Present participles: Categorial classification and derivation

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Abstract

The paper focuses on the categorial status of present participles in English and Hebrew, and on their derivation. Using a large number of diagnostics, I show that while all present participles are verbal, only a subset of them are ambiguous, and have an adjectival reading in addition. I further claim that this subset is constrained aspectually: only stative verbs have adjectival present participle correlates. Having established a categorial split between two types of present participles, I suggest that the former are derived in the lexicon, and the latter – in the syntax, and outline the lexical operation deriving adjectival present participles from verbs. Finally, I discuss the prenominal position in English, showing that it must be analyzed as being able to host reduced relative clauses, and not only APs. The analysis offered in the paper reveals substantial parallelisms between present and passive participles.

1. Introduction

Participles cross-linguistically exhibit properties of both verbs and adjectives, a fact reflected in the term "verbal adjectives" by which traditional grammars often refer to them. In the same spirit, generative studies sometimes analyzed participles as a "neutralized" category (Chomsky 1981, Blevins 2005), lexically underspecified with regard to the categorial features.

This view, however, was 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). The

participle therefore has two distinct readings, one verbal and one adjectival, and not one "mixed" reading. 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 2009).

Present participles have been the focus of less research. While it is commonly agreed that they have a verbal use, it is still argued which present participles can be adjectival in addition. Some researchers (for example Borer 1990, Bresnan 1996, Parsons 1990 and 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 definition of the class of stems giving rise to adjectival present participles, namely, that only stative verbs can form such adjectives. This constraint turns out to derive from the properties of the present participle morpheme. In addition, I outline the operation that derives adjectival present participles, arguing that it takes place 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, while others are only verbal. The claim to be presented, that the class of stems 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 (2009) with regard to the derivation of adjectival versus verbal passive participles. The 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 are simply ambiguous between two discrete categories – verbs and adjectives. It will be shown that verbal present participles are not listed in the lexicon, whereas adjectival ones do, a fact which undermines an analysis in which the participle corresponds to only one, "mixed" lexical entry.

Lastly, the paper presents evidence that the lexicon should be viewed as an active, operative component of the grammar, where word formation can occur (Siloni 2002, Reinhart 2002, Williams 2007, Horvath & Siloni 2009, 2010), 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. This 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 can be defined based on aspectual properties, namely, that only stative stems have adjectival present participles 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, offering in addition an overview of the possible inputs for adjective formation in general. Section 5 contains a discussion of the prenominal position, whose status is reconsidered in light of the conclusions reached in the previous sections.

2. Determining the category of present participles based on their distribution

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, intuitions based on interpretation can be misleading, since verbs can denote permanent properties (as in *god exists*), and stage-level adjectives denote transitory eventualities (as in *John is hungry*). Thus, in order to determine the categorial status of present participles one should examine their syntactic behavior and distribution, rather than their semantics.

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 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. (3) contains a non-tensed small clause, rather than a tensed sentential complement, the participle receiving its temporal interpretation from the main verb, so that Dina's writing is perceived as taking place before the speech time (in the past), in accordance with the past tense of *ra'a* 'saw'.

(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 examine 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.[1]

Importantly, the generalization in (4) does not mean that the same forms cannot have an additional reading. In fact, in 2.2 it will be shown that many, though not all, present participles behave also like adjectives, namely, are ambiguous.

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.[2]

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

[2] There are sentence where present participles of transitive verbs are ungrammatical with a complement:

i.   The man is annoying (??the children).

This however is not due to the failure of accusative Case checking, but rather due to the constraint that neither verbs denoting states nor those denoting achievements can appear in the progressive (see Parsons 1990). That *annoying* can in fact license a complement can be seen in example (1) in the text.

(5)   a. *ha-yeladot ra'u et   dina **merama oto**.

          the-girls   saw ACC Dina cheating him

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

(6)   a. *dina rama'it   oto.*

          Dina cheater him

        b. Dina is supportive *(of) him.

Present participles of intransitive stems 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 (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). I could not find an example of a present participle which could not be modified in this manner. 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 adjectival. 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

Former studies have used various adjectivalhood 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. Borer (1990), Bresnan (1996), and Parsons (1990), taking the prenominal modification facts to be presented in 2.2.1 below to be crucial, concluded that all present participles are adjectival. On the other hand, Brekke (1988) and Emonds (1991) seem to attribute much importance to –*ly* suffixation and the degree modifiers data to be presented in 2.2.3 and 2.2.6, therefore concluding that not all present participles have an adjectival reading. In fact, as will be shown presently, 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 The prenominal position

Wasow (1977) mentions the premonimal position in English as a position allowing only adjectives, and not verbs (11):

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

      b. *a drinks / drank boy

The ability to appear prenominally was often used since 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 be hosted in the post-nominal position (12):

(12)   a. *yeled   yafe   / xaxam*

          boy beautiful / smart

          'a beautiful / smart boy'

b. *yeled šata

   boy drank

Turning now to present participles, a great number of them can appear in the prenominal position in English (13), and in the post-nominal position in Hebrew (14):

(13)   a. the interesting / amusing boy, the disgusting / annoying movie, the flourishing town, the glimmering diamond, the fitting remark, the understanding friend

        b. the jumping / crying / growing / eating / writing boy

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

           boy interesting / funny movie annoying   town flourishing diamond glimmering

        b. *yeled kofec   / boxe   / oxel*

           boy   jumping / crying / eating

In fact, all present participles of intransitive verbs, as well as many participles of transitive ones, can appear in the prenominal / post-nominal position. Thus, if these positions are indeed exclusively adjectival, the facts of (13)-(14) 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. First, there is a considerable group of present participles of transitive verbs which cannot appear prenominally, as exemplified in (15a). Note, that transitivity is not to blame for the ungrammaticality here, since participles of other transitive verbs do occupy this position (15b). I return to these facts in 2.2.8.

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

        b. The interesting / annoying boy

Second, as will become clear, many participles which can appear prenominally do not pass other diagnostics for adjectivalhood.

In what follows I present various pieces of evidence showing that not all present participles (not even all those who pass the prenominal position diagnostics) are adjectival. In 2.2.2-2.2.4 I present contexts in which all adjectives and only adjectives can appear. In 2.2.5-2.2.6 I discuss contexts that allow only adjectives, but not all adjectives, namely, contexts in which adjectivalhood is a necessary condition, but not a sufficient one. In 2.2.7 I present direct evidence that certain present participles do not have an adjectival reading. In 2.2.8 I present an additional set of facts showing a split between two classes of present participles, which can be accounted for by the fact that some present participles are adjectival while others are only verbal. It will become apparent that the same present participles consistently pass all these diagnostics, or fail all of them. As mentioned above, the only test in which the behavior of the participles is different is the prenominal position test.

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

Wasow (1977), Levin & Rappaport (1995) and others mention the fact that certain verbs, such as *seem*, *become, look* and others, take as their complements only APs, not VPs[3] (16).

(16)   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* (17), whereas others cannot (18):

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

        b. The town became flourishing.

        c. Your remark seems fitting.

        d. Your friend has become understanding.

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[3] 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.

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

(18)   *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 meanings of 'seems/seemed' and that of '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 (19a); when followed by a verb phrase, they only have the second, perceptual meaning (19b):

(19)   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 (20), while others are interpreted with 'was seen' / 'is/was heard', as expected if the participles are verbs (21)[4]. The split between the different participles is just like the one observed in English.

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

        the-movie seems sounds   interesting amazing amusing

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

(21)   *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.'

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[4] For some speakers, *nir'a / nišma* cannot be followed by a VP at all. In this case the test is clearer: for such speakers (20) will be grammatical, while (21) will be ungrammatical.

2.2.3 –*ly* suffixation

The English suffix –*ly* is a very productive suffix which attaches only to adjectives, and turns them into adverbs (22):

(22)   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 (23), while others disallow it (24):

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

(24)   *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 (25), while others cannot (26):

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

in-manner interesting surprising exciting   understanding lasting

'interestingly / surprisingly / excitingly / understandingly / lastingly'

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

in-manner crying / jumping / walking / writing

2.2.4 Following the future copula

An additional adjectival test exists in Hebrew. As claimed in Doron (2000), in Hebrew, only adjectives can follow the future copula, as seen in (27):

(27)   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 (28) and others not (29), lending further support to the claim that only certain present participles are adjectival.

(28)   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-xulca tihiye   mat'ima.*

the-shirt will+be fitting

'The shirt will be fitting.'

d. *ha-xaver šelxa   yihiye   mitxašev.*

the-friend yours will+be understanding

'Your friend will be understanding.'

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

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

2.2.5 *un-* prefixation

As was noted by Wasow (1977), *un-* can be prefixed to both verbs and adjectives, but with different results: when prefixed to verbs, the resulting form expresses the reversal of the action denoted by the original verb (*dress – undress, lock – unlock*). When prefixed to

adjectives, the resulting form expresses the opposite property or state from that denoted by the original adjective (*happy – unhappy, intelligent – unintelligent*). Prefixation of this second *un-* can therefore distinguish adjectives from verbs. Adjectivalhood is not a sufficient condition in this case, since *un-* does not attach to all adjectives (**unsmart, *unrude*). Still, it attaches only to adjectives. (30)-(31) show that present participles exhibit here as well the same split observed above:

(30)   uninteresting, unsurprising, unexciting, unpleasing, unfitting, uncompromising, unforgiving, unassuming, unreasoning, unrevealing

(31)   *uncrying, *ungrowing, *unjumping, *unwalking, *unwriting, *unchewing, *undrawing, *unstanding, *unfinding.

Notice, that it is impossible to claim that in (30) *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 (32), and not to others (33).

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

        unbinding   undamaging unfitting

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

        undrawing,   unjumping, uncrying

2.2.6 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 or incompatibility with degree modifiers such as *very, rather, so* etc. The same pattern observed above repeats itself in this case (for simplicity of presentation, I focus in the discussion on

very only): some present participles are compatible with the modifier (34) and others are not (35).

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

　　　b. Florence is very flourishing.

　　　c. Your mother is very understanding.

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

Borer (1990) questions the validity of this test as a criterion for adjectivalhood. 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 (34) above are grammatical in correspondence to those in (36), and the ungrammaticality of the sentences in (35) above corresponds to that of (37):

(36)　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.

(37)　*Max jumps / cries / sleeps very much.

While this correlation between *very* and *very much* clearly holds, it is nonetheless true that *very* can serve as a test for adjectivalhood, 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 (38).

(38)　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, adjectivalhood is only a necessary condition for modification by *very*, not a sufficient one, as is evident from (39). This is

possibly what underlies Borer's claim that modification by *very* is not a valid diagnostics for adjectivalhood.

(39) a. *Romeo is very dead.

   b. *This car is very black.

In view of all this, participles that can be modified by *very* (such as those in (34) above) can safely be classified as adjectives; Borer (1990) is right in claiming that participles that cannot be modified by *very*, as in (35), cannot be automatically classified as verbs. There may be another reason for the failure of modification by *very*, as in (39).

Again Hebrew presents a similar test. The modifier *kaze* 'so' can, in most registers, attach only to adjectives, and not to verbs, as in (40):

(40) 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* (41), while the rest do not (42), again suggesting that the former are adjectives.

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

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

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

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

   Max so jumping / crying / growing

2.2.7 Coordination with verb 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 (43)-(44):

(43)   a. *a crying and beautiful girl

         b. *yalda boxa   ve-yafa

             girl   crying and-beautiful

(44)   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.[5] Therefore, if two elements cannot be coordinated, it is safe to 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:

(45)   a. an interesting and beautiful girl

         b. *yalda me'anyenet ve-yafa*

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[5] There could be other conditions on coordination. For example, one might suspect that what is responsible for the ungrammaticality of (43)-(44) 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), so this cannot be the reason for the ungrammaticality.

(i)   a. an interesting and available position

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

girl   interesting and-beautiful

'an interesting and beautiful girl'

(46)   a. a big and flourishing town

  b. *'ir gdola ve-mesagseget*

    town big and-flourishing

    'a big and flourishing town'

(47)   a. clever and understanding man

(45)-(47) do not prove that *interesting, flourishing* and *understanding* are adjecitves 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.

2.2.8 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 (48)-(49). These sentences are

ungrammatical since they contain verbs with an obligatory internal θ-role, which is not

realized by an argument:

(48)   a. *The boy interested / amazed / understood.

  b. *The boy folded / locked / tamed.

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

     the-boy interested / surprised / amazed / understood.

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

     the-boy folded / found / locked / tamed.

Consider, however, sentences containing the present participles of these verbs. Some such

sentences are completely grammatical without complementation (50), while others are not

(51).

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(50) a. The boy is interesting / surprising / amazing / understanding.

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

(51) 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, even when they are related to verbs which do have such complements. In section 4.3 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, however, are verbal, and as such have the original thematic grid of the verb. These sentences are ungrammatical for precisely the same reason as in (48)-(49), namely, the verbs in them have an unassigned obligatory θ-role.

To conclude, I have shown firstly that all present participles have a verbal reading. When one examines their adjectival status, the following picture emerges: the prenominal position test diagnoses a substantial group of participles as adjectives, while according to **all** other diagnostics, only a subset of these participles, both in English and in Hebrew, behave like adjectives. These data must 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 adjectivalhood 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. If all present participles were adjectives, each of the splits shown above would require an independent explanation. Given that the prenominal position test is the only one which is inconsistent with the rest, I suggest that it is not a reliable adjectivalhood diagnostics. This suggestion receives independent support, which I present and discuss in section 5.

The obvious question which arises at this point is, what defines the class of stems which give rise to adjectival present participles? The following section offers an answer.

3. Defining the class of stems 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 stems 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, intriguing, surprising* etc.), which consistently pass tests for adjectivalhood, and participles of verbs denoting eventualities not involving mental states (*jumping, crying, growing, laughing, 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 an explanation as to *why* it should be the case that only participles of object-Experiencer verbs can be adjectival. The *Experiencer*

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Constraint can be attributed neither to some property of object-Experiencer verbs, nor to some property of adjectives. In this respect, it seems almost accidental that it is precisely this type of stems 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 the additional verbs which derive adjectival present participles to three classes (the following names and characterizations of the classes, as well as the examples, are taken from Brekke, pp. 175-176):

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

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

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

c. "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, etc.

It can be noted that the first class corresponds roughly to the class of subject-Experiencer verbs, where the sentient argument is external. The second class is the class of "verbs of light emission" (Levin and Rappaport Hovav 1995). The third class seems to have no natural characterization, other than the fact that all of its members have corresponding adjectival present participles. Observing the different classes, Brekke himself 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, 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 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. *Know, own* and *love* are some prototypical stative verbs.

Given this, I suggest the following constraint on the formation of adjectival present participles:

(53)   The *Stativity Constraint*

        Only stative stems give rise to adjectival present participles.[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

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[6] Note that the generalization in (53) does not state that *all* stative stems give rise to adjectival present participles.

whether (53) captures the data presented in section 2 above. 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 consistently, four types of verbs have corresponding adjectival present participles: object-Experiencer, "disposition" (namely, subject-Experiencer), "impact" (namely, light emission) and "manner" 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, and for a detailed discussion see Arad 1998) that object-Experiencer verbs like *interest, annoy, excite, disgust, amaze* etc., have both an eventive and a stative interpretation. In the eventive interpretation, the object undergoes a change of mental state, as in (54a). In contrast, the stative interpretation merely asserts that the object is in a specific mental state (54b). As Arad (1998) notes: "On the stative reading there is *no* change of state in the experiencer… the stative reading thus only asserts that the experiencer is at a specific state as long as she perceives the stimulus…" (p. 206).

(54)   a. Nina frightened Laura to make her go away.

          b. John's behavior frightened Nina.   (Arad 1998)

As possible reinforcement for the existence of a stative reading for object-Experiencer verbs, let us look at the progressive. It is often noted that stative verbs are incompatible with the progressive in English (Dowty 1979, among many others). As expected, many object-Experiencer verbs cannot appear in the progressive (55).

(55)   ??The book is depressing / boring / worrying the children.

Two remarks are in order with regard to the progressive diagnostics. First, it is generally noted that achievement verbs are also incompatible with the progressive. Therefore,

incompatibility with the progressive does not entail stativity. This is particularly important in the case of object-Experiencer verbs, whose eventive reading is generally classified as achievement (Arad 1998). Second, the test should not be taken as conclusive since even the most prototypical stative verbs can appear in the progressive under certain conditions, or for certain speakers (as in e.g. *I'm loving it*). Possibly, the judgments are clearer for sentences with present perfect progressive, as shown by the sharp contrast between (56a) and (56b):

(56)   a. The children have been watching the movie for an hour when their parents arrived.

        b. *The movie has been interesting / boring / amusing the children for an hour when their parents arrived.

Kenny (1963) suggests an additional test for stativity, which can be used in order to reinforce the existence of a stative reading for object-Experiencer verbs. Kenny notes that in the simple present tense, sentences with dynamic verbs have a frequentative interpretation – they are understood as involving more than one event. On the other hand, sentences with stative verbs do not have this interpretation. Therefore, (57a), with a dynamic verb, is interpreted as habitual, while (57b), which contains a stative verb, is understood as involving a single event of John knowing the answer.

(57)   a. John runs.

        b. John knows the answer.

Let us now look at object-Experiencer verbs. (58a) resembles (57b) in not having a frequentative, habitual interpretation, thus showing that *interest* is stative. The case of (58b) is more complex, since *amuse*, like many object-Experiencer verbs, probably has an activity reading in addition to its stative reading. Still, (58b) can be construed as meaning that there is something about John which inevitably amuses the children whenever they perceive him. Under this reading, the sentence does not have a habitual interpretation.

(58)   a. The book interests the children.

b. John amuses the children.

The facts of (58) therefore support the existence of a stative reading for object-Experiencer verbs.

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. (59) shows that object-Experiencer verbs are incompatible with such structures (at least under one of their readings), suggesting again that they have a stative reading.[7]

(59)   ??What the book / John did was interest / bore / amuse the children.

3.2.2.2 "Disposition" verbs

Brekke's class of "disposition verbs" consists of verbs like *compromise, love, understand, know, dare*, etc. These are, in fact, a sub-class of the class of subject-Experiencer verbs, which are traditionally classified as stative (Dowty 1979).[8] 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 (60).

(60)   a. John loves Mary.

        b. John understands the situation.

As predicted, simple present tense sentences with subject-Experiencer verbs (such as those in (60) above) do not have a habitual interpretation. In addition, these verbs cannot appear in the

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[7] 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.

[8] Some stative, subject-Experiencer verbs, however, 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. Such gaps are compatible with a lexicalist view of the derivation of adjectival present participles, as discussed in 4.1.

progressive (61) (but see the reservations mentioned in 3.2.1.1 with regard to this test). Furthermore, these verbs are ungrammatical in the *do* construction discussed above (62). All of this points to the conclusion that these verbs are stative.

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

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

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

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 verb *forget* undeniably denotes a change of (mental) state. That this verb is dynamic can be deduced from its compatibility with the *do* construction:

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

      order.

Importantly, the *Stativity Constraint* predicts that verbs such as *forget*, though thematically identical to subject-Experiencer verbs like *love*, will not have adjectival present participle alternates, since they are not stative. As shown in (64), this is indeed the case.

(64)   a. *This teacher seems forgetting.

      b. **ha-more   yihiye   šoxeax*.

        the-teacher will+be forgetting

3.2.2.3 "Manner" verbs

According to Brekke, 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. 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 (65); Simple present tense sentences

including them do not have a habitual interpretation (66); and they are ungrammatical in the *do* construction (67).

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

b. *The war was lasting 3 years.

c. *This dress is revealing your neck.

(66) a. The shirt fits her.

b. The town flourishes.

c. The shirt reveals her neck.

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

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

c. *What the town did was flourish.

3.2.2.4 "Impact" verbs

The fourth class of stems 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 stems 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 (68) 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.

(68) 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 adjectivalhood 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 (68a) 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.

Lets us therefore look at the other diagnostics for adjectivalhood 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 (69). The modified noun can be a concrete noun like *wine*, with no psychological properties as in (69b), where the stem *sparkle* is used in its literal meaning.

(69)   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 (70a) and literal (70b-c) readings:

(70)   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 (71a) or a literal (72b) sense:

(71)   a. an unsparkling report

        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 (72a) or non-metaphorically (72b):

(72)   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. In fact, (72b) 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 (73).

(73)   a. very sparkling earrings

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

Brekke's constraint that "impact" verbs give rise to adjectival present participles only in "psychological" contexts is therefore not justified. Verbs of light emission consistently have adjectival present participle alternates. 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, concluding that they are stative. First, it can be noted that verbs of light emission attribute some steady property to their subject without entailing any change of state, as can be seen in (74):

(74)   a. The floor shines.

        b. The diamond sparkles.

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

Other tests also point to the stativity of verbs of light emission. They are ungrammatical in the *do* construction (75), and their interpretation in the present simple tense is not habitual, and does not involve more than one event (see sentences (74) above).[9] I therefore conclude that light emission verbs are stative.

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

Notice that if the *Stativity Constraint* is established as a principle of grammar, the mere existence of adjectival present participles corresponding to verbs of light emission would serve as a diagnostics for the stativity of these verbs. Potentially, the stative vs. dynamic nature of other verb classes, with regard to whom the classification is not clear, could be determined based on the existence of adjectival present participles derived from them.

To conclude, the common feature of object-Experiencer, "disposition", "manner" and "impact" verbs is that they are all stative. These verbs therefore form an aspectual natural

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[9] Verbs of light emission do appear in the progressive, as seen in (ia-b), which deliberately contain verbal environments. It was already noted in 3.2.2.1, however, that this test should not be viewed as conclusive.

(i)   a. The moon was shining magnificently.

        b. His eyes kept glimmering.

class. The question that arises is *why* it should be that only stative 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 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, reinforcing a view of the lexicon as an operative component of the grammar. The section also shows that the derivation of verbal present participles is syntactic, indicating that adjectival present participles cannot be derived from verbal ones (contra e.g. Bresnan 1996). Section 4.2 offers a discussion of the possibilities of adjective formation in general, and the properties of the participial morpheme *–ing* in particular. 4.3 then presents sample derivations of adjectival 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 wide discussion of 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. Extreme lexicalist frameworks (e.g. LFG, see Bresnan 1982, 1996) hold that both types are derived lexically, via re-bracketing; extreme syntactic frameworks (e.g. DM, 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 (2009) (following a line of thought emerging from Wasow 1977) suggest 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 (2009) 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, and cannot undergo a process of drift.

Examples (76)-(78), with present participles, illustrate the same phenomenon. The (a) sentences show adjectival present participles with drifted meanings. The (b) sentences show that this meaning is not shared by the related verbs, which exhibit only the original meaning (c).

(76)   a. *ha-haxlala   tihiye   gorefet.*

the-generalization will+be sweeping

'The generalization will be sweeping'.

b. *ha-haxlala   tigrof   (et   kol ha-mikrim).

the-generalization will+sweep ACC all the-cases

c. ha-saxanit tigrof   et kol ha-revaxim.

the actress will+sweep ACC all the-profits

(77)   a. ha-idkunim yihiyu   šotfim.

the-updates will+be washing

'The updated will be continuous'.

b. *ha-idkunim yištefu.

the-updates will+wash

c. ha-galim yištefu   et   ha-xof.

the-waves will+wash ACC the-shore

'The waves will wash the shore.'

(78)   a. The colonel seems dashing.

b. *The colonel dashed.

c. The colonel dashed their hopes.

In contrast, I could not find any examples where a verbal present participle had a meaning not shared by the other, tensed verbal forms. When forcing the verbal reading of a participle, for example by adding an accusative object as in (79), only the original meaning of the verb surfaces.

(79)   a. *ha-haxlala   gorefet   et   kol ha-mikrim.

the-generalization sweeping ACC all the-cases

b. ha-saxanit gorefet   et   kol ha-revaxim.

the-actress   sweeping ACC all the-profits

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 (2009) 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 (for a study establishing the psychological reality of frozen entries see Fadlon 2008). 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 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 (80)-(86). The first form in each (a) example is exclusively an adjectival present participle, lacking a verbal reading (as established in (b) and (c)), and the second is the hypothetic 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, and are therefore not part of the actual vocabulary of the language.[10]

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[10] With regard to the Hebrew examples in (83)-(86), 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). The only way to force a verbal reading of a form in Hebrew is adding an Accusative object to it, an options not available for intransitive verbs.

English:

(80)   a. cunning - *cuns

        b. The prisoner seems (completely) cunning.

        c. *The prisoner is cunning completely.

(81)   a. forthcoming - *forthcomes

        b. No immediate solution seems forthcoming.

        c. *The solution is forthcoming slowly.[11]

(82)   a. fleeting - *fleets

        b. All beauty seems fleeting and fragile.

        c. *The moments are fleeting quickly.

Hebrew:

(83)   a. šomem - *šamam

         desolate

        b. *ha-bayit yihiye šomem.*

         the-house will+be desolate

(84)   a. boded - *badad

          lonely

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

         the-boy   will+be lonely

(85)   a. nimhar - *yimaher

          hasty

        b. *ha-ca'ad yihiye nimhar*

         the-step   will+be hasty

(86)   a. hogen - *hagan

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[11] The sentence is grammatical for those speakers who have the verb "to forthcome" as part of their vocabulary.

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 data which provides further 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 that are not expected from 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).

(87) presents examples of Hebrew adjectival present participles, whose English counterpart is a non-participial adjective.[12] (88) presents examples of the opposite situation. 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 (89).

(87)   a. *macxik* - funny

       b. *mitxašev* – considerate

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[12] The participial forms are in fact ambiguous, as shown in section 2 above, but the focus here is on the adjectival reading.

c. *koren* – radiant

d. *so'er* – stormy

(88)　a. revealing - *xosfani*

b. lasting – *kavu'a*

c. cunning – *armumi, pikeax*

d. forgiving – *salxani*

(89)　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 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.[13] This provides evidence that 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

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

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 root, or from a category-less stem. In what follows I will adopt the former option, though nothing hinges on this. 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.

4.2 Adjective formation – the aspectual change

4.2.1 The aspectual classification of verbs and adjectives

As noted in the beginning of this section, 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 atelic events from telic ones, is that the former are homogenous, namely, their sub-intervals are identical to the event itself. In contrast, telic events heterogeneous; they include at least two sub-events, one of which is a final state. Achievements and accomplishments are therefore often analyzed as being decomposed semantically to several components, including a BECOME component, and a STATE component, denoting the result state of the verb (see e.g. Dowty 1979, Rothstein 1999). According to Rothstein 1999, activities can also be decomposed, into a DO component and a predicate. Importantly, however, this predicate must denote an activity rather then a state, since in contrast to becoming in a state, "doing a state" makes no sense. The properties of the different verb types are summarized in (90):

(90)

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 $\lambda s.\text{STATE}(s)$.[14]

4.2.2 The aspectual properties of adjectival 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 stems are selected by each morpheme.

4.2.2.1 The passive participle morpheme

A rather well-studied example of an aspectually-motivated selection of stems 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 (91)-(92):

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[14] Another view on adjectives is defended in Rothstein (1999). See the appendix for an implementation of adjectival present participle formation under Rothstein's analysis.

(91)   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.'

(92)   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. We can see that adjectival
passive morphology "isolates" the result state of a telic verb in order to give rise to a suitable
denotation for an adjective, by removing the BECOME or DO components of the verb. 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 (90), 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 there is no BECOME or DO
components it can remove from the interpretation. 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 manipulation. 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.

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 incapability of aspectual manipulation) is not surprising, given that -*ing* is in many respects neutral and lacks specific semantic import. This neutral nature is manifested for example in the fact that it derives words of different lexical categories: verbs (verbal present participles) adjectives, nominal elements (-*ing* nominalizations and gerunds), and possibly even prepositions (e.g. *regarding*, as suggested by Milsark 1988). The same is true for present participle 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 state and an achievement 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.

4.2.2.3 Non-participial morphology

As a side note, it is interesting to look also at non-participial morphology. The discussion of English and Hebrew above reveals that participial morphology can derive adjectives from verbs which have a STATE component in their meaning. Adjectival passive participle morphology selects achievements and accomplishments, and adjectival present participle morphology selects states. A natural question which arises is whether activity verbs have adjectival alternates, too. Consideration of English and Hebrew reveals that they indeed do. It seems that the suffixes *–y* in English, and *–an/-ani* in Hebrew mark adjectives that are related to activity verbs, as exemplified in (93).

(93)   a. jump – jumpy, sleep – sleepy, push – pushy

       b. *baxa – baxyan, xiyex – xayxan,   kafac – kofcani*

         cried   crybaby smile tends to smile   jump   jumpy

It is interesting to note that unlike participial morphology, these morphemes are not productive (e.g. *laugh - *laughy*), and the meaning they carry varies with the verb (a jumpy person is a person who tends to jump, but a sleepy person is not a person who tends to sleep, but rather a tired person). The mapping of adjective types related to different types of verbs via different morphemes no doubt requires further research.

4.3 Sample derivations

We have seen that the formation of adjectival present participles includes a minimal aspectual change. This process, however, has also thematic effects, as well as the obvious category-change. Some sample derivations of different input verb types are given below.

The derivation of the adjective *sparkling* from the verb *sparkle* is shown in (94a). 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 *sparkle* includes both the fact that it is a one-place predicate with an external theme argument (see Levin & Rappaport 1995, Reinhart 2002), and that it is stative (thus having as 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 *sparkle*, the operation does not do anything thematically, either.[15] The resulting adjective has one θ-role, like the verb. The interpretation of a sentence containing the resulting adjective is given in (94b).

(94)   a. sparkle-V (θ_{THEME}, [s])

             →

             sparkling-ADJ, (θ_{THEME}, [s])

        b. The water is sparkling

             Interpretation: $\exists s[\text{SPARKLE}(s) \ \& \ \text{Theme}(s, \text{water})]$

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

Things are somewhat more complicated with two-place verbs, as exemplified with the verb *reveal* in (95). 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 2009, Meltzer 2006, and on verbal passives Chierchia 2004, Reinhart

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[15] I assume here that the inventory of θ-roles is the same for adjectives and verbs, though this issue undoubtedly requires further study.

2002). The resulting adjective will have only one θ-role, the cause role, which needs to be assigned syntactically. The theme role is assigned to an existentially bound variable in the semantic component.

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

→

revealing-ADJ (θ_{CAUSE}, $\theta_{THEME \to \exists}$, [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 (96), 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 stems 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 book confused. It must have confused a certain number of people to be called *confusing*. What seems to be at work in deriving the interpretation of the adjective here is an existential closure of 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 $\exists arb$. Again, only the cause θ-role of the adjective will be assigned syntactically; the experiencer role is understood as bound.

(96)   a. confuse-V (θ_{CAUSE}, $\theta_{EXPERIENCER}$, [s])

→

confusing-ADJ (θ_{CAUSE}, $\theta_{EXPERIENCER \to \exists arb}$, [s])

b. The book is confusing.

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

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'There is a state of confusing of which the cause is the book, and there is some group of humans x_{arb} which is the Experiencer of this state.'

As a side note, the fact that experiencer arguments undergo existential closure of x_{arb} where other arguments are closed existentially using a regular variable can be seen also in the case 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, several people have to admire something for it to be referred to as *admired*.

In conclusion, adjectival present participle formation is an operation which, firstly, induces category-change from verb to adjective. The nature of the present participle morpheme dictates that the operation applies only to stative verb, 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.

5. The prenominal position

5.1 The category of prenominal dynamic participial phrases

As was shown in section 2.2.1, many present participles can appear prenominally in English, and post-nominally in Hebrew, including participles of dynamic verbs, as exemplified in (97).

(97)   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 according to this analysis, dynamic stems do not give rise to adjectival present participles. I therefore conjecture that the prenominal position must be able to host categories other than AP.

Emonds (1985) suggests that XP in (97) 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 (97) an external θ-role, which it does assign in other structures. Emonds (1991) revises his analysis, claiming that *jumping* in (97) is a verb, but projects an adjective phrase, so that XP=AP. Such an analysis introduces an obvious complication to the familiar merging procedures, in which the label of a phrase must be determined based on the label of its head, and runs the risk of over-generation.

As in Laskova (2007), I propose that the prenominal position is not limited to adjectival phrases only. Following Siloni (1995), I suggest that in (97), XP is a clausal constituent, namely, a reduced, participial relative clause. Siloni analyses 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 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 Determiner, rather than a Complementizer. No TP is projected, since the clause is tenseless. The structure is given in (98).

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

        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 (99).

(99)   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, without further clausal projections (though see Cinque 2007 for a revival of the reduced relative analysis of attributive adjectives). It is only verbal participles that I suggest appear in prenominal reduced relatives. 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 cannot be maintained. However, all the dynamic participles to which I attribute a reduced relative analysis are perfectly grammatical in predicative positions (*the jumping boy – the boy who is jumping*), and the problem does not arise.

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 2.2.2-2.2.8 above. Returning to the discussion of complementation options in 2.2.8, it is now clear why (100) is ungrammatical. In (100), *locking*, a dynamic participle, is necessarily verbal, and thus has an obligatory internal θ-role. The ungrammaticality results from the fact that this θ-role is not assigned, just as the DP *the boy who is locking* is ungrammatical.[16]

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

(100)   *the locking boy

5.1.1 Additional reinforcement 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 literature (see Laskova 2007). In order to present these ambiguities, I will digress and discuss passive participles. The reasons for this will be clear presently.

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 (101):

(101)   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 (102) are likewise ambiguous:

(102)   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 (102) corresponds to the adjectival, state reading of (101), 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

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(i)   The locking the door boy

This, however, is due to the adjacency requirement, as explained in 5.1.2 below.

such as (103a). The prenominal passive participle in this case cannot be adjectival (as can be seen in (103b)), 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:

(103) 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 (103a) is grammatical, as well as how the two readings of (102a) arise. On the other hand, if we accept that reduced relative clauses, as well as adjectives, can appear prenominally, then (103a) presents no problem, and given that in (102a) the participle itself is ambiguous between an uninflected verb and an adjective, we straightforwardly predict the ambiguity of the sentence.

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. In addition, the hypothesis will not even be testable in many cases, since with all obligatorily transitive stems, the verbal participle must be followed by a complement (and consequently undergo extraposition to avoid violation of the adjacency requirement, see discussion in the next section), while the adjectival one cannot be followed by a complement. With participles corresponding to these verbs, therefore, no ambiguity is predicted to arise.

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 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 2007, who claims, on different grounds, that both reduced and full relative clauses are merged prenominally cross-linguistically). Support for this idea comes from the paradigm in (104)-(105). Under the assumption that reduced relatives are merged post-nominally in English, namely, that the structures in (104) are the basic ones, there is no natural explanation for the ungrammaticality of (104a). 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 reduced relatives are merged prenominally, namely that the structures in (105) are basic, the grammatical status of all four sentences falls out naturally.

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

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

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

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

(105a) is base-generated as is, and it is grammatical. (105b), 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 (see Grosu & Horvath 2006 and references cited therein), and is therefore ungrammatical. The adjacency requirement, though not fully understood, is robust, and can be seen in different constructions, not involving participles, as in (106).

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

b. *a [taller than the girl] boy

(104b) is a result of applying extraposition to (105b), and is therefore predicted to be grammatical. Again, extraposition needs to be assumed anyway, as a mechanism that "salvages" structures violating the head-adjacency requirement, as can be seen in (107).

(107)   a. a father [proud of his son]

        b. a boy [taller than the girl]

In (104a), on the other hand, unnecessary extraposition took place, since the original structure, (105a), 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

In Hebrew, both APs and (reduced) relative clauses appear post-nominally. Thus, the fact that a participle appears in this position does not help in determining its category. Given, however, that dynamic participles consistently do not behave like adjectives (as was shown in 2.2.2-2.2.8 above), such participles cannot be analyzed as adjectives when they appear post-nominally as well. I therefore propose that Hebrew post-nominal dynamic participles, like English prenominal ones, are verbal forms projecting a reduced clausal structure, as exemplified in (108).

(108)   *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 (98a) above. If *ha-* is taken to be a necessary element in reduced relatives in Hebrew, then the fact that there is no complementizer in (108) 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" (whether by addition of complements or of adjuncts to the participial verb), *ha-* becomes obligatory, as seen in (109).

(109) 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 (110a). But, *ha-* can surface with long AP's (110b). Admittedly, (110b) is not extremely natural, partly because *ha-* is hardly used in spoken Hebrew. However, it is undoubtedly much better than the completely ungrammatical (110c), with a short AP.

(110)   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 are not adjectival comes from negation. In Hebrew, post-nominal adjectives can be negated as in (111a). In contrast, as pointed out in Siloni (1995), negation is impossible in Hebrew reduced relatives, as seen in (111b).

(111) 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 (112), 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.

(112)   **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. 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 defined aspectually; since the adjectival present participle morpheme *–ing* cannot perform any aspectual manipulations, it can only attach to verbs which are stative to begin with.

The paper brought to light many aspects in which adjectival present participles and adjectival passive participles parallel one another. 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 as well. 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. As the reader may have noticed, the *Stativity Constraint* provides a necessary condition on verbs for having an adjectival present participle counterpart. It does not provide a sufficient condition. There are numerous stative verbs which do not have corresponding adjectival participles. Among these are *sit, stand, have, own, equal, resemble, reflect, mean, indicate, see, hear, taste, believe, desire*. Possibly, an additional constraint is at play in the formation of adjectival present participles. It seems very plausible that this constraint is thematic (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 others component, 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 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. sparkle-V (θ_{THEME}, [e])

   →

   sparkling-ADJ, (θ_{THEME}, [s])

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