Present participles: Categorial classification and derivation

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1. Introduction

Participles cross-linguistically exhibit properties of both verbs and adjectives. Traditional grammarians often referred to them as "verbal adjectives", belonging to a "mixed category" with characteristics of both categories. In the same spirit, generative studies sometimes analyzed participles as "neutralized" entries (e.g. Chomsky 1981, Hoekstra 1984), lexically underspecified with regard to the categorial N-feature. Under these views, the category of the participle is determined by the syntactic environment in which it appears.

Such analyses, however, were abandoned almost completely in the study of passive participles, and replaced by the understanding that although some passive participles indeed behave both like verbs and like adjectives, this is due to the fact that verbal and adjectival passives are very often homophonous (Wasow 1977, Levin & Rapapport 1986, among many others). There are thus two distinct entries, one verbal and one adjectival, rather than one "mixed" entry. Following this insight, several studies have aimed to pinpoint exactly which stems give rise to adjectival passive participles, both considering their thematic properties (e.g. Levin & Rappaport 1986), and their aspectual ones (Bresnan 1996, Doron 2000). Furthermore, a host of studies offer different analyses for the exact nature of the derivation of adjectival passives, some arguing for a syntactic derivation of these participles (Kratzer 2000, Embick 2004 and others), and others for a lexical one (Wasow 1977, Bresnan 1996, Horvath & Siloni 2008).

Present participles have been the focus of less research. While it is commonly agreed that they exhibit verbal properties, it is still debated whether some or all of them display adjectival properties in addition. Some researchers (Borer 1990, Bresnan 1996, Parsons 1990 and

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others) claim that all present participles are adjectival in addition to being verbal; In contrast, Chomsky (1957), Fabb (1984), Brekke (1988), Bennis & Wehrmann (1990) and others claim that only some present participles are adjectival, Brekke (1988) being the only study trying to characterize this class precisely. In addition, although there are several attempts at a comprehensive study of the present participle morpheme –*ing* (see in particular Milsark 1988, Emonds 1991), none of them present a detailed account of the process of adjectival present participle formation.

The current study addresses exactly these issues. Focusing mainly on Hebrew and English, I show that only some present participles are adjectival in addition to being verbal. I then suggest a semantic, aspectual constraint of the class of verbs giving rise to adjectival present participles, namely, that only stative verbs can form such adjectives. The constraint is shown to have a much wider coverage than Brekke's (1988) thematic constraint on adjectival present participle formation. Further, it turns out to derive naturally from the properties of the present participle morpheme. In addition, I outline the operation that derives adjectival present participles, arguing that it applies in the lexicon.

The view of present participles advocated here is therefore on a par with the common view of passive participles, namely that some such participles double as both verbs and adjectives (since the verbal and adjectival forms are homophonous), while others are only verbal. The claim to be presented, that the class of verbs giving rise to adjectival present participles is restricted aspectually, likewise echoes some recent claims with regard to adjectival passives (Bresnan 1996, Doron 2000), namely that the class of stems forming them can be defined aspectually. Finally, the claim that adjectival present participles are derived lexically (while verbal ones are derived syntactically), parallels the split suggested by Horvath & Siloni (2008) with regard to the derivation of adjectival versus verbal passive participles. The

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current study therefore complements the vast ongoing study of passive participles and argues for a minimally different analysis of these and present participles.

The study also contributes to the debate over the nature of participles in general, namely whether they should be viewed as a "mixed category", or whether they simply correspond to two homophonous forms of discrete categories – verbs and adjectives. It will be shown that verbal present participles are not listed in the lexicon, whereas adjectival ones are, a fact which undermines an analysis in which the participle corresponds to only one, "mixed" lexical entry, whose categorial nature is determined based on its syntactic environment. Lastly, the paper presents evidence that the lexicon should be viewed as an active, generative component of the grammar, where word formation can occur (Siloni 2002, Reinhart 2002, Williams 2007, Horvath & Siloni 2008),[1] rather than as a list of roots devoid of computational force (as in e.g. Marantz 1997, Borer 2005).

The paper proceeds as follows: in section 2 I present the relevant data concerning present participles in Hebrew and English, focusing on their distribution. These data reveal that while all present participles have the distribution of verbs, only a subclass of them has, in addition, the distribution of adjectives. In section 3 I show that the class of adjectival present participles is restricted aspectually, namely, that only stative verbs have adjectival present participle counterparts. Section 4 addresses the formation of adjectival present participles, presenting arguments in favor of their lexical derivation, in contrast to a syntactic derivation of verbal present participles. The section presents the aspectual and thematic details of the derivation of adjectival present participles, as well as a suggestion with regard to the derivation of verbal ones. Section 5 contains a discussion of participles in the prenominal position, whose status is reconsidered in light of the conclusions reached in the previous sections, and section 6

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[1] Here, I take word-formation to include morphological operations as well as syntactic/semantic changes such as category-change, changes in argument structure, etc.

considers the question of why certain stative verbs do not lend themselves to the formation of adjectival present participles.

2. Determining the category of present participles

What is the categorial status of present participles? The "verbal adjective" or "neutralized category" intuition with regard to present participles emerges from the fact that these participles appear both in sentences such as (1), in which they denote an event, therefore resembling verbs, and in sentences such as (2), in which they denote some property of an individual, like adjectives:

(1)   Dan saw John **annoying** the children.

(2)   Dan met an **annoying** man.

However, verbs can denote permanent properties (as in *god exists*), and stage-level adjectives denote transitory eventualities (as in *John is hungry*), and thus, the syntactic behavior and distribution of the participles must be examined, rather than their interpretation.

Before turning to present the syntactic facts regarding present participles, a brief remark with regard to their morphology is in order. As is well-known, in English, present participles are forms suffixed with *–ing*. In Hebrew, present participles appear in a morphological form identical to that of verbs in the present tense, in any one of the five non-passive verbal templates of the language (*XoXeX, niXXaX, meXaXeX, maXXiX,* and *mitXaXeX*). Note however that despite the morphological identity to the present tense verbal form, present participles such as the one in (3) are in fact uninflected for tense, as in English.[2] (3) contains a

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[2] As pointed out by a *Lingua* reviewer, the question arises here whether it is justified to group the Hebrew forms and the English ones under the same category of 'present participles'. Although the distribution of the forms in the two languages is not completely identical (e.g., in English they are used to form the progressive, which does not exist in Hebrew), the Hebrew and English forms share the basic properties of the participle, namely, a tense-less form, which can be used either predicatively or attributively (modifying a noun), exhibiting properties of

non-tensed small clause, rather than a tensed sentential complement, the participle receiving its temporal interpretation from the main verb.

(3)   *dan ra'a et   dina **kotevet** mixtav.*

Dan saw ACC Dina **writing** letter

'Dan saw Dina writing a letter'.

Let us now turn to examining the distribution of present participles.

2.1 Syntactic evidence for the verbal status of present participles

In this section I would like to establish the following claim:

(4)   *All* present participles behave syntactically like verbs.[3]

Importantly, the generalization in (4) does not mean that the same forms cannot have an additional, adjectival reading.[4] In fact, in 2.2 it will be shown that many, though not all, present participles behave also like adjectives, namely, correspond to two homophonous entries.

There are several reasons for claiming that all present participles are verbal. As noted by Bennis & Wehrmann (1990), the verbal status of present participles of transitive verbs can be deduced from the fact that, as seen in (5), they check accusative Case. This is true for all present participles of transitive verbs. In contrast, as shown in (6), adjectives in Hebrew and English cannot check accusative Case.

(5)   a. *hem šam'u ota **xosefet   et   sodoteha**.*

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both verb and adjective. Thus, at least for the purposes of this paper, it is safe to treat the Hebrew and English forms on a par.

[3] There are a handful of exceptions to this generalization, discussed in section 4.1.2.

[4] I use the phrase 'has a verbal/adjectival reading/use' descriptively, to mean that the participle behaves like a verb/adjective with regard to the relevant syntactic property. As explained in the introduction though, I do not view an ambiguous participle as one lexical entry with two readings, or with one "mixed" reading, but rather as representing two homophonous entries – one verbal and one adjectival.

they heard her revealing ACC secrets+her

'They heard her reveal her secrets.'

b. The girls saw Dina **supporting him**.

(6)   a. *ha-viduy   šela haya xosfani   (*et   sodoteha).*

the-confession hers was revealing(ADJ) ACC secrets+her

b. Dina is supportive *(of) him.

Present participles of intransitive verbs can be shown to be verbal, too. Laskova (2007) argues

that in English only verbs, not adjectives, allow post-modification by adverbs. This is

evidenced, for example, from the incompatibility of *seem*, which selects only APs, not VPs

(see 2.3.2 below), with a post-modified participle:

(7)   *The silver seems polished carefully.   (cf.: The silver seems carefully polished.)

Present participles can be readily post-modified by adverbs in English, as exemplified in (8).

This shows that such participles necessarily have a verbal reading.

(8)   a. I saw him walking idly.

b. I saw the diamond glimmering magnificently.

Verbs of temporal aspect in English provide us with another verbal context, as their

complement can be only a verb phrase (9a), not an adjective phrase (9b) (Emonds 1991).

Again, all present participles can appear as complements of these verbs (10), reinforcing the

conclusion that they are verbal.

(9)   a. John kept / resumed / ceased watching / annoying me.

b. *John kept / resumed / ceased intelligent / mad at Sam.

(10)   John kept / resumed / ceased walking / jumping.

All present participles, therefore, are verbal. In the following section I will argue that only

some present participles have an additional, adjectival reading.

2.2 Syntactic evidence regarding the adjectival status of present participles

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Former studies have used various adjectivehood diagnostics in order to determine which present participles have an adjectival reading. The studies differed in their conclusion, depending on the diagnostics they perceived as most central or reliable. Brekke (1988) and Emonds (1991) seem to attribute much importance to *–ly* suffixation and the degree modifiers data (to be presented in 2.2.2 and 2.2.5), therefore concluding that not all present participles have an adjectival reading. On the other hand, Borer (1990), Bresnan (1996), and Parsons (1990) took the prenominal modification facts (to be presented in 2.2.8 below) to be crucial, and concluded that all present participles are adjectival. In fact, as will be shown in 2.2.8, even the prenominal position test does not diagnose **all** present participles as adjectives, but it is true that it diagnoses as adjectives a superset of the participles so diagnosed by the other tests. I return to this issue at the end of this section, where I conclude that this test is not a reliable one.

2.2.1 Complement of *seem*, *become* etc.

Wasow (1977), Levin & Rappaport (1995) and others mention the fact that certain raising verbs, such as *seem*, *become* and others, take as their complements only APs, not VPs[5] (11) (*seem* selects clauses as well, but this is irrelevant here).

(11)   a. The boy seems / became beautiful / smart / rude.

b. *The boy seems / became chewing gum / folding his papers.

Looking at present participles, as noted by Fabb (1984), some of them can appear as complements to *seem* or *become* (12), whereas others cannot (13):

(12)   a. The movie seems interesting / amazing / amusing / annoying.

b. The food seems appetizing.

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[5] These verbs can take as a complement any AP that appears predicatively. Adjectives that have only an attributive function, such as *former*, cannot appear in this context. This, however, is immaterial here, since adjectival present participles can always be used predicatively.

c. The town became flourishing.

d. Your remark seems fitting.

e. Your friend has become understanding.

f. After a few days, he became sparing of the bread.

g. ".. and his raiment became shining" (Mark 9:3)

(13)   *The boy seems / became jumping / growing / crying / eating / writing.

A similar test applies to Hebrew, at least for some speakers. The verb *nir'a* in Hebrew is ambiguous between the raising verb meaning 'seems/seemed' and the passive perceptual reading 'was seen'. The verb *nišma* is likewise ambiguous, between 'sounds/sounded' and 'is heard/was heard'. When these verbs are followed by an adjectival phrase, they only have the first meaning, that of a raising verb (14a); when followed by a verb phrase, they only have the second, perceptual meaning (14b):

(14)   a. *ha-yeled nir'a / nišma   nexmad.*

          the-boy seems   sounds   nice

          'The boy seems / sounds nice.'

        b. *ha-yeled nir'a   / nišma   lo'es mastik.*

          the-boy was+seen   is/was+heard   chewing gum

          'The boy was seen / is/was heard chewing gum.'

When Hebrew present participles are preceded by *nir'a / nišma*, some of the sentences are interpreted with 'seems' / 'sounds', as expected if the participles are adjectives (15), while others are interpreted with 'was seen' / 'is/was heard', as expected if the participles are verbs (16)[6]. The split between the different participles is just like the one observed in English.

(15)   *ha-seret   nir'a / nišma   me'anyen / madhim / meša'aše'a.*

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[6] For some speakers, *nir'a / nišma* cannot be followed by a VP at all. In this case the test is clearer: for such speakers (15) will be grammatical, while (16) will be ungrammatical.

the-movie seems sounds interesting amazing amusing

'The movie seems / sounds interesting / amazing / amusing.'

(16)   *ha-yeled nir'a   / nišma   kofec   / oxel / holex.*

the-boy was+seen   is/was+heard jumping eating walking

'The boy was seen / is/was heard jumping /eating / walking.'

2.2.2 –*ly* suffixation

The English suffix –*ly* is a very productive suffix which attaches to adjectives, and turns them into adverbs (17a); the suffix cannot attach to verbs (17b).[7]

(17)   a. beautifully, smartly, rudely

b. *eatly, *walkly, *thinkly

As noted by Fabb (1984) and Brekke (1988), here as well present participles behave non-uniformly: some of them allow –*ly* suffixation (18), while others disallow it (19):

(18)   interestingly, surprisingly, excitingly, pleasingly, fittingly, lastingly, compromisingly, forgivingly, shiningly, glimmeringly, inspiringly…

(19)   *sittingly, *cryingly, *jumpingly, *walkingly, *writingly, *chewingly, *drawingly, *findingly, *foldingly…

In this case too Hebrew provides a similar test. While in Hebrew there is no productive morphological operation that forms adverbs from adjectives, adverbs can be formed periphrastically using *be-ofen Adj* ('in a Adj manner'). Verbs, on the other hand, cannot serve as input for such adverb formation. Looking at present participles, we observe again that some of them can form adverbs in this way (20), while others cannot (21):

(20)   *be-ofen me'anyen   / mafti'a   / merageš / mitxašev   / matmid*

in-manner interesting surprising exciting   understanding lasting

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[7] There is a second –*ly* in English that forms adjectives from nouns, as in e.g. *earthly, monthly*. This suffix is irrelevant for the current discussion.

'interestingly / surprisingly / excitingly / understandingly / lastingly'

(21)   *be-ofen   boxe / kofec   / holex   / kotev

       in-manner crying / jumping / walking / writing

2.2.3 Following the future copula

An additional adjectival test exists in Hebrew. As claimed in Doron (2000), in Hebrew, only

adjectives (and nouns), not verbs, can follow the future copula, as seen in (22):

(22)   a. *ha-yeled yihiye   yafe   / xaxam / xacuf.*

          the-boy   will+be beautiful smart   rude

          'The boy will be beautiful / smart / rude.'

        b. **ha-yeled yihiye   lo'es mastik / mekapel niyarot.*

          the-boy will+be chewing gum folding papers

Present participles behave non-uniformly in this context, some following the future copula

(23) and others not (24). Again, the same participles are diagnosed as adjectives by this test as

by the preceding ones.

(23)   a. *ha-yeled yihiye me'anyen   / mafti'a   / meša'aše'a / margiz.*

           the-boy will+be interesting surprising amusing   annoying

          'The boy will be interesting / surprising / amusing / annoying.'

        b. *ha-ir   tihiye   mesagseget.*

          the-town will+be flourishing

          'The town will be flourishing.'

        c. *ha-oneš   yihiye   mat'im (la-avera).*

          the-punishment will+be fitting to+the crime

          'The punishment will be fitting (to the crime).'

        d. *ha-xaver šelxa   yihiye   mitxašev.*

           the-friend yours will+be considerate

'Your friend will be considerate.'

(24)   *ha-yeled yihiye   kofec   / holex   / gadel   / boxe.

         the-boy will+be jumping / walking / growing / crying

2.2.4 *un-* prefixation

As was noted by Wasow (1977), there are two *un-* prefixes in English. One is prefixed to

verbs, with the resulting form expressing the reversal of the action denoted by the original

verb (*dress – undress, lock – unlock*). The relevant prefix for the current discussion is the one

which attaches to adjectives to create a form expressing the opposite property or state from

that denoted by the original adjective (*happy – unhappy, intelligent – unintelligent*).

Prefixation of this second *un-* can distinguish adjectives from verbs. Note that adjectivehood

is not a sufficient condition in this case, since *un-* does not attach to all adjectives (**unsmart*,

**unrude*). Still, it attaches only to adjectives. (25)-(26) show that present participles exhibit

here the same split observed above:

(25)   uninteresting, unsettling, unsurprising, unexciting, unpleasing, unfitting,

        uncompromising, unforgiving, unsuspecting, unassuming, unreasoning, unsparing,

        unrevealing

(26)   *uncrying, *ungrowing, *unjumping, *unwalking, *unwriting, *unchewing,

        *undrawing, *unstanding, *unfinding.

Notice, that it is impossible to claim that in (25) *un-* is prefixed to verbs, since such an

analysis would predict also the existence of the non-existing verbs **uninterest, *unsurprise*

etc.

In this case, too, Hebrew offers a parallel test. The negative prefix *bilti-* attaches only to

adjectives, though, as in English, not productively (Doron 2000). Again, this prefix can attach

to certain present participles, showing that they are adjectival (27), and not to others (28).

(27)   *bilti-mexayev, bilti-mazik,   bilti-mat'im*

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unbinding   undamaging unfitting

(28)   *bilti-mecayer,*bilti-kofec, *bilti-boxe

undrawing,   unjumping, uncrying

2.2.5 Modification by degree modifiers

The diagnostics most frequently used in order to determine the adjectival status of present

participles (Brekke 1988, Milsark 1988, Emonds 1991 and others) is their compatibility with

degree modifiers such as *very, rather, so* etc. The same pattern observed above repeats itself

in this case: some present participles are compatible with such modifiers (29) and others are

not (30).

(29)   a. The movie is very interesting / amusing / boring.

b. Florence is very flourishing.

c. Your brother was very understanding.

(30)   *Max is very jumping / growing / crying.

Borer (1990) questions the validity of this test as a criterion for adjectivehood. She argues that

the compatibility of a participle with *very* and other degree modifiers has nothing to do with

its categorial status, but rather depends on other, semantic factors, those that determine

whether the verb related to the participle is compatible with the modifier *very much*. Hence,

the sentences in (29) above are grammatical in correspondence to those in (31), and the

ungrammaticality of the sentences in (30) above corresponds to that of (32):

(31)   a. The movie interested / amused / bored me very much.

b. Florence flourished very much in the middle ages.

c. Max understood what I said very much.

(32)   a. *This car jumped very much.

b. *This girl slept very much (with the reading synonymous with *very much slept*)

(Borer 1990)

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While this correlation between *very* and *very much* clearly holds, it is nonetheless true that *very* can serve as a test for adjectivehood, since in its bare form (without *much)* it can attach only to adjectives, and it is only adjectives that it can precede, and not follow, as shown in (33).

(33)   a. Max is very pale / tall.

b. *Max very loves / interests Lucy.

c. Max loves / interests Lucy very much.

It is likewise true, that as in the case of *un-* prefixation, adjectivehood is only a necessary condition for modification by *very*, not a sufficient one. Non-gradable adjectives cannot be modified by *very*, as is evident from (34).

(34)   a. *Romeo is very dead.

b. *The number seven is very prime.

In view of all this, participles that can be modified by *very* (as in (29) above) can safely be classified as adjectives; Borer (1990) is right in claiming that participles that cannot be modified by *very*, as in (30), cannot be automatically classified as verbs. There may be another reason for the failure of modification by *very*, as in (34).

Again Hebrew presents a similar test. The modifier *kaze* 'so' can, in most registers, attaches only to adjectives, and not to verbs, as in (35):

(35)   a. *maks kaze xiver / gavoha.*

Max   so   pale   tall

'Max is so pale / tall.'

b. **maks kaze lo'es   mastik / ohev   et   lusi.*

Max   so chews gum   loves   ACC Lucy

As expected, the same present participles which behaved as adjectives in the previous contexts allow modification by *kaze* (36), while the rest do not (37).

(36) *ha-seret kaze me'anyen / macxik /   merageš.*

the-movie so interesting funny (lit. makes laugh) exciting

'The movie is so interesting / funny / exciting.'

(37) **maks kaze kofec   / boxe   / gadel.*

 Max so jumping / crying / growing

2.2.6 Coordination with adjective phrases

Another piece of evidence, not discussed in previous studies, which points to the conclusion

that some present participles are not adjectives, comes from coordination facts. Some present

participles cannot appear in coordination structures with adjectives, both in English and in

Hebrew (38)-(39):

(38)   a. ??a crying and beautiful girl

        b. **yalda boxa   ve-yafa*

            girl   crying and-beautiful

(39)   a. ??a rude and jumping boy

        b. **yeled xacuf ve-kofec*

          boy   rude   and-jumping

Note that although the conjuncts' being of the same category is not a necessary condition for

the grammaticality of a coordination structure (as shown in Sag et al 1985, cf. *Pat is a*

republican and proud of it), it is a sufficient one: if two elements are of the same category,

they can be coordinated.[8] Therefore, if two elements cannot be coordinated, it is safe to

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[8] In principle, there could exist additional conditions on coordination. For example, one might suspect that what

is responsible for the ungrammaticality of (38)-(39) is a constraint against coordination of stage-level predicates

(*crying, jumping*) with individual-level predicates (*beautiful, rude*), or of dynamic predicates with stative ones.

However, such coordinations are possible, when both predicates are of the same lexical category (i).

(i)   a. an interesting and available position

         b. Max likes Lucy and often invites her to his house.

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conclude that they are not of the same category. Thus, participles such as *crying* and *jumping* cannot be adjectives.

Note, on the other hand, that some present participles can be coordinated with adjectives:

(40)   a. an interesting and beautiful girl

   b. *yalda me'anyenet ve-yafa*

   girl   interesting and-beautiful

   'an interesting and beautiful girl'

(41)   a. a big and flourishing town

   b. *'ir gdola ve-mesagseget*

   town big and-flourishing

   'a big and flourishing town'

(42)   a. clever and understanding man

(40)-(42) do not prove that *interesting, flourishing* and *understanding* are adjectives since, as mentioned above, there are coordination structures in which the conjuncts are not of the same category. However, the facts are compatible with the claim that these participles are adjectives.

2.2.7 Complementation

Another observation with regard to the split in the behavior of present participles has to do with their complementation options. Consider the sentences in (43)-(45), which are ungrammatical since they contain verbs with an unassigned obligatory internal θ-role:

(43)   a. *The boy interested / amazed / loved.

   b. *The boy folded / locked / tamed.

(44)   a. *ha-yeled inyen*   */ hiftia*   */ hidhim / hevin.*

   the-boy interested / surprised / amazed / understood.

   b. *ha-yeled*   *kipel / maca / na'al   / ilef.*

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the-boy folded / found / locked / tamed.

Now let us look at sentences containing the present participles of these verbs. Some such sentences are completely grammatical without complementation (45a), (46a), while others are not (45b), (46b).

(45)   a. The boy is interesting / surprising / amazing / loving.

b. *The boy is folding / locking / taming.

(46)   a. *ha-yeled me'anyen   / mafti'a   / madhim / mevin.*

the-boy interesting surprising   amazing   understanding

'The boy is interesting / surprising / amazing / understanding.'

b. *ha-yeled mekapel / moce   / no'el / me'alef.*

the-boy folding   finding   locking taming

Given that all the verbs in question have an obligatory internal θ-role, the split in their behavior may seem surprising. However, it can receive a natural account under the assumption that the participles in the (a) sentences are adjectival, since it is well-known that adjectives (at least in English and Hebrew), unlike verbs, do not have obligatory complements. In section 4.3.1 I discuss the operation which derives adjectival present participles, showing that it includes saturation of the internal θ-role of the related verb, leading to the intransitivity of the adjective. The present participles in the (b) sentences, in contrast, are verbal, and as such have the original thematic grid of the verb. These sentences are ungrammatical for precisely the same reason as in (43)-(44), namely, the verbs in them have an unassigned obligatory θ-role.

2.2.8 The prenominal position

Wasow (1977) mentions the prenominal position in English as a position allowing only adjectives, and not verbs (47):

(47)   a. a beautiful / smart / rude boy

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b. *a drinks / drank boy

The ability to appear prenominally was since often used as a diagnostics for the adjectival status of a word (e.g. in Levin & Rappaport 1986). Doron (2000) adapted the generalization to Hebrew, claiming that in this language, only adjectives can appear in the post-nominal position (48):

(48)   a. *yeled   yafe   / xaxam*

         boy beautiful / smart

         'a beautiful / smart boy'

        b. **yeled šata*

          boy drank

Turning now to present participles, many of them can appear in the prenominal position in English and in the post-nominal position in Hebrew. In (49), (50), we see that the participles passing the adjective diagnostics in 2.2.1-2.2.7 can appear prenominally in English, or post-nominally in Hebrew.

(49)   the interesting / amusing / charming boy, the disgusting / annoying / engaging movie, the flourishing town, the glimmering diamond, the fitting remark, the understanding friend, the appetizing meal…

(50)   *yeled me'anyen / macxik, seret me'acben,   'ir mesagseget, yahalom nocec*

          boy interesting / funny movie annoying   town flourishing diamond glimmering

Interestingly, however, these positions can host also additional participles, which do not pass the other adjective diagnostics. Specifically, as shown in (51), (52), all participles of intransitive verbs can appear in them.

(51)   the jumping / crying / growing / eating / writing boy

(52)   *yeled kofec   / boxe   / oxel*

         boy   jumping / crying / eating

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If these positions are indeed exclusively adjectival, these facts unequivocally suggest that all these participles have an adjectival reading (in addition to their verbal one). This is what led Borer (1990), Bresnan (1996) and Parsons (1990) to claim that all present participles can be adjectives. There are, however, two caveats to this generalization. First, there is a considerable group of present participles (of transitive verbs) which cannot appear prenominally, as exemplified in (53a). Note, that transitivity is not to blame for the ungrammaticality here, since participles of other transitive verbs do occupy this position (53b) (see also the discussion in 2.2.7).

(53)   a. *The locking / folding / taming boy

        b. The interesting / annoying boy

Second, as mentioned above, many participles appearing in the prenominal position (e.g. those in (51), (52)) do not pass any other diagnostics for adjectivehood, as shown in 2.2.1-2.2.6.

To conclude this section, I have shown firstly that all present participles have a verbal reading. When one examines their adjectival status, the following picture emerges: all the diagnostics both in English and in Hebrew, except for the prenominal/post-nominal position one, diagnose only a certain subset of present participles as adjectives. The prenominal position test diagnoses a bigger set of these participles as adjectives. This is depicted in the table in (52).

(52)   Summary of the diagnostics presented in this section

Diagnostics	Participles passing the diagnostics
Verbal diagnostics: - post-modification - complementation of temporal aspect verbs	All participles

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Adjectival diagnostics: - complementation of *seem* etc.	A subset of the participles

- *-ly* suffixation
 	
    - following the future copula
 	
    - *un-* prefixation
 	
    - modification by degree modifiers
 	
    - coordination with VPs
 	
    - complementation options
	(to be defined
	
	in section 3)

Prenominal position	The subset above + all intransitive participles

These data lead to the conclusion that, contra Borer (1990), Bresnan (1996) and Parsons (1990), not all present participles are adjectival, but rather only the subset of the participles passing all the diagnostics. Though in some of the tests adjectivehood is only a necessary, not a sufficient condition, when taken together the tests clearly show that some present participles do not have an adjectival reading.

Given that the prenominal position test is the only one which is inconsistent with the rest, I suggest that it is not a reliable adjectivehood diagnostics. This suggestion receives independent support, which I present and discuss in section 5.

A natural question which arises at this point is: what restricts the class of verbs which give rise to adjectival present participles? The following section offers an answer to this question.

3. Restricting the class of verbs giving rise to adjectival present participles

3.1 Brekke's (1988) *Experiencer Constraint*

Having reached the conclusion that not all present participles are adjectival (based on modification by degree modifiers and *–ly* suffixation), Brekke (1988), building on Chomsky

(1957), attempts to define the set of verbs giving rise to adjectival present participles, and suggests the *Experiencer Constraint:* only verbs with an internal Experiencer θ-role can derive adjectival present participles. Brekke's generalization accounts for a substantial part of the data presented in section 2.2 above: it draws a clear distinction between participles of object-Experiencer verbs (*amazing, amusing, interesting, boring, exciting, fascinating,* etc.), which consistently pass tests for adjectivehood, and participles of verbs denoting eventualities whose objects do not involve mental states (*jumping, growing, writing, walking*, *drawing* etc.) which consistently fail them. The constraint, therefore, seems quite promising.

However, Brekke's generalization raises both a theoretical and an empirical problem. The theoretical problem is that the analysis does not provide any insight as to *why* it should be the case that only participles of object-Experiencer verbs can be adjectival. The *Experiencer Constraint* can be attributed neither to some property of object-Experiencer verbs, nor to some property of adjectives. In this respect, it seems accidental that it is precisely this type of verbs which have corresponding adjectival participles.

The empirical problem is even more disturbing. Brekke himself notes that there are many adjectival present participles which are not derived from object-Experiencer verbs, in contrast to his prediction. He classifies these additional verbs to three classes (the following names and characterizations of the classes, as well as the examples, are taken from Brekke, pp. 175-176):

(53)   Non-object-Experiencer verbs with adjectival present participles:

   a. "Manner" verbs – "verbs that describe the manner in which some event proceeds, or evaluate some psychological or social phenomenon": enduring, fitting, flourishing, lasting, telling, revealing,[9] etc.

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[9] As noted by a *Lingua* reviewer, *tell* and *reveal* have an Experiencer argument, and can therefore be viewed also as object-Experiencer verbs, thus not representing a problem for *the Experiencer Constraint.*

b. "Impact" verbs: blazing, dashing, glimmering, glistening, sparkling, shining, etc.

c. "Disposition" verbs – "verbs that describe the psychological character of a human being": compromising, condescending, cunning, daring, forgiving, knowing, loving, caring, understanding, yielding, etc.

It can be noted that the second class is the class of "verbs of light emission" (Levin and Rappaport Hovav 1995), whereas the third class is a subclass of subject-Experiencer verbs, where the sentient argument is external. The first class, however, seems to have no natural characterization, other than the fact that all of its members have corresponding adjectival present participles. Observing the different classes, which have very different thematic properties, Brekke notes that a generalization is probably missed here.

3.2 An aspectual constraint on the formation of adjectival present participles

3.2.1 The *Stativity Constraint*

Brekke's constraint on the formation of adjectival present participles is thematic, in that the possible input for the operation is constrained based on the θ-grid of the verb. However, the four verb classes: object-Experiencer, "disposition", "impact" and "manner", when looked at thematically, do not form a natural class. I suggest instead that in order to define the properties of the stems giving rise to adjectival present participles, it is worth looking at the aspectual properties of these stems. After all, the main difference between verbs and adjectives lies in their aspectual features (roughly, events versus states). Therefore, as noted in Bennis (2000, footnote 22), this seems like a natural domain to look into for the definition of the set of adjectival present participles, as well as of other sets of adjectives.

Verbs denote different kinds of eventualities. According to the traditional, "Aristotelian" classification (Vendler 1957, Dowty 1979, among many others), verbs can denote four types of eventualities: dynamic verbs denote accomplishments, achievements or activities / processes, and stative verbs denote states. Stative verbs refer to static, unchanging

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eventualities, which do not result in the creation, change of state or change of location of any of their participants. According to Kearnes (1991) "states have no essential changes or transitions", and Comrie (1976) suggests that states do not require an input of energy for the maintenance of the eventuality. In the often-used system of semantic decomposition proposed by Dowty (1979), to be presented in more detail in (95) below, a stative eventuality is one which does not include a DO or a BECOME operator. Hence, it never entails active causation (represented by DO) or change-of-state (represented by BECOME). *Know, own* and *love* are some prototypical stative verbs.

Several diagnostics were suggested in the literature for identifying stative verbs. Kenny (1963) notes, that in the simple present tense, sentences with dynamic verbs have a frequentative interpretation, namely, are understood as involving more than one event. On the other hand, sentences with stative verbs do not have this interpretation. Therefore, (54a), with a dynamic verb, is interpreted as habitual, while (54b), which contains a stative verb, is understood as involving a single event of John knowing the answer.

(54)   a. John runs.

          b. John knows the answer.

Another stativity diagnostics is the ability of a verb to appear in *do* constructions; as noted by Dowty (1979), stative verbs are ungrammatical in these structures (55).[10]

(55)   *What John did was know the answer.

Another diagnostic for stativity is provided by the often-noted observation (e.g. Dowty 1979) that stative verbs are incompatible with the progressive in English (56). It is important to note,

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[10] Levin & Rappaport (1995) show that this test is indeed sensitive to stativity / non-stativity rather than to agentivity / non-agentivity, citing (i), which shows that a non-agentive yet dynamic verb can appear in this construction:

(i)   What the rock did was roll down the hill.

however, that the progressive test is inconclusive, since, as shown by Mufwene (1984), Van Voorst (1992) and others, many stative verbs do appear in the progressive under certain circumstances.

(56)   *John is knowing the answer.

Given the discussion of stativity above, I suggest the following constraint on the formation of adjectival present participles:

(57)   The *Stativity Constraint*

         Only stative verbs give rise to adjectival present participles.

Note that (57) provides a necessary, not a sufficient condition for the existence of an adjectival present participle alternate for a verb, as it does not state that *all* stative verbs give rise to adjectival present participles. I return to this issue in section 6.

In what follows I will show how the current hypothesis deals with the problems mentioned above with regard to the *Experiencer Constraint*. In the following subsection I will consider whether (57) captures the data presented in section 2 above, and show that it is superior to the *Experiencer Constraint*, since it accounts for more data. The rationale behind the stativity constraint will be presented in section 4.2.

3.2.2 The empirical coverage of the *Stativity Constraint*

In section 3.1 it was noted that four types of verbs have corresponding adjectival present participles: object-Experiencer, "manner", "impact" (namely, light emission) and "disposition" (namely, subject-Experiencer) verbs (in Brekke's terms). I claim that what is common to all of these verbs is that they are all stative, or at least have a stative reading. Let us look at each group separately.

3.2.2.1 Object-Experiencer verbs.

It has been repeatedly suggested in the literature (Dowty 1979, Pesetsky 1995, Arad 1998 among others) that many object-Experiencer verbs have both an eventive and a stative interpretation. In the eventive interpretation, the object undergoes a change of mental state. In contrast, the stative interpretation merely asserts that the object is in a specific mental state.[11] Let us try to isolate the stative reading of object Experiencer verbs, in order to test the *Stativity Constraint*. Importantly, when the subject of an object-Experiencer verb is animate and interpreted as an Agent, an eventive reading of the verb must arise (Arad 1998). On the other hand, a non-volitional subject may give rise to two interpretations (Pesetsky 1995, Reinhart 2002). It can either be the Cause of emotion, in which case a change of mental state is entailed (58a). In this case, the subject matter of the emotion may be something else than the subject, as shown by the possible continuation in (58b). Alternatively, the inanimate subject of an object-Experiencer verb may receive the Subject Matter (SM) role (Pesetsky 1995) (59a). In this case, of course, the subject must be interpreted as the subject matter of the emotion (59b).

(58)   a. The letter$_{CAUS}$ worried the patient.

         b. … but he was not worried about the letter$_{SM}$.

(59)   a. His health$_{SM}$ worried the patient.

         b. #... but he was not worried about his health$_{SM}$.

It can be observed intuitively that whereas (58a) is eventive, denoting a change of mental state, (59a), with a SM subject, merely states the preoccupation of the patient with his health, and is thus stative. Let us see whether object-Experiencer verbs with SM subjects indeed pass

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[11] As noted by e.g. Pestsky (1995), some object-Experiencer verbs are more strongly eventive, others are more strongly stative, and yet others – relatively neutral. Important for the current discussion, however, is the fact that all of these verbs, including the strongly eventive ones (e.g. *frighten*, according to Pesetsky), have a stative reading, and it is this reading which gives rise to the adjectival present participle, as shown in the section.

stativity tests. First, it can be observed that present simple sentences with object-Experiencer verbs and SM subjects do not have a frequentative, habitual interpretation (60), thus showing that the verbs here are stative.

(60)   John's behavior$_{SM}$ interests / amuses / frightens the children. (#but they are not

interested in / amused at / frightened of his behavior$_{SM}$).

Further, (61) shows that object-Experiencer verbs with SM subjects are ungrammatical in the *do*-construction, suggesting again that they are stative.

(61)   *What John's behavior$_{SM}$ did was amuse / frighten / worry the children.

As noted by Pesetsky (1995), certain Object-Experiencer verbs also resist the progressive, a fact reinforcing the existence of a stative reading for them (62).

(62)   ?? Odd noises were continually depressing Sue.   (Pesetsky 1995)

I conclude that object-Experiencer verbs have a stative reading, and it is thus predicted by *the Stativity Constraint* that they give rise to adjectival present participles.

Importantly, note that it is indeed only the stative variant of the verb, where the subject receives the SM role, which gives rise to the adjective. Thus, as noted by Landau (2006), object-Experiencer adjectival present participles are not causative, as can be deduced from the contrast between (63a) and (63b).

(63)   a. The article$_{CAUS}$ irritated Bill, but he wasn't irritated at the article$_{SM}$.

b. #The article$_{SM}$ was irritating to Bill, but he wasn't irritated at the article$_{SM}$.

(Landau 2006)

3.2.2.2 "Manner" verbs

According to Brekke (1988), the class of "manner" verbs includes verbs such as *fit, flourish, last* and *reveal*. Clearly, these verbs denote a state of affairs or a property of their subject,

without entailing any change of state.[12] In fact, it is hard to find a common property of the verbs in this group, thematic or other, besides their stativity.

Again, the fact that these verbs are stative can be demonstrated in several ways. It is easy to see that they are incompatible with the progressive (64); Simple present tense sentences including them do not have a habitual interpretation (65); and they are ungrammatical in the *do* construction (66).

(64)   a. *The shirt is fitting her.

b. *The war was lasting 3 years.

c. *This dress is revealing your neck.

(65)   a. The shirt fits her.

b. The town flourishes.

c. The shirt reveals her neck.

(66)   a. *What the shirt did was fit her.

b. *What the war did was last 3 years.

c. *What the town did was flourish.

3.2.2.3 "Disposition" verbs

Brekke's class of "disposition verbs" consists of verbs like *compromise, love, understand, know, dare*, *spare*, etc. These are, in fact, a sub-class of the class of subject-Experiencer verbs, which are traditionally classified as stative (Dowty 1979). These verbs denote the mental state of their subject, without entailing any change of state in either the subject or the object, as seen in (67).

(67)   a. John loves Mary.

b. John understands the situation.

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[12] *Reveal* has also an eventive reading, irrelevant here, as in *The spy was revealing state secrets to the enemy for three years.*

As predicted, simple present tense sentences with subject-Experiencer verbs (such as those in (67) above) do not have a habitual interpretation. In addition, these verbs are ungrammatical in the *do* construction (68) and many of them cannot appear in the progressive (69). All of this points to the conclusion that these verbs are stative.

(68)   ??What Mary did was love / hate / understand me.

(69)   a. *My friend is understanding me.

        b. *John is daring to do it.   (meaning: John dares to do it)

Interestingly, subject-Experiencer verbs present a case where thematic classification and aspectual classification do not coincide, in that not all these verbs are stative. For example, the subject-Experiencer verbs *forget* and *realize* undeniably denote a change of (mental) state. That these verbs are dynamic can be deduced from their compatibility with the *do* construction:

(70)   a. We waited for the waiter to get our food, but instead, what he did was forget half

           our order.

        b. What Newton did was realize that the force of gravity follows the same

           mathematical rules as light.

The *Stativity Constraint* predicts that such verbs, though thematically identical to subject-Experiencer verbs like *love*, will not have adjectival present participle alternates, since they are not stative. As shown in (71), this is indeed the case.

(71)   a. *This teacher seems forgetting.

        b. **ha-more   yihiye   šoxeax.*

           the-teacher will+be forgetting

        c. *He finally seems realizing.

Thus, the class of "disposition verbs", giving rise to adjectival present participles, is not identical to the class of subject-Experiencer verbs, but rather consists of the stative sub-class

of the latter. This further reinforces the claim that the constraint on adjectival present participle formation is aspectual rather than thematic.

At this point it must be acknowledged that some exceptions exist, in both directions. Some stative subject-Experiencer verbs do not give rise to adjectival present participles. For example, while *loving* has an adjectival reading, *hating* does not; the Hebrew analogue of *loving*, 'ohev', is likewise only verbal. *Like* and *feel* are additional examples. It is important to note, however, that such gaps are compatible with a lexicalist view of the derivation of adjectival present participles, as discussed in 4.1. Conversely, *forgive,* which is not naturally perceived as stative, does have the adjectival counterpart *forgiving*. Again, if adjectival present participles exist as lexical items, it is possible for such exceptions to be listed. Section 6 offers further discussion of the exceptions to the *Stativity Constraint*.

3.2.2.4 "Impact" verbs

The fourth class of verbs giving rise to adjectival present participles, according to Brekke, is that which he names "impact verbs", including *blaze, dash, gleam, glimmer, glisten* etc. These are the verbs labeled by Levin & Rappaport (1995) "verbs of light emission". Let us first consider whether these verbs indeed have corresponding adjectival present participles, and then turn to the discussion of their aspectual classification.

In his discussion of "impact" verbs, Brekke notes that in order for a verb of this class to give rise to a true adjective, the noun modified by the adjective should have a "psychological denotation". According to him, examples such as (72) show that these stems form adjectival present participles only under a drifted, metaphoric reading, not under the literal "light emission" reading. This casts doubt on the general availability of adjectival present participle counterparts to light emission verbs.

(72)   a. We were enjoying a very sparkling conversation / *champagne.

          b. The performance / *new lamp was very glittering.

However, it is important to check whether Brekke's generalization regarding the psychological character of the modified noun does not stem from the specific adjectivehood diagnostics he is employing (modification by *very*). Namely, it is possible that both a conversation and a champagne can be modified by the adjective "sparkling", but that the difference in grammaticality between the two options in (72a) stems from the fact that only in the former case can the adjective be further modified by "very", since a conversation can sparkle to different degrees, while a champagne either sparkles or not.

Let us therefore look at the other diagnostics for adjectivehood presented in section 2, and see whether they classify participles of light emission verbs as adjectival.

- **Complement of *seem / become*:** Present participles based on verbs of light emission are possible as complements to *seem* and *become*, as seen in (73). The modified noun can be a concrete noun like *wine*, with no psychological properties, as in (73b), where the stem *sparkle* is used in its literal meaning.[13]

(73)   a. Everything seems shining to me.

         b. The wines were bottled and became sparkling.

- **-ly suffixation:** *-ly* can be suffixed to present participles corresponding to light emission verbs, both in metaphorical (74a) and literal (74b-c) readings, though the latter are perhaps less than perfect:

(74)   a. The film remains a shimmeringly lovely coming-of-age portrait.

         b. ?the airport, with its shiningly clean and modern terminal…

         c. ?skin that appears supple, hydrated and glimmeringly smooth…

- **Un- prefixation:** just like with *–ly*, *-un* can be prefixed to the relevant participles, whether carrying a metaphorical (75a) or a literal (75b) sense, again, the latter being a little degraded:

(75)   a. an unsparkling report

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[13] The sentences in (73)-(76) were found on the web; a web search reveals many similar examples.

b. ?He saw the dull, unshining armor.

- **Following the future copula in Hebrew:** present participles of light emission verbs can follow the future copula in Hebrew, both when used metaphorically (76a) or non-metaphorically (76b):[14]

(76) a. *tekes   ha-oskar ha-šana yihiye   nocec   me-ha-ragil.*

      ceremony the-Oscar the-year will+be shining than-the-usual

      'The Oscars ceremony this year will be more shining than usual.'

    b. *be-ta'arix ze   koxav ma'adim yihiye   bohek   me'od bi-šmey ha-layla.*

      in-date   this star   Mars   will+be gleaming very in-skies the-night

      'On this date, Mars will be very gleaming in the night skies.'

It seems, then, that verbs of light emission do generally give rise to adjectival present participles, though perhaps their metaphorical reading lends itself to adjective formation slightly more easily. Given this conclusion, the *Stativity Constraint* predicts that light emission verbs are stative. Is this really the case?

Levin & Rappaport (1995) discuss in detail the aspectual status of emission verbs. With regard to light emission verbs, they conclude that at least some of them, i.e. *gleam, glisten, glow* and *shine* ought to be classified as stative. These verbs attribute some steady property to their subject without entailing any change of state (e.g. *The floor shines*). Levin & Rappaport further note that when considering a change of state or lack thereof in the context of emission verbs, it is important to distinguish the emitter from what is emitted, since the former does not undergo any change, while the latter is typically depicted as undergoing a change, namely, flowing. Verbs of light emission are intransitive, and therefore denote an eventuality

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[14] In fact, (76b) shows an additional thing: these adjectives can also be modified by *very*, even when predicated of concrete, non-psychological nouns. Indeed, many examples can be found that show this, as exemplified in (i).

(i)   a. very sparkling earrings

      b. Avoid very gleaming shoes that were perceptibly planned for more elegant outfits.

including only one participant – the emitter. This participant does not undergo any change. Hence, the eventuality denoted by these verbs is stative. They further claim that using Comrie's (1976) criterion mentioned in 3.2.1 above, these verbs are stative since maintaining the eventuality denoted by them (such as shining or glowing) does not require an input of energy.

Other tests also point to the stativity of these verbs. They are ungrammatical in the *do* construction (77), and their interpretation in the present simple tense (e.g. as in *The floor shines*) is not habitual, and does not involve more than one event.[15]

(77)   ??What the spotlight did was shine on the parking lot.   (Levin & Rappaport 1995)

Levin & Rapapport do not discuss the stativity of other light emission verbs, e.g. *shimmer, glimmer* and *sparkle*. It seems to me, however, that these verbs should be classified as stative as well, given that it is not apparent what kind of change they entail, and that the eventuality denoted by them does not require an input of energy for its maintenance. It is possible, however, that certain verbs are perceived by some speakers as stative and by others as dynamic, or that the same verb is perceived as stative in its metaphorical reading, and as dynamic in its literal reading. The *Stativity Constraint* predicts that a correlation will exist between a speaker's perception of a verb as stative and his having an adjectival present participle alternate for that verb. So, for example, a speaker for whom *unsparkling* or *very sparkling* are odd probably perceives the verb *sparkle* as dynamic, rather than stative.

It is interesting to discuss at this point also verbs of sound, substance and smell emission. Levin & Rapapport (1995) claim that verbs of sound and substance emission are eventive,

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[15] Verbs of light emission do appear in the progressive, as seen in (ia-b), which deliberately contain verbal environments. However, as mentioned in 3.2.1, the progressive diagnostics is not a conclusive one.

(i)   a. The moon was shining magnificently.

         b. His eyes kept glimmering.

whereas verbs of smell emission are stative. As expected, participles of sound and substance emission verbs generally do not pass adjectivehood diagnostics (78), while those of smell emission do (79).[16]

(78)   a. *The teapot became whistling.

        b. *The volcano became spewing.

        c. *ha-mamtera   tihiye   matiza.

            the-water sprinkler will+be squirting

(79)   a. ha-xeder yihiye   masriax / macxin.

            the-room will+be stinking   malodorous

        b. The surroundings have become stinking and unhealthy.

        c. The drink had a reekingly bitter after-taste.

To conclude, the common feature of object-Experiencer, "manner", "disposition" and "impact" verbs, as well as smell emission verbs, is that they are all stative, thus conforming to the Stativity Constraint.[17] The question that arises next is *why* it should be that only stative

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[16] Here too there are several exceptions. For example, the sound emission verb *buzz* gives rise to an adjectival present participle, as can be seen in (i). The reason for this may be that *buzz* has a stative reading, i.e. 'be filled with a sound of buzzing or whispering'.

(i)   The place became buzzing at around 3pm.

On the other hand, the smell emission verb *smell* probably does not give rise to an adjectival present participle (ii).

 (ii)   ??The room became smelling after the party.

Such gaps are not unexpected given the lexical derivation of adjectival present participles to be discussed in section 4.

[17] A *Lingua* reviewer notes, that certain complex participial forms can appear as complements of *seem* (i), though headed by participles related to dynamic verbs, thus suggesting that not only stative verbs can give rise to adjectival present participles:

verbs have corresponding adjectival present participles. This will become clear once the process of adjectival present participle formation is discussed.

4. The formation of adjectival present participles

Having established that present participles of a subset of the class of stative verbs have an adjectival reading, the next step is to describe the details of the derivation of these adjectives. Section 4.1 argues that the derivation of adjectival present participles must be a pre-syntactic, lexical operation, supporting a view of the lexicon as a computational component of the grammar. Section 4.2 offers a discussion of the possibilities of adjectival participles in general, and the properties of the participial morpheme –*ing* in particular. 4.3 then presents sample derivations of adjectival and verbal present participles.

4.1 Lexical derivation for adjectival present participles, syntactic derivation for verbal ones

The question in what component of the grammar present participle formation takes place falls within the broad debate over the division of labor between the lexicon and the syntax. This discussion has been especially vivid with regard to adjectival and verbal passives. While all frameworks recognize a difference between the two types of passives, the analyses offered for their derivations vary significantly. Radically lexicalist frameworks (e.g. Lexical Functional Grammar, see Bresnan 1982, 1996) hold that both types are derived lexically; radically

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(i)   The color seems eye-catching.

Note, however, that this behavior is limited to a number of idiomatic expressions (e.g. *eye-catching*, *mind-opening*), and does not extend to other phrases headed by the same dynamic participles, as shown in (ii).

(ii)   *This player seems football-catching.

In general, then, dynamic verbs do not give rise to adjectival participles. This is true in spite of the fact, that certain idiomatic adjectival phrases contain dynamic participles. The characteristics and formation process of these idioms are beyond the scope of this paper.

syntactic frameworks (e.g. Distributed Morphology, see Embick 2004, Anagnostopoulou 2003, Marantz 1997; see also Emonds 1991 for a different non-lexicalist framework, which uses two levels of lexical insertion) hold that both types are derived in the syntax, via different functional heads; others, e.g. Horvath & Siloni (2008) (following a line of thought emerging from Wasow 1977) argue that verbal passives are derived syntactically, and adjectival passives – lexically. I believe that it is this last analysis which best suits the case of present participles. In what follows I will show that adjectival present participles exhibit the types of idiosyncrasies which are characteristic of lexical items, whereas verbal present participles are completely systematic in both form and meaning. The most natural account for this contrast is the assumption that adjectival present participles are derived lexically and stored in the mental lexicon, while verbal ones are built in the syntactic component.

4.1.1 Semantic drifts

One of the arguments used by Horvath & Siloni (2008) to establish the claim that adjectival passives are derived lexically and verbal passives syntactically is based on semantic drifts. The authors show that only adjectival passives may exhibit drifted meanings, not shared by the active verb; verbal passives can never show such a drift. For example, the Hebrew adjectival passive *mufnam*, literally 'internalized' (derived from *hifnim* 'internalize'), has an additional meaning, 'introverted'; the corresponding verbal passive, in contrast, has only the expected meaning, 'internalized'. This is easily explained under the hypothesis that adjectival passives are derived lexically while verbal passives are created syntactically. Stored lexical items can undergo semantic drifts and acquire additional meanings, but the result of a syntactic operation must have a compositional meaning.

Examples (80)-(84), with present participles, illustrate the same phenomenon. The (a) sentences show adjectival present participles with drifted meanings. The (b) sentences show

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that this meaning is not shared by the related verbs, which exhibit only the original meaning (c).

(80)　　a. *ha-nituax　yihiye　mavrik.*

　　　　　　the-analysis will+be brilliant

　　　　　　'The analysis will be brilliant'.

　　　　b. **ha-nituax　yavrik.*

　　　　　　 the-analysis will+shine

　　　　c. *ha-xalon　yavrik.*

　　　　　The-window will+shine

　　　　　'The window will shine.'

(81)　　a. *ha-seret　yihiye　marhiv.*

　　　　　　the-movie will+be spectacular

　　　　　 'The movie will be spectacular.'

　　　　b. **ha-seret　yarhiv.*

　　　　　　the-movie will+dare

　　　　c. *ha-xayal　yarhiv　le-hitnaged la-mefaked.*

　　　　　the-soldier will+dare to-oppose　to+the-commander.

　　　　　'The soldier will dare oppose the commander.'

(82)　　a. *ha-saxkanit tihiye lohetet.*

　　　　　the-actress will+be attractive

　　　　　'The actress will be attractive.'

　　　　b. **ha-saxkanit tilhat.*

　　　　　 the-actress　will+burn

　　　　c. *ha-šemeš tilhat.*

　　　　　the-sun　will+burn

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'The sun will burn.'

(83)　a. The colonel seems dashing.

　　　b. *The colonel dashed.

　　　c. The colonel dashed their hopes.

(84)　a. Her smile was very fetching.

　　　b. *Her smile fetched him immediately.

　　　c. She fetched him home from school.

In contrast, I could not find any examples where a verbal present participle had a meaning not shared by the other, tensed verbal forms.

The data is accounted for under the assumption that adjectival present participles, like adjectival passives, exist in the lexicon, and are thereby prone to undergoing drift processes, while verbal present participles, like verbal passives, are formed in the syntax, and are not stored in the lexicon at all.

4.1.2 Frozen entries

Another argument presented in Horvath & Siloni (2008) for the split between lexical and syntactic derivation of passives is based on the notion of *frozen entries*. According to the authors, *frozen entries* are lexical entries which exist in the lexicon, and can therefore serve as input for lexical operations, but are not available for insertion to syntactic derivations.[18] For example, the transitive alternate of *fall* in English is analyzed by Horvath & Siloni as a frozen entry – an existing lexical entry that nonetheless will never appear in a sentence.

Given this, if some predicate is derived from a frozen entry (say *navul* 'wilted', derived from the frozen **hibil* 'wilt trans.'), it must be the case that its derivation is lexical, since the frozen

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[18] Some authors have argued against the existence of such lexical items, e.g. Jackendoff 1975. However, see Horvath & Siloni (2009) for arguments in favor of assuming frozen entries, as well as Fadlon (2008) for a study establishing their psychological reality.

entry is not available in the syntax. If a word is formed syntactically, then necessarily each of

its morphemes must be inserted into the syntactic derivation.

In view of the above, consider (85)-(91). The first form in each (a) example is exclusively

adjectival, lacking a verbal reading (as established in (b) and (c)), and the second is the

hypothetical verb from which the adjective was derived. All those verbs, however, are frozen,

in that although we can predict their form and meaning, they never appear in sentences.[19]

English:

(85)   a. cunning - *cuns

        b. The prisoner seems (completely) cunning.

        c. *The prisoner is cunning proudly.

(86)   a. grueling - *gruels

        b. The schedule seems grueling.

        c. *The work was grueling us.

(87)   a. fleeting - *fleets

        b. All beauty seems fleeting and fragile.

        c. *The moments are fleeting quickly.

Hebrew:

(88)   a. šomem - *šamam

         desolate

        b. *ha-bayit yihiye šomem.*

         the-house will+be desolate

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[19] With regard to the Hebrew forms in (88)-(91), the (b) examples show that they are adjectival. There is,
however, no way to establish beyond doubt that they do not have verbal reading, since Hebrew does not have a
diagnostics identifying intransitive forms as verbal (on a par with adverbial post-modification or
complementation of verbs of temporal aspect in English). However, the fact that they cannot appear in any
tensed form strongly undermines the possibility that they exist as verbal participles.

(89)   a. boded - *badad

          lonely

        b. *ha-na'ar yihiye boded.*

          the-boy   will+be lonely

(90)   a. nimhar - *yimaher

          hasty

        b. *ha-ca'ad yihiye nimhar*

          the-step   will+be hasty

(91)   a. hogen - *hagan

          fair

        b. *ha-misxak yihiye hogen.*

          the-game will+be fair

Again, no parallel examples can be found with verbal present participles. Any existing verbal

present participle has a corresponding verb in the actual vocabulary. This provides further

evidence in favor of a lexical derivation for adjectival present participles, and a syntactic one

for verbal present participles.

4.1.3 Cross-linguistic morphological evidence

A final piece of evidence which provides support for the lexical nature of adjectival present

participles vs. the syntactic nature of verbal ones has to do with the morphology of the forms.

Laks (2007) claims that lexical items can present morphological idiosyncrasies not existent in

items derived syntactically. For example, he shows that the morphology of verbal passives in

Hebrew is very systematic, a fact consistent with the view that they are derived in the syntax.

On the other hand, the morphology of unaccusatives in Hebrew is much less predictable. This

is expected under the assumption, adopted by Laks, that unaccusative verbs are derived in the

lexicon (Reinhart 2002, among others).

(92) presents examples of Hebrew adjectival present participles, whose English counterpart is a non-participial adjective. (93) presents opposite examples. The same phenomenon however is not found with verbal elements: the counterpart of a verbal present participle in the other language will always have a participial form as well, as exemplified in (94).

(92)   a. *mošex* - attractive[20]

        b. *mitxašev* – considerate

        c. *koren* – radiant

        d. *so'er* – stormy

(93)   a. revealing - *xosfani*

        b. lasting – *kavu'a*

        c. yielding – *kanu'a, caytan*

        d. enduring - *tmidi*

(94)   a. jumping - *kofec*

        b. crying – *boxe*

        c. growing – *gadel*

The assumption that adjectival present participles are derived lexically and verbal ones syntactically can naturally account for the data above. The verbal elements are completely regular, their morphology systematic: they are part of the verbal paradigm of the language. In contrast, the adjectives, as lexical items, exhibit idiosyncratic morphology; some of them have participial morphology and others do not.

Note that the analysis in section 3 predicts that a participle such as *revealing* is ambiguous between a verb (since all participles are verbal) and an adjective (since *reveal* is stative). And indeed, this participle translates to Hebrew in two ways, either as *xosfani* (which is only

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[20] Thanks to a *Lingua* reviewer for pointing out this example.

adjectival) or as *xosef* (which is only verbal). The verbal alternate presents the predicted, participial morphology, while the adjectival alternate exhibits non-participial morphology.

To conclude this section: adjectival present participles display idiosyncrasies typical of lexical items, which are not found with verbal present participles.[21] The facts would automatically fall in place if verbal and adjectival present participles are derived in different components of the grammar. One important implication of this outcome is that adjectival present participles cannot be analyzed as derived from verbal participles (as in Bresnan 1996, for example), since the latter are not stored in the lexicon at all, while the derivation of the former is lexical. Adjectival present participles are therefore derived either from a verbal stem, or from a category-less root. In what follows I will adopt the former option, though nothing hinges on this.

4.2 Adjective formation – the aspectual change

4.2.1 The aspectual classification of verbs and adjectives

As a first step in describing the derivation of adjectival present participles, let us examine more closely the aspectual change brought about by this process. As noted in section 3.2.1, verbs denote different types of eventualities: states, processes/activities, achievements and accomplishments. States and activities are generally grouped together as "atelic", while achievements and accomplishments are referred to as "telic". Roughly, what differentiates telic events from atelic ones, is that the former have natural, inherent endpoints, whereas the latter are homogenous eventualities, lacking such an endpoint. Achievements and accomplishments are therefore often analyzed as being decomposed semantically into several components, including a BECOME component, and a STATE component, denoting the result state of the verb. Activities can also be decomposed, into a DO component and a predicate.

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[21] Notice also that all of the idiosyncrasies are found with participles derived from stative verbs, a fact which reinforces *The Stativity Constraint*.

This predicate must denote an activity rather then a state, since in contrast to coming into a state, "doing a state" makes no sense. The properties of the different verb types are summarized in (95) (see e.g. Dowty 1979, Rothstein 1999):

(95)

Eventuality type		Decomposition into basic eventualities
Atelic eventualities	States	STATE
	Activity	DO(ACTIVITY)
Telic eventualities	Achievements	BECOME(STATE)
	Accomplishments	DO(ACTIVITY) & BECOME(STATE)

Adjectives, unlike verbs, invariably denote states. Parsons (1990) suggests that adjectives are just like stative verbs, and that both have a Davidsonian state argument, which ranges over stative eventualities (unlike dynamic verbs, which have a Davidsonian event argument, ranging over dynamic eventualities). So, the representation of both stative verbs and adjectives is $\lambda s.STATE(s)$. (Another view on adjectives is defended in Rothstein 1999. See the Appendix for an implementation of adjectival present participle formation under Rothstein's analysis.)

4.2.2 The aspectual properties of adjectival participial morphemes

Since verbs can pick up different types of eventualities, while adjectives always pick up states, in order to derive an adjective from a verb, the eventuality which the verb denotes must somehow be converted into a state. I suggest that different adjectival morphemes are capable of different aspectual manipulations of the input, and this in fact dictates which verbs are selected by each morpheme.

4.2.2.1 The passive participle morpheme

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A rather well-studied example of an aspectually-motivated selection of verbs by an adjectival morpheme is the formation of adjectival passives. While a verbal passive can be formed from any type of eventuality (telic or atelic), Bresnan (1996), Doron (2000) and Kratzer (2000) suggest that in several languages, adjectival passives can be formed only from telic verbs, which have as part of their interpretation a STATE component. As stated in Bresnan: "The state denoted by the adjective appears to be the result state of the eventuality denoted by the participle" (pp. 12-13). This constraint can account for contrasts such as the one observed in (96)-(97):

(96)　　a. *maks afa　et　　ha-uga.*

　　　　　Max　baked ACC　the-cake

　　　　　'Max baked the cake.'

　　　　b. *ha-uga　　afuya.*

　　　　　the-cake　baked(Adj.)

　　　　　'The cake is baked.'

(97)　　a. *maks daxaf　et　　ha-agala.*

　　　　　Max　pushed ACC the-cart

　　　　　'Max pushed the cart.'

　　　　b. **ha-agala dxufa.*

　　　　　 the-cart　pushed(Adj.)

While *afa* 'bake' is telic, *daxaf* 'push' is an activity verb; it lacks an adjectival passive since it specifies no endpoint which can be referred to by the adjective. Adjectival passive morphology "isolates" the result state of a telic verb, making it the denotation of the adjective. If this is what the adjectival passive morpheme does, then it is clear why it cannot attach to atelic verbs: these verbs lack the aspectual properties required by the morpheme, since they are not decomposable into BECOME or DO components and a STATE component.

4.2.2.2 The present participle morpheme

Returning to the table in (95), we observe the obvious fact that stative verbs have a STATE component in their semantics as well (this is the only component they have). This makes them a-priori suitable as input for adjective formation too. However, by hypothesis, adjectival passive morphology cannot attach to these verbs, since they include no BECOME or DO components. The suitable adjectival morpheme to turn these verbs into adjectives must be one which does very little: takes a verb denoting a state and turns it into an adjective (denoting a state).

I suggest that –*ing* (or present participial morphology in Hebrew) is exactly such a "minimal" morpheme. What -*ing* does is merely mark the categorial change from verb to adjective. It does not cause, because it in fact incapable of causing, any aspectual change. The *Stativity Constraint* then follows: -*ing* can attach only to stative verbs, since these are the only verbs which denote states to begin with, and can therefore give rise to adjectives without any aspectual change. Unlike the *Experiencer Constraint* presented in 3.1 above, *the Stativity Constraint* is thus motivated, straightforwardly falling out from the properties of the relevant morpheme.

Though not attempting here a unified analysis for the various functions of –*ing* (for two such attempts see Milsark 1988 and Emonds 1991), it is worth mentioning that the impoverished semantic contribution of –*ing* in the case of adjectival present participle formation (namely, its inability to perform aspectual manipulation) is not surprising, given that -*ing* is in many respects neutral, lacking specific semantic import.[22] This neutral nature is manifested for example in the fact that it derives words of different lexical categories: verbs (verbal present

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[22] Thanks to Julia Horvath for pointing this out to me.

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participles) adjectives, and nominal elements (*-ing* nominalizations and gerunds).[23] The same is true for present participial morphology in Hebrew, which gives rise to verbs, adjectives and nouns. In view of this impoverished nature of the morpheme, the *Stativity Constraint* is very natural. The morpheme selects only stative verbs, since only in this case can it derive adjectives without aspectual manipulation.

Note, incidentally, that stems which have a double aspectual classification, both as telic and as stative, are predicted to serve as input to both adjectival passive formation and adjectival present participle formation. This prediction is borne out. As explained in 3.2.2.1, object-Experiencer verbs have both a stative and an eventive (telic) reading. And indeed, these stems systematically give rise to both passive and present adjectival participles (*The teacher seemed confused and confusing*). Verbs which do not display an aspectual ambiguity do not have these two adjectival counterparts.

4.3 Sample derivations

4.3.1 Adjectival present participles

We have seen that the formation of adjectival present participles does not induce aspectual change.[24] The process, however, may have thematic effects.

The argument structure of adjectives and their thematic properties are rather poorly-understood domains. The null hypothesis in this regard, which I adopt here, is that adjectives assign θ-roles in a manner parallel to verbs, the only difference between the two categories being the Case deficiency of adjectives, as suggested in e.g. Chomsky (1981).[25] Cinque (1990) and Bennis (2000, 2004) additionally show, that on a par with verbs, some adjectives

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[23] Milsark (1988) suggests that *–ing* affixation is involved in deriving prepositions as well, e.g. *concerning* and *regarding*.

[24] See the Appendix for a different analysis, along the lines of Rothstein (1999).

[25] Other theories deny the symmetry between adjectives and verbs; Baker (2003), for example, claims that adjectives, unlike verbs, cannot θ-mark their specifier position.

are unergative, projecting an external argument, while others are ergative (or unaccusative), projecting their subject internally. Bennis (2004) proposes a more elaborate classification, in which ergative adjectives have two varieties: one which projects a functional layer 'little-*a*', and one which does not. Abstracting away from this suggestion, the relevant distinction to the issue at hand is whether adjectival present participles in English and Hebrew are unergative or ergative, namely, whether their subject is external or internal. Without going into too much detail, the available evidence seems to show that they are unergative. For example, in Hebrew they resist the predicate-subject order (98a), which is possible with ergative adjectives (98b); and in both English and Hebrew, they cannot appear in *as*-clauses (99a), (100a), a structure which, as argued by Cinque (1990) and Bennis (2004), can serve as a diagnostics for ergativity (99b), (100b).

(98)   a. **nocecim kama yahalomim.*

        shining   some diamonds

       b. *cfuyim   kama šinuyim.*

        expected some changes

        'Some changes are expected.'

(99)   a. **kmo še-haya   me'anyen, dan tas   le-anglia.*

        as   that-was interesting Dan went to-England

       b. *kmo še-haya   barur, dan tas   le-anglia.*

        as   that-was obvious Dan went to-England

        'As was obvious, Dan went to England.'

(100)   a. *As was interesting, the operation failed.

       b. As was likely, the operation failed.

I therefore conclude that adjectival present participles, like the verbs they are derived from, project an external argument.

The derivation of the adjective *shining* from the verb *shine* is shown in (101a). I assume that verbs carry both thematic information and aspectual information (as in e.g. Grimshaw 1990, Levin & Rappaport 1995, Reinhart 2002). Hence, the lexical information of *shine* includes both the fact that it is a one-place predicate with an external Theme θ-role (see Levin & Rappaport 1995, Reinhart 2002), and that it is stative (thus having a Davidsonian state argument *s*, rather than an event argument *e*). The operation changes the lexical category of the entry to adjective. As explained in the previous section, no aspectual manipulation takes place, and the *s* argument remains unchanged. In the case of *shine*, the operation does not do anything thematically, either. The resulting adjective has one θ-role, like the verb. The interpretation of a sentence containing the resulting adjective is given in (101b).

(101)   a. shine-V (θ_{THEME}, [s])

→

shining-ADJ, (θ_{THEME}, [s])

b. The water is shining

Interpretation: $\exists s[SHINE(s)$ & Theme(s, the water)]

'There is a state of shining of which the water is the theme.'

Things are somewhat more complicated with two-place verbs, as exemplified with the verb *reveal* in (102). In these cases, when the verb turns into an adjective, the internal thematic role should be eliminated; it cannot be realized by a DP, since this argument will remain Case-less (as pointed out by Levin & Rappaport 1986 with regard to the derivation of adjectival passives). Note, however, that *the shirt is revealing* means that **there is** something which the shirt reveals, namely, the internal θ-role is interpreted as existentially bound. We can conclude that the operation marks the internal θ-role for existential closure, indicated here as →∃ (much like adjectival passive formation marks the external θ-role for existential closure,

see Horvath & Siloni 2008, and on verbal passives Chierchia 2004, Reinhart 2002).[26] In this case, the saturated argument cannot be traced using the standard tests detecting an implicit argument in e.g. passives, since these apply only to Agents (but see the discussion of *confusing* right below, where the presence of the saturated argument can be detected). The resulting adjective will have only one θ-role that needs to be assigned syntactically, the external one. The internal role is assigned to an existentially bound variable in the semantic component.

(101)   a. reveal-V (θ_{CAUSE}, θ_{THEME}, [s])[27]

→

revealing-ADJ (θ_{CAUSE}, $\theta_{THEME \rightarrow \exists}$, [s])

b. The shirt is revealing.

$\exists s[REVEAL(s)$ & $Cause(s, the\ shirt)$ & $\exists x[Theme(s, x)]]$

'There is a state of revealing of which the Cause is the shirt, and there is some x which is the Theme of this state.'

In the case of object-Experiencer verbs as in (102), again, a closure of the internal θ-role must take place, since the role cannot be otherwise realized. Note however that the interpretation of adjectival participles of object-Experiencer verbs is different from that of e.g. *revealing*, since in order to call a book *confusing*, for example, it is not enough that **there is** someone that the

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[26] Interestingly, the optional goal argument of *reveal* is also saturated, and cannot be realized, as shown in (i).

(i)   *The shirt seems [revealing to John].

Thus, saturation seems to apply here to all the internal arguments. This may suggest that the reason for saturation in adjective formation is not exclusively Case-related. I leave this issue open here (see Landau 2009 for some relevant discussion).

[27] Since we are dealing with the stative reading of *reveal*, it is unlikely that its external θ-role is Cause, a role assigned to a participant causing a change. I use this label for lack of a better one, given that we know very little about the thematic roles of stative verbs.

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book confuses. It must confuse a certain number of people to be called *confusing*.[28] What seems to be at work in deriving the interpretation of the adjective here is an existential closure introducing a special variable, x_{arb}, which ranges over *groups of humans* (the mechanism suggested in Chierchia's 1995 analysis of impersonal constructions in Italian). I mark such closure as →∃arb. Hence, only the Subject Matter θ-role of the adjective is assigned syntactically; the Experiencer role is understood as bound.

(102)   a. confuse-V ($\theta_{\text{SUBJECT MATTER}}$, $\theta_{\text{EXPERIENCER}}$, [s])

→

confusing-ADJ ($\theta_{\text{SUBJECT MATTER}}$, $\theta_{\text{EXPERIENCER}_{\rightarrow\exists arb}}$, [s])

b. The book is confusing.

∃s[CONFUSE(s) & Subject Matter(s, the book) & $\exists x_{arb}$[Experiencer(s, x_{arb})

'There is a state of confusing of which the subject matter is the book, and there is some group of humans x_{arb} who are the experiencers of this state.'

Note that in these cases, the presence of the implicit Experiencer can be traced. As shown in Epstein (1984) and Landau (2009) with regard to different types of adjectives, PRO in the clausal subject of these adjectival present participles is controlled by the understood Experiencer. Thus, for example, in (103), the readers of the book are necessarily the ones being interested. (103) cannot mean that for x to read the book is interesting to y.

(103)   [PRO reading a book] is interesting.

As a side note, the fact that Experiencer arguments undergo existential closure of x_{arb} whereas other arguments are closed existentially using a regular variable can be seen also in the case

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[28] As noted by a *Lingua* reviewer, this is somewhat simplified. Some modality needs to be introduced to the interpretation, since, for example, an instructor may comment on a student's paper saying that some argument is confusing, even if it has not confused anyone yet, but he suspects that when people read it, they will be confused by it. For lack of space, I do not discuss this issue further.

of adjectival passive formation. The stem *build*, with an Agent external θ-role which undergoes closure, gives rise to the adjectival passive *built*, and 'The wall is built' simply entails that there is someone who built the wall. In contrast, the stem *admire*, with an Experiencer external θ-role undergoing closure, gives rise to the adjectival passive *admired*, which cannot be predicated of something which only one person admires. Rather, a fair amount of people have to admire something for it to be referred to as *admired*.

In conclusion, adjectival present participle formation induces category-change from verb to adjective. The nature of the present participle morpheme dictates that the operation applies only to stative verbs, and hence no aspectual modification takes place. However, since adjectives do not check structural Case, a thematic manipulation is required when the input is transitive, in order to suppress one of the roles, making it unavailable for syntactic realization. The nature of the closure imposed on this role is dependent on the nature of the role – whether it is a Theme or an Experiencer.

4.3.2 Verbal present participles

As shown in section 4.1 above, the properties of verbal present participles suggest that they are a result of syntactic derivation. I assume here that the bound morpheme *–ing* is inserted under a functional head (PartV) taking the VP headed by the lexical verb as its complement (104). As noted by Kratzer (2000), the participial morphology is meaningless, and its only function is to license the absence of verbal inflection. With regard to Hebrew, adopting the assumption that verbal templates are realizations of functional heads (as in e.g. Doron 2003, Arad 2005), it is the participial template which appears under PartV.

(104)   [Enter figure 1 here]

5. The prenominal position

5.1 The category of prenominal dynamic participial phrases

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As was shown in section 2.2.8, present participles of intransitive verbs can appear prenominally in English, and post-nominally in Hebrew, even if the verbs are dynamic, as exemplified in (105).

(105)   a. The [XP jumping] boy is my cousin.

b. *yeladim* [XP *boxim*] *me'acbenim oti.*

children   crying   annoy   me

'Crying children annoy me.'

If the prenominal position is exclusively adjectival, then my analysis does not predict this fact, since dynamic verbs are not predicted to give rise to adjectival present participles (and recall that they do not pass any other adjective diagnostics). I therefore conjecture that the prenominal position must be able to host categories other than AP (see Laskova 2007). Emonds (1985) suggests that XP in (105) is a bare VP. As noted by Siloni (1995), however, such an analysis presents a problem to the Projection Principle, since according to it the participial verb *jumping* does not assign in (105) an external θ-role, which it does assign in other structures. Emonds (1991) revises his analysis, claiming that *jumping* in (105) is a verb projecting an adjective phrase, so that XP=AP. Such an analysis introduces an obvious complication to the familiar merging procedures (e.g. as in Chomsky 1995), in which the label of a phrase must be determined based on the label of its head (under the x-bar theory, it presents a problem for the generalization that phrases are projections of the categorial features of their head), and runs the risk of over-generation.

I suggest that in (105), XP is a clausal constituent, namely, a reduced, participial relative clause, adopting the analysis of reduced relatives proposed in Siloni (1995).[29] Siloni analyses

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[29] A *Lingua* reviewer notes, that this begs the question of what is common to adjectives and reduced relatives, as opposed to nouns, which allows them to appear prenominally. It is possible, as suggested by the reviewer, that agreement plays a role here, and pre-modification is licensed only for categories which agree with the head noun

present participial clauses in Hebrew and French, arguing that the participle is a verbal form, uninflected for tense. Furthermore, it is argued that the subject position of the clause must be syntactically realized, and suggested that it is realized by a phonologically null relative operator which then moves to a higher SPEC. With regard to the specific projections involved in the structure, abstracting away from irrelevant details, Siloni argues that the head of the clause is a Comp-like D(eterminer), rather than a standard C(omplementizer). The choice between the two is determined by the presence or absence of tense. In reduced relatives the clause is tenseless (no TP is projected), and thus D serves as the complementizer. The structure is given in (106).[30]

(106) a. *iš* DP[OP *ha [t kore   iton   ba-rexov]]* *hu meragel.*

       man   *ha*   reading newspaper in+the-street is spy

      'A man reading a newspaper in the street is a spy.'

    b. Un homme DP[OP [t lisant   un journal   dans la   rue]] est un espion.

      a   man   reading a newspaper in   the street is a   spy

      'A man reading a newspaper in the street is a spy.'

I suggest that the same reduced participial clausal structure can be present in the prenominal position in English, as in (107).

(107)   The DP[OP [t jumping]] boy is my cousin.

Note, that I am not suggesting, as was believed in the early days of generative grammar, that prenominal adjectives have a reduced relative clause origin. Adjectives, whether non-participial (*white, sleepy*) or participial *(interesting, flourishing)* appear prenominally as APs,

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(this is overtly exhibited in West-Germanic, for example). A different explanation is provided in Baker (2003), who proposes that nouns cannot act as attributes since they bear a referential index which must be identified, but such identification is impossible in the noun-modifier position.

[30] Siloni further argues that D in this occurrence has the feature [+mod], which determines that it heads a modifier, rather than a referential argument.

without further clausal projections (though see Cinque forthcoming for a revival of the reduced relative analysis for certain attributive adjectives).

It is worth mentioning that the reduced relative origin analysis of attributive adjectives was rejected (by Bolinger 1967 and others) because, among other things, it was noted that there are adjectives which can appear attributively, but not predicatively (*the former president* vs. **the president who is former*), and therefore, a predicative source for the attributive function, at least for these adjectives, cannot be maintained. However, all the dynamic participles to which I attribute a reduced relative analysis are perfectly grammatical in predicative positions, e.g. in copular constructions, in small clauses and as secondary predicates (*He arrived crying*), so this problem does not arise here.

If dynamic prenominal present participles are reduced relative clauses, not adjectives, we automatically have an account for the fact that these elements do not appear in any adjectival context, as detailed in 2.2.1-2.2.6 above. It is now also clear why only intransitive dynamic participles appear prenominally. Transitive dynamic participles, as in (108), are necessarily verbal, and thus have an obligatory internal θ-role, which remains unassigned (the same explanation is applicable for the facts of 2.2.7 above).[31]

(108)   **the locking boy*

5.1.1 Additional evidence for the clausal nature of prenominal dynamic participles

The assumption that the prenominal position can host verbal-clausal projections as well as adjectival ones can also account for certain ambiguities which received little attention in the

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[31] Of course, (i), where a complement does appear, is also ungrammatical:

(i)   The [locking the door] boy

This, however, is due to the adjacency requirement, as explained in 5.1.2 below. If adjacency is not violated, as in (ii), the phrase's grammaticality is improved. For lack of space, I do discuss structures such as (ii) further.

(ii)   The door-locking boy

literature (see Laskova 2007). In order to present these ambiguities, I will digress and discuss passive participles. The reasons for this will become clear below.

As mentioned in the introduction, it is well known (at least since Wasow 1977) that many passive participles are ambiguous between a verbal and an adjectival reading, as exemplified in (109):

(109)   The house was evacuated.

   Reading 1: The house was in the state of being evacuated, empty, unpopulated.

   Reading 2: Someone evacuated the house (which perhaps was re-populated since).

It is less acknowledged (but see Laskova 2007) that DPs such as (110) are likewise ambiguous:

(110)   the evacuated house

   Reading 1: the house which is in the state of being evacuated, the empty house, the unpopulated house

   Reading 2: the house which has been evacuated (even if it has since been re-populated, and is no longer empty)

The first reading of (110) corresponds to the adjectival, state reading of (109), while the second one corresponds to the verbal, event reading. It is possible that for some reason (possibly pragmatic), the first reading is more salient. However, the second, verbal-clausal reading is also available. As shown by Laskova (2007), this can be seen clearly in examples such as (111a). The prenominal passive participle in this case cannot be adjectival (as can be seen in (111b)), since it is based on an atelic verb (see discussion in section 4.2.2.1 above). However, it can appear prenominally, and is interpreted as referring to an event, rather than to a state:

(111)   a. The carts adjacent to the pushed cart were all empty.

   b. *The cart seems pushed.

If the prenominal position is taken to be exclusively adjectival, it is hard to explain why (111a) as opposed to (111b) is grammatical, as well as how the two readings of (110) arise. On the other hand, if we accept that reduced relative clauses can appear prenominally, then (111a) presents no problem, and given that in (110) the participle is ambiguous between an uninflected verb and an adjective, we straightforwardly predict the ambiguity of the DP. The reason why it is hard to show the same ambiguity with present participles is that the adjectival reading and the verbal reading of the participle will always be very similar. This is because by hypothesis, the participles which have an adjectival reading correspond to stative verbs, and so their verbal reading is stative, just like their adjectival reading. For example, according to my analysis, the participle in *the flourishing town* is ambiguous. However, the two readings are very tough to tease apart.

5.1.2 Evidence that reduced relatives are generated prenominally

In English, full relative clauses appear post-nominally. Nonetheless, I have suggested here that in this language reduced relatives can precede the head they modify. I would like to suggest further that in fact, the prenominal position is the base position for reduced relatives in English (see also Cinque forthcoming, who claims, on different grounds, that reduced relative clauses are merged prenominally cross-linguistically). Support for this idea comes from the paradigm in (112)-(113). Under the assumption that reduced relatives are merged post-nominally in English, namely, that the structures in (112) are the basic ones, there is no natural explanation for the ungrammaticality of (112a). Possibly, an ad-hoc rule should be postulated which filters out one-word reduced relatives, or moves them to the left of the head they modify. Such a rule is not needed anywhere else in the grammar. If, on the other hand, we assume that the structures in (113) are basic, the grammatical status of all four sentences falls out naturally.

(112)   a. ??The boy [jumping] is my cousin.

b. The boy [jumping in the yard] is my cousin.

(113)   a. The [jumping] boy is my cousin.

b. *The [jumping in the yard] boy is my cousin.

(113a) is base-generated as is, and is grammatical. (113b), in contrast, violates a very well-known constraint on left-adjoined modifiers, namely, the adjacency requirement between a modified head and the head of the phrase modifying it (Williams 1982, among many others), and is therefore ungrammatical. (112b) is a result of applying extraposition to (113b), and is therefore predicted to be grammatical. Extraposition needs to be assumed in the theory anyway, as a mechanism that "salvages" structures violating the head-adjacency requirement (114).

(114)   a. *a [proud of his son] father

b. a father [proud of his son].

In (112a), on the other hand, unnecessary extraposition took place, since the original structure, (113a), did not violate any principle. The fact that the sentence is not completely ruled out, but still strongly dispreferred, can perhaps be attributed to the fact that extraposition per se is a legitimate operation, but that due to economy considerations speakers will avoid it when it is unnecessary.

I therefore conclude that prenominal dynamic participles in English are clausal constituents base-generated to the left of the noun they modify.

5.2 The reduced relative analysis of dynamic participles in Hebrew

I propose that Hebrew post-nominal dynamic participles, like English prenominal ones, are verbal forms projecting a reduced clausal structure, as exemplified in (115).

(115)   *yeladim* $_{DP}$[OP [t *boxim*]] *me'acbenim oti.*

children   crying   annoy   me

'Crying children annoy me.'

Such an analysis poses one immediate problem. Participial relatives in Hebrew are usually

analyzed (see Siloni 1995) as obligatorily manifesting an overt determiner-complementizer,

ha- in D°, as in (106a) above. If *ha-* is taken to be a necessary element in reduced relatives in

Hebrew, then the fact that there is no complementizer in (115) is at first sight puzzling.

However, when observed closely, it seems that the phonetic realization of the determiner-

complementizer *ha-* is not necessary in Hebrew reduced relatives; its realization seems to be

related to phonological, rather then syntactic, factors. Specifically, as the reduced relative

clause gets phonologically "heavier", *ha-* becomes obligatory, as seen in (116).

(116) a. *yeladim *(ha-)boxim be-kol   ram mad'igim et   ha-rofe.*

        children   *ha* crying   in+voice loud worry   ACC the-doctor

        'Children crying loudly worry the doctor.'

In fact, it is possible that this "heaviness" effect affects not only participial clauses, but also

APs. Siloni (1995) suggests that a complementizer-like element (*ha-* or its phonetically null

equivalent) introduces not only reduced relatives, but also adjectival phrases. In the case of

APs, unlike in the case of reduced relatives above, *ha-* never needs to surface, no matter how

long the AP is (117a). But, *ha-* can surface with long APs (117b). Admittedly, (117b) is not

extremely natural, partly because *ha-* is hardly used in spoken Hebrew. However, it is

undoubtedly much better than the completely ungrammatical (117c), with a short AP.

(117) a. *mixnasayim kcarim be-šloša sentimetrim hayu nir'im yoter tov.*

        pants   short   in-three centimeters were looking more good

        'Pants three centimeters shorter would have looked better.'

   b. *?mixnasayim ha-kcarim be-šloša sentimetrim hayu nir'im yoter tov.*

        pants   *ha*-short   in-three centimeters were looking more good

   c. **mixnasayim ha-kcarim hayu nir'im yoter tov.*

        pants   *ha*-short   were looking more good

While the syntactic and phonological conditions under which *ha-* occurs in Hebrew clearly demand further study, it seems that this element cannot be taken simply as a marker of reduced relative clauses. Under my analysis, such clauses, when short, can appear without the complementizer.

An additional piece of evidence that post-nominal dynamic participles form clausal constituents rather than APs comes from negation. In Hebrew, post-nominal adjectives can be negated, as in (118a). In contrast, as pointed out in Siloni (1995), negation is impossible in Hebrew reduced relatives, as seen in (118b).

(118)   a. *baxurot lo razot lo yexolot lihiot dugmaniot.*

        girls   not thin not can   be   models

        'Girls who are not thin cannot be models.'

      b. **'iš   ha-lo kore   iton   ba-rexov…*

       man that-not reading paper in+the-street

As can be seen in (119), post-nominal participles of dynamic verbs do not allow negation. In that, they behave just as expected if they are reduced relative clauses. If these participles were adjectives, we would predict that they could be negated.

(119)   **yeladim lo boxim mad'igim et   ha-rofe.*

       children not crying worry   ACC the-doctor

To conclude, in this section I claimed that the prenominal (or post-nominal) position can host both APs and reduced relatives. Although superficially looking the same, participles of dynamic verbs are exclusively verbal, and can appear prenominally only inside a reduced relative clause. Participles of stative verbs, on the other hand, have both a verbal and an adjectival reading. On their verbal reading, they appear prenominally as reduced relatives, whereas on their adjectival one, they form prenominal APs.

6. Stative verbs with no adjectival present participle alternates

As mentioned in section 3.2.1, the *Stativity Constraint* provides a necessary, but not sufficient, condition on verbs for having an adjectival present participle counterpart. There are numerous stative verbs which do not have corresponding adjectival participles. This section deals with these exceptions.

Some of the stative verbs not giving rise to adjectival present participles, e.g. those in (120), fall within the classes of stative verbs described in 3.1 above (e.g. object-Experiencer or "manner" verbs).[32] *Bothering*, for example, does not exist as an adjective (**This boy seems bothering*), although *bother* is an object-Experiencer verb.

(120)   bother, suit, inform…

It may be that the reason for the non-existence of adjectival present participle alternates for these verbs is "blocking", as in Aronoff (1976). Note that for all these verbs, there is a different adjective with a similar meaning, namely *bothersome, suitable* and *informative*. The existence of these items in the lexicon may "block" the formation of the adjectival present participles *bothering, suiting, informing*. The existence of these exceptions is thus accommodated under a lexical account of adjectival present participle formation, lending further support to adopting a lexical derivation for these adjectives.

Another noticeable class of stative verbs lacking an adjectival present participle counterpart is the class of relational verbs, containing both verbs of possession and part-whole relations (121a) and verbs of abstract relationship, that are not perceived as affecting the object (121b).

(121)   a. own, have, possess, contain, consist of, involve,

      b. cost, weigh, equal, measure, resemble, mean, seem, sound, reflect, underlie

In addition, verbs of spatial configuration (122) lack adjectival present participle alternates, as do perception verbs and certain subject-Experiencer verbs (123).

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[32] Thanks to a *Lingua* reviewer for pointing out these cases, as well as the possible account for the lack of adjectival counterparts here.

(122)   stand, sit, lie

(123)   hear, see, taste, smell, feel, hate, like, detest, want..

What distinguishes the stative verbs in (121-123) from the stative verbs mentioned throughout the paper? Two divisions in the class of stative verbs come to mind as possible answers: that between stage- and individual-level predicates, and that between Davidsonian and Kimian states. However, neither one is satisfying. Let us see why.

The distinction between stage-level and individual-level predicates was introduced by Carlson (1980). Whereas individual-level predicates denote inherent properties of an individual, such as *tall* and *intelligent*, stage-level ones denote transitory states, such as *hungry* or *available*. It is easy to observe that most stative verbs, both those which give rise to adjectival present participles and those which do not, belong to the class of individual-level predicates (Rothmayr 2009). Only a few stative verbs, such as the spatial configuration ones as in (122), are stage-level (see Dowty 1979). Thus, the split between stage- and individual-level does not reflect the split between verbs which do or do not give rise to adjectives.

Maienborn (2004) argues for an additional, different split within the class of stative verbs, between Davidsonian-statives and Kimian-statives. Davidsonian statives have a Davidsonian state argument in their representation, and although they do not denote an observable action, they refer to an event. This event can be modified by manner and location adverbials, which are therefore licensed by Davidsonian-statives. Examples are given in (124).

(124)   a. Carol sat motionless / at the table.

         b. The candle shone brightly / in the dark room.

In contrast, Kimian-statives have an ontologically different argument, the so-called Kimian state argument, denoting a property. Since the representation of these predicates does not involve an event variable, manner or locative adverbs, which modify the event, are illicit with them. This is shown in (125).

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(125)   a. *John (generously) owns a lot of money in his house.

b. *The grinning (inappropriately) annoyed Irmy under a tree.

(Adapted from Rothmayr 2009)

(124)-(125) suffice in order to conclude that the Davidsonina / Kimian split, like the Stage- / Individual-level split, cannot capture the desired division of stative verbs, since adjectival present participles are derived from both Davidsonian statives (*shine*) and Kimian statives (*annoy*), though some Davidsonian (*sit*) as well as Kimian (*own*) statives do not give rise to the relevant adjectives.

I believe that there is no uniform reason for which the verbs in (121)-(123) lack adjectival present participles: the reason may be different for different verb types. Consider first the verbs in (121), in light of the derivation of adjectival present participles in 4.3.1 above, which, I suggested, includes existential closure of the internal θ-role. The verbs in (121) are hardly meaningful or informative when their internal role is existentially bound.[33] Thus *owning* as an adjective would mean "who owns something", but this is true about (almost) everyone. The same can be said about *resemble*, *consist*, *mean, equal, weigh* and the other verbs in (121), given that everything resembles something, consists of something, means something, and so on. What seems to be at work here is a grammaticalization of the pragmatic constraint that utterances have to be informative (see Goldberg & Ackerman's 2001 discussion of *?headed boy*, p. 811).[34] Since the output of adjective formation for these stems is uninformative, the operation is blocked.

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[33] Thanks to Mark Baker for suggesting this account.

[34] A *Lingua* reviewer notes, that though (ia) is informative (meaning *they seem to resemble each other*), it is still ungrammatical. I do not have an explanation for this at this stage. Note, interestingly, that the same is true for the parallel Hebrew present participle *mazkir* 'resemble' (ib), but not for the present participle *dome* 'similar', which does exist as an adjective (ic).

(i)   a. *They seem resembling.

With regard to the verbs of spatial configuration in (122), as was already pointed out above, they are the only stative verbs which are stage-level. This special property of these verbs may prevent them from giving rise to adjectival present participles, for some yet unknown reason. We are thus left with the verbs in (123). As already mentioned, since under the current analysis adjectival present participle formation is lexical, it is in principle possible that these verbs are simply listed as idiosyncratic exceptions. However, as noted by a *Lingua* reviewer, this seems improbable, since the Hebrew parallels of the verbs in (123) do not give rise to adjectival present participles as well. At the moment, I can think of no reason for why these verbs reject adjective formation, and further research is required here.

7. Conclusion

This paper aimed to clarify the categorial status of present participles. It was suggested that while all participles have a verbal reading, only a subset of them have an additional, adjectival reading. It was shown that the set of verbs giving rise to adjectival present participles can be constrained aspectually. Although *the Stativity Constraint* has several exceptions, it is nonetheless a step forward in comparison with previous attempts to delineate the class of verbs giving rise to adjectival present participles, as it predicts more of the data, while also suggesting an explanation for it: since the adjectival present participle morpheme *–ing* cannot perform any aspectual manipulation, it can only attach to verbs which are stative to begin with.

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   b. **hem nir'im mazkirim.*

     they seem resembling

  c. *hem nir'im domim.*

    they seem similar

   'They seem similar.'

The paper brought to light many aspects in which adjectival present participles and adjectival passive participles are parallel. The two types of adjectives exhibit the same kinds of idiosyncracies pointing to a lexical, rather than syntactic, derivation. Both are derived from verbs which include a STATE component in their semantics, the difference between the two emerging from the fact that the adjectival present participle morpheme is incapable of "removing" additional (BECOME and DO) components, a fact resulting in the *Stativity Constraint*. Additionally, the formation of both types of adjectives includes, when needed, saturation of one of the input verb's θ-roles, to create an intransitive entry. The difference between the two here is that this closure is performed upon the internal argument in the case of present participles, whereas in passive participles it is the external argument which is saturated. Interestingly, this last property follows from the aspectual properties of the verbs giving rise to adjectival passives: since the result state of atelic verbs is in most cases predicated of the internal argument of the verb, it is this argument which will serve as the argument of the related adjectival passive. Hence, saturation must affect the external argument.

The notion of a "mixed" or "neutralized" category was shown in the paper to be not only unnecessary, but practically inapplicable in the case of present participles. Besides the fact that not all present participles exhibit both readings (rather only stative ones do), it was argued that adjectival present participles are listed in the lexicon, whereas verbal ones are not stored at all but rather derived syntactically. Hence it cannot be claimed that there exists one present participle entry, neutralized with regard to category, which displays a "mixed" behavior. For example, such an analysis has no way of explaining why only the adjectival reading of the participle, and never the verbal one, can exhibit drifted meanings.

Several intriguing problems remain, notably, why certain stative verbs do not give rise to adjectival present participles. In addition to the suggestions made in section 6, it is possible

that a thematic constraint is at play here (much like the constraint that unergative verbs, whether telic or not, do not give rise to adjectival passives in the languages discussed here). However, our understanding of the thematic properties of stative verbs is in general very poor, and a deeper examination of this issue is much needed. Such a study of stative verbs can also lead to a better understanding of the thematic properties of adjectives (also denoting states), and consequently to a more comprehensive picture of the different types of verb-based adjectives available cross-linguistically, their properties and their formation.

Appendix – The derivation of adjectival present participles under Rothstein's (1999) aspectual analysis of stative verbs

Section 4.2 presented an analysis for the derivation of adjectival present participles from stative verbs, under Parson's (1990) assumption, that stative verbs and adjectives should be analyzed the same, both having a Davidsonian state argument.

Rothstein (1999), however, claims that stative verbs and adjectives are not identical in their aspectual nature. Rothstein presents several respects in which stative verbs behave like non-homogenous, count entities, while adjectives behave like homogenous, mass entities. She thus concludes that while stative verbs have an *e(vent)* argument ranging over count-like stative eventualities (and should be represented as λe.STATE(e)), adjectives, at least in English, have a *s(tate)* argument ranging over non-atomic, mass-like states, which she labels *M-states* (and will be represented as λs.STATE(s)).

In section 4.2 I have suggested that the adjectival present participle morpheme *–ing* is incapable of any aspectual manipulation, and is thus the simplest, most impoverished adjectival morpheme. This conclusion is not changed under Rothstein's analysis. Given this analysis, any process of adjective formation from verbs has to take count entities and turn them into mass entities, and must therefore involve the 'grinding function' of Lewis (cited in

Rothstein 1999) – a function which maps count entities into mass entities composed of the same stuff. The operation of this function in the nominal domain can be seen in sentences such as (1):

(1)   After he had been working for an hour, there was bicycle all over the garage floor.

        (Rothstein 1999)

Given this, the adjectival passive morpheme, for example, would not only isolate the STATE component of the verb's meaning from the other components, but would also "grind" this count state to give rise to a mass (M-)state. The present participle morpheme *-ing* is still the simplest adjectival morpheme, since it performs *only* the grinding function, not any other aspectual manipulation. In other words, it cannot change the meaning of the predicate, but only what Rothstein refers to as the "perspective" on it (whether it is a count entity or a mass entity). It selects only stative verbs, because they are the only verbs which can become adjectives simply by grinding, without additional change.

The existence of a grinding operation from count- to mass-states is predicted according to Rothstein's analysis. Since such an operation exists in the nominal domain (as in (1)), Rothstein notes that one should expect to find it in the domain of events as well, but hesitates with regard to where it applies. The analysis presented above of *–ing* attributes to it exactly this function, suggesting that it is the missing element in Rothstein's analysis.

In the sample derivations given in section 4.3.1 above, the input verb was marked as having a Davidsonian state argument, *s*, just like the derived adjective. Under Rothstein's analysis, the Davidsonian argument of the input verb will be an event argument *e*, as in (2). The application of the grinding operation will result in this argument becoming a state argument.

(2)   a. shine-V (θ_{THEME}, [e])

        →

        shining-ADJ, (θ_{THEME}, [s])

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Acknowledgments

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