argentatura* 'silver-coat' with instrument nouns such as *frullatore* 'mixer' / *stampante* 'printer': the latter are "intermediary instruments", and are involved in the performance of dynamic actions. Hence, there is an intrinsic dynamic and agentive value in the meaning of these instrument nouns that R nominals typically lack instead.

Along with these verbs, there exist other predicates with both stative and eventive uses. I refer in particular to the class of psych Object-Experiencer verbs such as *attrarre* 'attract', *divertire* 'amuse', *intrattenere* 'entertain', *sorprendere* 'surprise', *spaventare* 'frighten', etc. Like the predicates of the *ostruire* class, they also are causatives.

These verbs can take an Agentive subject, which is interpreted as the volitional causer of the change of state undergone by the Experiencer. Grimshaw (1990) defines the OE verbs in this class as psychological agentive verbs:

(80)   PSYCHOLOGICAL AGENTIVE:
       Il contadino sta spaventando gli uccelli nel campo.
       Agent   Experiencer
       'The farmer is frightening the birds in the field'

Otherwise, they project a non-sentient (animate or inanimate) argument into subject position, which is the (involuntary) Stimulus or Causer of the psychological state. Grimshaw (1990) defines the OE verbs in this class as psychological causatives:

(81)   PSYCHOLOGICAL CAUSATIVE:
       Il buio spaventa Gianni.
       Causer/Stimulus - Experiencer
       'The dark frightens John'

In this case, we find an entity which lacks volition or mental involvement in the psychological situation (the cause of the emotion, or what I have called the Psych Stimulus in Chapter 3). In this case, the only sentient argument is the Experiencer argument projected into direct object position.

Most importantly, R nominals from psych OE verbs can refer to this psych stimulus: among these examples, we find *sorpresa* 'surprise', *attrazione* 'attraction', *divertimento* 'entertainment', etc. Observe that, though obtained from *spaventare* 'frighten' through conversion rather than suffixation, *spavento* 'frightening' can refer to the animate or inanimate entity which causes the corresponding psych state:

(82)   Quell'uomo è uno spavento.[38]
       lit. that man is a frightening
       'That man is a nightmare'

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[38] Example taken from DISC.

Interestingly, the word *spaventa+tore* 'frightener' is occasionally attested in Italian, but with a clear Agentive interpretation.

Therefore, I tentatively propose that, similar to the verbs of the *ostruire* type, the skeleton of a psychological OE verb has two different representations: the (a) skeleton is a dynamic causative with a true Agentive causer (also an external force), which is involved in a dynamic situation. The (b) skeleton is that of a stative causative, where there is no dynamic action performed by the Subject-Stimulus (co-indexed with *j*), which accordingly participates in a non-dynamic causing subevent.:

(83) OE verbs (*spaventare* 'frighten' / *attrarre* 'attract', etc.):

   a. $[+\text{dyn} ([_i \ ]_{E1}, [_j \ ], [_k \ ])]; [+\text{dyn} ([_i \ ]_{E1}, [_j \ ], [+\text{dyn}, +\text{IEPS} ([\ ]_{E2}, [_k \ ], [_{\text{Path}}])])]$
      j does something to *k*   ➔   the doing brings about the target state of *k*

   b. $[-\text{dyn} ([_i \ ]_{E1}, [_j \ ])]; \quad [-\text{dyn} ([_i \ ]_{E1}, [_j \ ], [-\text{dyn}, ([\ ]_{E2}, [\ ])])]$
      the state of *j*   ➔ causes the target state (=E_2) of the Experiencer

At this point, I am not sure whether it is possible to apply to the (b) skeleton the same process of Event Co-identification proposed for the *ostruire* class of verbs. In fact, the psych state of the subject could go on indefinitely, also when the psych stimulus is not present any longer. Put differently, the state of the causer need not be coextensive with the psychological state of the Experiencer, and this fact would not allow Event Co-identification to simplify the complex skeleton in (83)b.

Anyway, concerning the R interpretation of these psych nominals, it seems that the functioning of co-indexation confirms the prediction borne out in this research: because *sorpresa* 'surprise', *attrazione* 'attraction', *divertimento* 'entertainment' refer to the (non-agentive) psych Stimulus, it seems that the R affix binds the (highest) non-sentient argument in a non-dynamic situation.

In effect, if the R suffix were merged with the agentive skeleton of the psych verb (cf. (83)a.), it would not find compatible arguments among the verb's arguments. Both the volitional Agent and the Experiencer argument are sentient, and therefore do not satisfy the strong requirement of the affix. Accordingly, co-indexation does not apply between the skeletons of the affix and that of the Agentive OE predicate.

In the configuration of skeletons below, instead, the Psych Stimulus of the base, the outermost R argument of the non-head, qualifies as non-sentient, and therefore it can be co-indexed with the *R* argument of the head (co-indexation links an already co-indexed argument, *j*):

(84)   *attrazione* 'attraction'
         [± material, –dynamic ([$_{nonsentient, <...>-i}$]$_R$, [–dyn ([$_i$]$_{E1}$, [$_i$])]; [–dyn ([$_i$]$_{E1}$, [$_i$],
                                                      [–dyn, ([ ]$_{E2}$, [ ])])])]
         -zione$_R$ *attrarre*

Of course, it remains to be explained why E nominals derived from OE verbs only have a stative interpretation. They in fact can never refer to the causing subevent and even lack the inchoative reading; *preoccupazione* 'worry' for instance cannot refer to the causing activity performed by the Agent or express the Experiencer's 'becoming worried', but can only mean 'being worried'. I leave the exploration of this challenging class of verbs and their derived nominals for future investigation.[39]

To conclude, some words about the overall argument binding options displayed by R nominals. Although the R nominals we have defined as ENTITY IN STATE can have subject-like interpretations, I emphasize that the arguments bound by the R affix never count as true external arguments.

Take *giacenza* 'unsold stock', to start with: it is obtained from a spatial configuration verb, *giacere* 'lay', which is unaccusative when it has a non-sentient entity as Theme-Subject, as confirmed by its choice of the auxiliary *essere* (this auxiliary is the hallmark of unaccusativity in Italian).

Further, the subject of a psychological stative-causative such as *attrarre* 'attract' also qualifies as non-external, because of a clash between the prominence relation in the aspectual and thematic tiers of this verb.[40] Specifically, the non-sentient psych Stimulus is thematically lower than the Experiencer, but it is projected as a subject because it is a Cause, and it is the most prominent argument in the causal/aspectual dimension. Because to count as external implies being the outermost argument in both the aspectual and thematic dimension, the Psych Stimulus (or Source), cannot be a true external argument (cf. Chapter 2 of Grimshaw, 1990, for further explanation).

Finally, I propose that the base verbs of nominals such as *ostruzione* 'obstruction' / *collegamento* 'connection', which might exhibit a subject-like interpretation, have internal rather than external arguments projected as Subject. Take for instance *ostruire-ostruzione*: as explained in this section, the causing subevent of the target-state subevent

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[39] An interesting account of the argument distribution properties of psych nominals is to be found in Roswadowska (1997), which is based on a theory of event structure comparable to the one presented in this research.

[40] Grimshaw's theory of argument structure assumes two levels of analysis of a predicate, i.e. the thematic and aspectual analysis, respectively displaying the following hierarchies (Grimshaw, 1990: 24):
(i)   (Agent (Experiencer (Goal/Source/Location (Theme))))
(ii)   (Cause (other (…)))
Only arguments that are the most prominent in both dimensions can count as external in Grimshaw's theory.

is the spatial configuration of the referent of the argument in subject position. Specifically, given the skeleton in (76)b., it appears that this argument is introduced by [–dynamic, +Loc]. Therefore, similar to the subjects of verbs of existence, which are usually unaccusatives and display the same skeleton, I argue that the subject of the stative *ostruire* 'obstruct' should also be taken as a Theme, and that it also cannot count as an external argument.

In light of these observations, it seems that the R affix, despite binding arguments dischargeable as Subjects, cannot bind arguments that really count as external. This binding option is usually reserved for agentive affixes, like –*tore* in Italian, which never show the polysemy exhibited by E·R affixes.

Because the crucial ambiguity between Event (or State) and R interpretation of a derived nominal precludes binding arguments that count as "external" with respect to the Event, I conclude by saying that the polysemy of deverbal nouns seems to correlate with the acknowledged asymmetry between external and internal arguments in the syntactic configuration of the VP.

5.4   Concluding remarks

In this chapter, I have formally implemented the co-indexation mechanism that drives the derivational semantics of E·R nominals. This study has revealed that most interpretations displayed by these complex lexemes can be successfully accounted for once we have formalized the nonhead verbal skeleton, and composed it with the head affixal skeleton. In fact, the principle of co-indexation allows us to integrate the constituent-morphemes' skeletons into a single referential unit. Most importantly, this merger does not only account for the semantic interpretation (recall that the coindexed arguments are predicated of the same referent, in logical terms), but also determines the number of syntactic arguments that are eventually discharged in the syntax of the nominal construction.

Moreover, because indexing is sensitive to the semantic requirements of the head argument, it is possible to explain why the E interpretation is the default meaning, whereas the R interpretation is not always available to the nominal formed by means of E·R affixes. In fact, while the E argument in the E affix's skeleton does not impose semantic conditions (and this explains the default E interpretation of the derived nominal), the R argument in the R affix's skeleton imposes a set of semantic requirements on the nonhead argument. Therefore, if there are no requirement-compatible arguments in the base skeleton, co-indexation with the R affix might be blocked, and the derived nominal only gets the E interpretation.

On the other hand, since some (weak) semantic constraints (i.e. "incrementality" and "effectedness") can be overridden or violated in co-indexation, we have an explanation for the different interpretations displayed by R nominals (overall defined as ENTITIES IN STATE). I summarize the main differences in co-indexation, and corresponding semantic interpretation of R nominals as follows:

• The derivation of PRODUCT nominals relies on the satisfaction of the effectedness and non-sentience constraints by the relevant base argument. Incrementality is satisfied too, if the base verb lexicalizes a durative EVENT OF CHANGE with a D-Path in its skeleton (aspectually, an accomplishment or degree achievement), since the relevant argument is in this case incrementally effected.[41]

• The formation of PATH nominals depends on the presence of a D-Path argument in the nonhead skeleton, which corresponds to a syntactic incremental argument; therefore, a PATH nominal corresponds to a non-sentient and incremental argument.

• Finally, other ENTITY IN STATE nominals are obtained overriding both the incrementality and effectedness constraints, and thus co-indexing the head argument and the highest non-sentient argument in the nonhead (stative) skeleton. The variable co-indexation options of this subset of R nominals, exhibiting both Subject-like and Object-like interpretations, depend on the different syntactic configuration of the base verbs, or more precisely, on which is the highest among the nonhead arguments that satisfies the head's semantic constraint. Since (stative) Causer arguments might be non-sentient, the co-indexing mechanism also accounts for the (Subject-like) Psych Stimulus and Causer/Means interpretations of the nominals derived from psych and stative causative predicates respectively.

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[41] As I have explained in Chapter 4, PRODUCT nominals can be obtained by achievement verbs as well, which lack incremental arguments proper; the incrementality constraint can be overridden in these instances of co-indexation.

6 CONCLUSION

This study on deverbal nouns is innovative in many respects. First, because it concerns the semantics of word formation, it covers a neglected domain of studies in the generative frame; and, in particular, though exploring a deeply questioned issue such as nominalization, it is primarily focused on the class of R nominals, which have been seriously understudied in the literature.

Further, this research fills in a gap of the study on nominalization in Italian, since it explains and formally derives the various semantic patterns displayed by complex lexemes usually understood as lexicalized forms, outcomes of semantic drift and, therefore, typically unpredictable from the interpretative viewpoint.

Importantly, the novelty of this research consists in the fact that the semantics of deverbal nominals is considered from the perspective of a morphological analysis. In fact, this research aims at understanding and explaining the overall semantic interpretation of deverbal nouns as the result of the composition of the base's referential properties with those of the nominal affix. To accomplish this goal, the meaning of deverbal nouns is decomposed into smaller units of meaning in order to isolate the semantic import of the affixal head and that of the verbal nonhead.

Pursuing the insight that polysemy in the derived lexicon ought to reproduce the polysemy of the simplex lexicon, I have pointed out that the semantic variation of E/R nominals can be explained, for the most part, as polysemy of logical or inherent type (cf. Pustejovsky, 1995). Most importantly, I have argued that nominals' polysemy derives from the logical polysemy of the head affixes, which are themselves *dot object* or *complex type* affixes (cf. Chapter 3 on this point). In particular, I have assumed that each E/R affix, despite corresponding to a single lexical entry, has a double representation that captures the intrinsic lexical semantic contribution to the base verb. By means of Lieber's featural system, I have identified the following skeletons for E·R suffixes, respectively:

- E affixal skeleton: [−material, ±dynamic ([   ]$_E$, \<base>)]
- R affixal skeleton: [±material, −dynamic ([   ]$_R$, \<base>)]

The semantic import of these polysemous affixes has been isolated through a contrastive analysis between E·R nominals and comparable polysemous words (or dot objects) in the simplex lexicon domain. Specifically, E affixes have the same skeleton of simple event nouns (like *war*, *race*) because they derive nouns falling in the same semantic space of these simplex lexemes. As for R affixes, their skeletal representation is (under)specified in such a way that it can cover all the possible semantic values displayed by logically-polysemous simple event nouns (see the parallelism of E·R nominals such as *costruzione* 'construction' and *traduzione* 'translation' with simple event nouns like *esame* 'exam' and *concerto* 'concert'). Since R nominals are both abstract and concrete, it is therefore expected that the R skeleton is semantically underdetermined with respect to its outermost featural specification.

Elaborating on the relation between some aspects of Lieber's lexical semantic model and Pustejovsky's Generative Lexicon, I have attempted to formally implement the representation of the semantic-pragmatic *body* of E·R nouns developing their Qualia Structure as a powerful, systematized means of capturing the conceptual array of these complex types.

In this study, I have argued that the polysemy of E/R nouns can be of a different type. In fact, I have shown that – besides the core meaning of R nominals – we can find sense extensions like the agentive-collective and locative readings, which cannot be expressed by the featural content of the R skeleton. Such interpretations are instead the result of a pragmatic pressure to form nouns with those meanings, combined with a lack of systematic and productive derivational means in a morphological system to express them. The emergence of these senses produces a type of polysemy which, following Booij and Lieber (2004), can be defined as "paradigmatic sense extension" because it follows from the extension of the use and of the basic meaning of the E·R affixes (in the same paradigmatic cell) for the expression of other meanings.

Further, there are sense extensions that are only triggered by the predicative contexts where E nominals are inserted and can be explained as deriving from the vagueness of E nominals, rather than actual polysemy, as manifested by the manner, temporal, and factive readings.

The systematization of the semantic interpretations of ambiguous nominals, which has been developed throughout this research, can be therefore summarized as follows:

Table (8)   *E/R nominals' semantic interpretations*

«E/R» interpretations			
LOGICAL / INHERENT POLYSEMY «E·R»	**EVENT / STATE**		
	ENTITY IN STATE		
	Product		
	Means		
	Path		
	Psych Stimulus / Causer-Means		
Other R interpretations			
SENSE EXTENSION (POLYSEMY)	Agentive-Collective		
	Locative		
Other «non-E» interpretations			
SENSE EXTENSION (VAGUENESS)	Manner		
	Temporal		
	Factive		

In this study, I have also sought to explain the "asymmetry" among the semantic interpretations available to deverbal nominals. In fact, if the E type is the default reading of these complex lexemes, their likeliness to display one of the R interpretations is much more limited. On the other hand, on the basis of the featural properties in the R skeleton, it is not directly evident why, how and to what extent the formation of R nominals is more constrained than that of E nominals. One of the major outcomes of this research is that of demonstrating that the semantics of the base verb strongly influences the meaning of the derived nominal. Specifically, while the formation of E nominals is semantically unrestrained, the formation of R nominals (as ENTITIES IN STATE) appears, instead, constrained according to a set of semantic requirements associated with the base verb's aspectual and conceptual properties. In the course of Chapter 4, in particular, I have identified a set of semantic constraints, i.e. non-sentience, incrementality, effectedness, which one syntactic/semantic argument of the base must satisfy (entirely or partially) in order to form an R nominal.

In Chapter 5, I have implemented the semantic derivation of E·R nouns, showing that not only the semantic interpretations but also the syntactic behavior of these nominals can be accounted for by means of the co-indexing mechanism.

To conclude, in the course of this study, I have suggested some modifications to Lieber's (2004) theoretical model, which has been adopted for representational purposes, and as frame theory of this research on deverbal nominals. First, I have enriched her typology of arguments, introducing the Davidsonian E argument in the semantic skeleton of certain lexemes and affixes. Further, while Lieber assumes an equipollent and privative use of the semantic features, I have proposed that the features in an affixal skeleton can also be underspecified [±]; in this case, the [+] or [−] value of that feature can be set through co-indexation, where the head's skeleton "inherits" the featural value of the non-head argument it co-indexes. Most importantly, I have slightly modified Lieber's systematization of the conceptual class of SITUATIONS (categorially, verbs and adjectives). In particular, this partial reassessment of her verbal taxonomy owes much to other influential works in the field of lexical semantics, on which Lieber's own frame is based. Specifically, I have integrated Levin and Rappaport Hovav's elegant solutions concerning the representation of event structure templates into Lieber's system, in order to improve her treatment of certain verbal classes (i.e. incremental-Theme verbs and psych and stative causative). In general, however, I have shown that Lieber's model of lexical semantics is a powerful formal apparatus that allows us to understand the manner and the extent to which lexical semantics constrains and drives word formation, and to account for the polysemy exhibited by the derived and simplex lexemes in the same principled fashion.

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