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ADJECTIVAL PASSIVES AND ADJECTIVAL DECAUSATIVES IN  
HEBREW

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## 1. Introduction

There is, in generative studies, a well-known distinction between adjectival and verbal passives (see, for example, Wasow (1977)). Many studies have tried to define the operations that form the two passives, and while verbal passive formation seems to be quite understood, there is still debate on the nature of the operation that forms adjectival passives (for a very influential analysis see Levin and Rappaport (1986)). In this work I will try to define this operation for Hebrew. I will first show that there are two classes of adjectival passives in Hebrew. I will then argue that these two classes of adjectives correspond to two classes of verbs: passives and unaccusatives. Therefore, I will label the two types of adjectives **adjectival passives** and **adjectival decausatives**. I will then define the operations that form the two types of adjectives based on the operations that form the corresponding verb types.

In my work I am assuming the Theta-System (Reinhart (2000, 2002)) and the Active Lexicon Hypothesis (Siloni (2002)).

The work is organized as follows: in chapter 2, I will present the main empirical facts concerning the morphology of adjectival passives in Hebrew. In chapter 3, I will show some evidence that there are, in Hebrew, two different types of adjectival passives, and discuss the parallelism which I believe exists between the verbal system and the adjectival system in Hebrew. Specifically, I will argue that the two classes of adjectival passives correspond to two types of verbs: passives and unaccusatives, and are derived by the same operations which derive the corresponding verbs. In chapters 4 and 5, I will make a digression and discuss the verbal system. In particular, I will discuss the operations that, I believe, generate passive and unaccusative verbs. In chapter 6, I will present some data that reinforces the analysis proposed here, namely that the two types of adjectival passives are derived by the same operations which derive passive and unaccusative verbs. In chapters 7 and 8, I will define the operations that generate each type of the adjectives, based on the corresponding verb-forming operations, and show how my analysis accounts for the data presented in chapter 3. Chapter 9 discusses some theoretical implications of the analysis and topics for further research.

## 2. The morphology of Hebrew adjectival passives

Adjectival passives in Hebrew typically appear in one of four templates, given in 1-4 (the C's stand for the consonants of the tri-consonantal Hebrew root):

- (1) *muCCaC*. This template is related to the active template *hiCCiC*. Examples: *mumca* ('invented'), *munax* ('placed, laid'), *mud'ag* ('worried'), *mugaz* ('carbonated'), *muxan* ('prepared, ready'), *mukpa* ('frozen').
- (2) *meCuCaC*. This template is related to the active template *CiCeC*. Examples: *megulgal* ('rolled'), *mevulbal* ('confused'), *mesulsal* ('curly'), *meluxlax* ('dirty'), *megulaf* ('engraved, carved'), *mecuyar* ('drawn, sketched, illustrated').
- (3) *niCCaC*. This template is related to the active template *CaCaC*<sup>1</sup>. Examples: *nistar* ('hidden, concealed, invisible'), *nirgaz* ('annoyed, angry, furious').
- (4) *CaCuC*. This template, like the template in 3, is related to the active template *CaCaC*. Examples: *hafux* ('reversed, inverted, upside down'), *kafu* ('frozen'), *sagur* ('closed'), *katuv* ('written'), *patu'ax* ('open'), *kavuy* ('extinguished'), *afuy* ('baked').

It is important to notice that the first three templates are also used to create verbal passives in the present tense. Thus, most of the forms in 1-3 are ambiguous between a verb and an adjective, although the adjective interpretation is much more accessible. This is shown in 5-6 for forms of group 1. The sentences in 5 show typical contexts in which verbal passives are possible, while adjectival passives aren't:

- (5)a. *mumca'im xamiša patentin be-yom ba-maxon ha-ze.*  
(are) invented five patents in-day in+the-institution the-this  
'Five patents are invented each day in this institution.'
- b. *sisma'ot xadašot mumca'ot pa'amayim be-šavu'a.*  
passwords new (are) invented twice in-week  
'New passwords are invented twice a week.'

In 5a the predicate precedes the subject – this is possible in Hebrew only when the subject is an internal argument, therefore it is possible with verbal passives. The subject of adjectives, on the other hand, is external, and therefore predicate-subject inversion cannot take place

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<sup>1</sup> Adjectival passives in this template are rare. Most of the verbs in the *CaCaC* template will have a verbal passive alternate in this template, but their adjectival passive alternate will be in the fourth template mentioned above, *CaCuC*.

with adjectival passives. In 5b there is an event modifier *pa'amayim be-šavu'a* ('twice a week') which can only be adjoined to verbs, not to adjectives.

The sentences in 6 show typical "adjectival" contexts:

(6)a. *ha-iton ha-ze lo mefarsem uvdot mumca'ot.*

the-paper the-this not publish facts invented

'This paper doesn't publish invented (made-up) facts.'

b. *yeš li hargaša še-hateruc šelo yihye mumca.*

there is to+me feeling that-the-excuse his will+be invented

'I have a feeling that his excuse will be a fabrication.'

In 6a, the predicate is in a post-nominal position, which is possible only when it is an adjective. In 6b, the predicate follows the copula in the future tense— this, again, is possible only with adjectives, not with verbs.<sup>2 3</sup>

As can be seen, the form *mumca* ('invented', taken from the first group above) is possible in both types of contexts: verbal and adjectival. Similar examples can be found for the forms in groups 2-3 above.

The fourth template presented above, on the other hand, creates only adjectives – the forms in 4 above are unambiguously adjectival. This is shown in 7: sentences 7a and 7b, which include contexts which allow only verbal passives, are ungrammatical when one inserts to them a form from group 4. Sentences 7(c-d), which include adjectival contexts, are grammatical.

(7)a. *\*hafuxot xameš xulcot ba-megera ha-zot.*

inverted (inside-out) five shirts in+the-drawer the-this

b. *\*ha-xulcot ha-ele hafuxot pa'amayim be-šavu'a.*

the-shirts the-these inverted (inside-out) twice in-week

<sup>2</sup> I use the copula in the future tense because it provides a context which is, for most speakers, unambiguously adjectival. The past tense copula followed by the predicate, as in (i), creates an ambiguity between an adjectival interpretation and a progressive verbal interpretation.

(i) *ha-teruc šelo haya mumca.*  
the-excuse his was invented  
'His excuse was a fabrication.' or  
'His excuse was being made up / invented.'

<sup>3</sup> The sentences in 6 above will become ungrammatical if we replace the adjective with a verb:

(i) *\*ha-iton ha-ze lo mefarsem uvdot me'anyenot et ha-cibur.*  
the-paper the-this not publish facts interest the public  
(ii) *\*yeš li hargaša še-ha-teruc šelo yihye me'anyen et ha-more.*  
there+is to+me a feeling that-the-excuse his will+be interest the-teacher

c. *max tamid holex im xulca hafuxa.*

Max always walks with shirt inside-out

d. *maxar ha-xulca šel max tihye hafuxa.*

tomorrow the-shirt of Max be will+be inside-out

To summarize, I presented in this section the four possible forms that Hebrew adjectival passives can appear in. Three of these forms derive verbal passives as well, while the fourth one is exclusively adjectival.

### **3. Two types of adjectival passives in Hebrew**

In this chapter I would like to show that there is varied evidence showing that adjectival passives in Hebrew do not form one homogeneous group. Adjectival passives show non-uniform behavior in two respects. First, they differ with regard to the accessibility of the external argument of the corresponding transitive alternate (namely, some of them act as if the external argument is still present the interpretation, others don't). Second, some adjectival passives entail the existence of an Action, acted upon their subject, while others do not. In the end of the chapter I will argue that the two types of adjectives correspond to two types of verbs: passives and unaccusatives.

#### **3.1 Accessibility of the external argument**

There are several tests that can show whether the external argument of a predicate is present in the interpretation, even when it is not realized in the syntax. I will discuss here four such tests: realization of the Instrument theta-role, use of Agent-oriented adverbs, addition of a *by*-phrase, and adjunction of purpose clauses. Regarding verbal passives, these tests show (as is commonly accepted) that the external argument **is** still present in the semantics, even when not mapped to the syntax. Regarding adjectival passives, it is commonly assumed (Levin & Rappaport (1986) among others) that they lack such external arguments. But a closer look at Hebrew data reveals that the situation concerning adjectival passives is more complex.

##### **3.1.1 Realization of the Instrument theta-role**

According to Reinhart and Sioni (2005) an argument bearing the Instrument theta-role can only be realized when an Agent is present in the sentence, explicitly (that is - mapped in the

syntax) or implicitly (that is – inferred, present in the interpretation of the sentence). Compare, for example, 8a with 8b:

(8)a. Max ate the soup with a spoon.

b. \*Max hated the soup with a spoon.

In 8a, the PP *with a spoon* can receive the Instrument theta-role, since there is an Agent realized in the sentence. In 8b, there is no realized or inferred Agent, and therefore the verb cannot assign an Instrument role. Now look at the passive sentences 9(a-b):

(9)a. The soup was eaten with a spoon.

b. The window was broken with a stone.

Sentences 9(a-b) are grammatical, and this indicates that an Agent is present in them. The Agent is not realized syntactically, but it is present in the interpretation of passive verbs.

Now let us look at adjectival passives. It is easy to see that many adjectival passives do not allow realization of the Instrument theta-role (10). This can lead us to believe that in adjectival passives, unlike in verbal passives, there is no Agent present, not even in the interpretation.<sup>4</sup>

(10)a. \**ha-kise šavur be-patiš.*

the-chair broken in-hammer

b. \**ha-bayit patuax be-mafteax.*

the-house open in-key

c. \**ha-yeled xavut be-maklot.*

the-child beaten in-sticks

d. \**ha-kufsa dvuka be-devek plasti.*

the-box glued in-glue plastic

e. \**ha-rikma kfu'a be-xankan nozli.*

the-tissue frozen in-nitrogen liquid

On the other hand, there are examples (11) in which an argument bearing the Instrument theta role can appear with adjectival passives, indicating that an Agent does exist in the interpretation.

(11)a. *ha-mixtav katuv be-et.*

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<sup>4</sup> Most of the examples I will give use adjectives in the *CaCuC* template. This is done simply in order to avoid ambiguity and force an adjectival reading. Similar sentences with adjectives in other templates can be easily found, but judgments are more difficult to get, because of the ambiguity.

- the-letter written in-pen
- b. *ha-kelev kašur be-recu'a.*  
the-dog tied in-leash
- c. *ha-bayit na'ul be-mafte'ax.*  
the-house locked in-key
- d. *max natan li kufsa mudbeket be-devek plasti.*  
Max gave to+me box glued in-glue plastic<sup>5</sup>
- e. *bet ha-xolim kibel mišlo'ax šel rekamot mukpa'ot be-xankan nozli.*  
the hospital received shipment of tissues frozen in-nitrogen liquid

### 3.1.2 Use of Agent-oriented adverbs

The existence of an Agent can be detected also by using Agent-oriented adverbs. Only an Agent, explicit or implicit, can license such adverbs. Compare, for example, 12, 13 and 14:

(12) Max ate the soup on purpose.

(13) \*Max hated the soup on purpose.

(14) The soup was eaten on purpose.

In 12, we can use the adverb *on purpose*, because there is an Agent present in the sentence.

In 13 this is not possible – *hate* does not assign the Agent role. In 14 we see that the use of an Agent-oriented adverb is perfectly grammatical. This shows, again, that an Agent is present in the interpretation of verbal passives, although it is not realized syntactically.

Let us turn now to adjectival passives. Here, too, we see a non-uniform behavior. Some adjectival passives do not allow the addition of Agent-oriented adverbs (15). This fact can indicate that an Agent is not present at all in the interpretation of such adjectives.

(15)a. \**ha-bakbuk sagur be-zadon.*

the-bottle closed maliciously

b. \**maxar max yihiye mud'ag be-xavana.*

tomorrow Max will+be worried in-purpose

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<sup>5</sup> Notice the adjectives in sentences 10d and 11d: *davuk* and *mudbak*. Both of them are connected to the same root, and both of them can be translated to English roughly as "attached, stuck, glued". But their meaning and use are different in exactly the ways I discuss in this chapter. One behaves as if an Agent is present in its interpretation, and the other does not. The same holds for the adjectives in 10e and 11e. I will discuss such adjectives in detail in section 6.2.1.

(intended meaning: 'tomorrow someone will worry Max on purpose')

c. \**ha-poster davuk be-rašlanut.*

the-poster glued in-carelessness

On the other hand, we can find grammatical sentences containing adjectival passives in which there is an Agent-oriented adverb:

(16)a. *ha-sefer katuv be-kišaron.*

the-book written in-talent

b. *ha-xulca ha-zot tfura be-xoser mikco'iyut.*

the-shirt the-this sewn in-lack (of) professionalism

c. *max avar leyad poster mudbak be-rašlanut.*

Max passed by (a) poster glued in-carelessness

Sentences like 16(a-c) suggest that at least for some adjectival passives, there is still an Agent present in the interpretation.

In general, the same adjectives that allow realization of the Instrument role allow the use of Agent-oriented adverbs. There are some exceptions, but I believe that they can be explained on other grounds. I return to this issue in section 7.5.

### 3.1.3 Addition of a *by*-phrase

Another very intuitive test that can detect the existence of an implicit Agent is suggested by the use of a *by*-phrase. The idea is that only when the external role is still present, it can be realized via a *by*-phrase; when it is missing, a *by*-phrase cannot be added. The *by*-phrase introduces a suppressed argument, if it exists.

It is very well known that all verbal passives allow the addition of a *by*-phrase:

(17)a. The apple was eaten by Max.

b. The door was opened by Max.

Regarding adjectival passives, it was often suggested that they never allow the addition of a *by*-phrase (see, for example, Embick (2004)). In fact, the possibility / impossibility of adding a *by*-phrase were even used as a diagnostics to distinguish between verbal and adjectival passives. But, under close examination, adjectival passives behave non-uniformly here as well. There are examples in which they do allow the addition of a *by*-phrase, alongside examples in which they do not:

(18)a. *ha-sefer arux al-yedey orex mecuyan.*

the-book edited by editor excellent

'The book is edited by an excellent editor.' (adjectival reading)

b. *ha-ictadion šamur al-yedey šotrim xamušim.*

the-stadium guarded by policemen armed

'The stadium is guarded by armed policemen.'

(19)a. *\*ha-kise šavur al-yedey max.*

the-chair broken by Max

b. *\*ha-rikma kfu'a al-yedey mad'anim.*

the-tissue frozen by scientists

Again, the adjectives that allow the addition of a *by*-phrase are roughly those that allow the addition of an Instrument argument and of Agent-oriented adverbs.

#### .4 Adjunction of purpose clauses

Infinitival purpose clauses can occur in a sentence only when there is in the sentence an Agent (explicit or implicit) that can control the subject PRO of the infinitival. This can be seen in 20-22:

(20) Max sank the ship [PRO to collect the insurance].

(21) \*The blow of wind sank the ship [PRO to collect the insurance].

(22) The ship was sunk yesterday [PRO to collect the insurance].

In 20, PRO is controlled by the Agent of *sank*. In 21 there is no Agent, realized or inferred, and the purpose clause renders the sentence ungrammatical. 22 is a grammatical sentence; the adjunction of a purpose clause is possible, although there is no explicit Agent in the sentence. This shows, again, that the Agent of a verbal passive is still present in the interpretation. Here, it can control PRO.

In contrast to the three former tests, adjectival passives seem to behave uniformly with regard to this test: they do not allow purpose clauses, as can be seen in 23:

(23)a. *\*ha-delet sgura [kedey [PRO lo le-hictanen.]]*

the-door closed [in order [PRO not to-catch a cold]]

b. *\*ha-sefer katuv [bišvil [PRO le-hitparsem]].*

the-book written [in order [PRO to-be famous]]

c. \**ha-uga axula [kedey [PRO le-hašmin]]*.

the-cake eaten [in order [PRO to-get fat]]

It seems that in this respect, the behavior of all adjectival passives contrasts with the behavior of verbal passives: apparently, according to this test, there is no implicit Agent in any adjectival passive. In section 7.5 I will try to explain what I think is the reason for these data - why is this test not suitable in order to distinguish between different types of adjectival passives.

To summarize this section, I have shown here that adjectival passives do not behave uniformly with regard to the accessibility of the external argument of the corresponding active alternate. In some of them the Agent seems to be present in the interpretation, while in others it seems to be missing altogether.<sup>6</sup>

### 3.2 Entailment of an Action

An additional test that distinguishes between the two types of adjectival passives is that some adjectival passives entail an Action, while others do not. I define for my purposes that an adjective entails an Action if it entails that someone acted upon the adjective's subject. The test is inspired by Dubinsky and Simango (1996), which discuss sentences such as 24(a-b):<sup>7</sup>

(24)a. The beans are cooked, even though they were not cooked.

b. The branch is bent, even though it was not bent.

The authors notice that 24a is contradictory when we try to interpret *cooked* as an adjective, that is, when we try to assign to it the meaning: 'the beans are in the state of being cooked, even though they were never acted on by any cooking process'. 24b, on the other hand, can have the meaning: 'the branch is in the state of being bent, even though it was never acted on by any bending process'. Dubinsky and Simango claim that the Action, or what they call the

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<sup>6</sup> The reader may have noticed that all the tests presented above detect the existence of an Agent, and not of just any external argument. One could therefore claim that for verbs whose external thematic role is Cause, there is still a possibility that though they have no implicit Agent, they have an implicit inanimate Cause. But, I claim that if there is no implicit Agent, there is no implicit external argument of any sort. There are two reasons for this: first, as will be shown in section 4.1, the missing argument in Hebrew passive sentences is always understood as an Agent. It cannot be understood as, say, a Cause. Therefore, if there's no implicit Agent, there is no implicit external argument at all. The second, more general reason, is that nowhere in the grammar do we find a Cause role that **must** be interpreted as inanimate. In contrast to this, if in the case described here there is an external Cause role, but no implicit Agent, this would entail that the Cause role must be interpreted as inanimate.

<sup>7</sup> The sentences discussed in their paper are in Chichewa, but I believe that the judgments are the same for English and Hebrew sentences.

process, in not entailed in any case, and that 'when a stative is understood as having necessarily involved a process... the process is merely pragmatically implicated.'

I believe that this is not true. If the Action is only implicated and not entailed, we should be able to cancel the implication with the right context. But this implication cannot be cancelled. Let us look at sentence 24a again. If the adjective 'cooked' did not **entail** that an Action took place, but only implicated it, we could cancel the implication by asserting that such an Action never occurred. But – this is exactly what is done in sentence 24a. The second part of the sentence claims that an Action never took place, but it does not cancel the implication - it creates a contradiction. What I claim is that the existence of an Action, of which the subject of the adjective was the theme, is a part of the **meaning** of some adjectival passives (including, for example, *cooked*). Other adjectives, like *bent*, do not include this entailment as a part of the meaning. Let us look at some Hebrew examples:

(25)a. *ha-lexem afuy / xatux, lamrot še-af exad lo afa / xatax oto.* (contradiction)

the-bread baked/sliced though that-no one baked / sliced it

b. *ha-kufsa ptuxa / sgura / hafuxa, lamrot še-af exad lo patax / sagar /*

the-box open / closed / turned over though that-no one opened / closed /

*hafx ota.*

turned it

We can see in 25(a-b) more examples for the distinction made before. *afuy* ('baked') and *xatux* ('sliced') behave like *cooked* in that they entail an Action. *sagur* ('closed'), *patu'ax* ('open') and *hafux* ('turned over, reversed, upside down') behave like *bent* in that they do not entail an Action.

At this point, it can be claimed that the reason for the entailment of an Action in adjectives like *baked* and *cooked* is our knowledge of the world: we know that things have to go through a process of cooking in order to be in a state of being cooked – things are not "created" cooked. But this is not enough – knowledge of the world by itself cannot determine when there will be an Action entailment. Consider the following Hebrew examples:

(26)a. *ha-agam ha-ze kafu, lamrot še-af exad lo hikpi oto.*

the-lake the-this frozen, though that-no one froze it

b. *ha-agam ha-ze mukpa, lamrot še-af exad lo hikpi oto.* (contradiction)

the-lake the-this frozen, though that-no one froze it

In 26 we see a minimal pair. The adjectives in both sentences are connected to the verb *kafa* ('freeze'), and both are translated to English as 'frozen'. Regardless of what we know about the world and the connection between the action of freezing something and the state of being frozen, the fact is that the adjective in 26a does not entail an Action, and the adjective in 26b does.

What I showed in this section is that some adjectival passives entail the existence of an Action, while others do not. There is a strong correlation between the adjectives that entail an Action and the adjectives which pass the tests for the existence of an external argument. This is not coincidental, as I will show when presenting my analysis for the two adjective types.

### **3.3 Parallelism between the adjectival system and the verbal system**

#### **3.3.1 The differences between verbal passives and unaccusatives**

Passive verbs and unaccusative verbs are alike in many respects: both types of verbs are intransitive, do not assign accusative Case, and do not realize their external theta-role the way their transitive alternates do: both types of verbs usually have a transitive alternate, but the unaccusative/passive version of the verb does not map its external argument in its canonical position – spec,VP. In both cases the surface subject is originally an internal argument

The difference between passives and unaccusatives lies exactly in the status of the unrealized external argument. While, as shown already in the previous sections, the external argument of verbal passives is accessible and is still present in the interpretation, the external argument of unaccusatives is missing altogether. This can be easily shown using the tests discussed above – realization of the Instrument role, use of Agent-oriented adverbs, addition of *by*-phrases and purpose clauses. Consider 27-28:

(27) The window was broken with a stone / on purpose / by Max / to upset the neighbors.

(28) \*The window broke with a stone / on purpose / by Max / to upset the neighbors.

27 contains a passive verb. We can realize an argument bearing the Instrument theta-role, use Agent-oriented adverbs and add a *by*-phrase or a purpose clause. This shows that the original external argument is still present, and semantically active (though not mapped to the syntax).

28, on the other hand, contains an unaccusative verb. In this case, we cannot realize the Instrument theta-role, or add Agent-oriented adverbs, *by*-phrases and purpose clauses. These facts suggest that in this case, the original external argument is missing altogether. It is not mapped to the syntax, and not inferred or present in the semantics.

### 3.3.2 Definition of the two types of adjectival passives

In sections 3.1 and 3.2, I have shown some evidence that adjectival passives do not form a uniform group in two respects: first, some of them act as if the external argument of the transitive alternate is present in the semantics, and others do not. Second, some of them entail the existence of an Action, and others do not. I also noted that there is correspondence between these two features: if the external argument is still present, there is also an entailment that the subject of the adjective was acted upon in some Action, and vice versa. Both types of adjectives have passive morphology.

If we look at the verb system in Hebrew, we find that the correlation between the morphology of a verb and its type (passive, unaccusative, reflexive, etc.) or meaning is not completely predictable. There are certain templates that are typical for some type of verb, but the same templates will be used to create other types of verbs, as well. For example, the *hitCaCeC* template is traditionally regarded as the reflexive template, but we can find in it also reciprocal verbs, unaccusative verbs and others (see Siloni (to appear)). Another example is the *niCCaC* template. As mentioned in chapter 2, it is used to create passive verbs. But there are also many unaccusative verbs formed with it. When we find a verb in the *niCCaC* template, we cannot decide based on the morphology alone if this is a passive or an unaccusative verb. In order to determine that, we would have to use a test that distinguishes between the two. Such tests are, for example, the ones mentioned in section 3.1 which identify the existence of an external argument. If the external argument is accessible, the verb is a passive verb; if it isn't, the verb is unaccusative.

As explained above, what defines passive verbs (as opposed to unaccusatives or others) is exactly the fact that their external argument is semantically active. If we take this definition of passivity seriously, we should think that passive adjectives, just like passive verbs, should be exactly those adjectives which exhibit the existence of an external argument in their semantics. In other words – the fact that an adjective has what is usually regarded as passive

morphology can not, on its own, indicate that the adjective is passive in the strict sense that I am referring to. In order for an adjective to be a 'true' **adjectival passive** it should pass the tests that show accessibility of the external argument. Adjectives that do not show accessibility of the external argument, though bearing passive morphology, should not be regarded as passives (in this strict sense). I will refer to these adjectives as **adjectival decausatives**.<sup>8</sup>

From now on, when I use the term **adjectival passives**, I use it in its narrow meaning, that is – adjectives which have an implicit external argument, and not just any adjective that has passive morphology.

What I would like to suggest is that the similarity between adjectival passives and verbal passives, and the similarity between unaccusative verbs and adjectival decausatives, emerges from the fact that they are derived by the same operations. Namely, adjectival passives and adjectival decausatives are formed by the same operations which derive passive and unaccusative verbs, respectively. Of course, a category change must take place as well. In the following chapters I will discuss in detail the operations that form passive and unaccusative verbs; but even before the details of these operations are known, it is clear that they must reflect the difference between passive and unaccusative verbs: the operation that creates passive verbs should leave the external argument present in the derivation, while the one that creates unaccusatives should not.

The analysis suggested here can immediately account for the data presented in section 3.1 above. Adjectives which show the presence in the semantics of an external argument are adjectival passives. Adjectives which do not show it are adjectival decausatives. In chapter 7

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<sup>8</sup> It is important to notice that the similarity between unaccusative verbs and adjectival decausatives is in that they are both missing the external argument of the transitive verb alternate. I do not claim that adjectival decausatives map their subject internally, like unaccusative verbs. This is the case with adjectival passives as well: they resemble verbal passives with regard to their interpretation, but they do not map their subject internally like verbal passives.

I leave open the question whether all adjectives map their subject externally, or whether some of them map it internally (for some discussion see, for example, cinque (1990)). But it seems quite clear that the types of adjectives I am discussing in Hebrew map it externally, since they do not seem to pass unaccusativity tests. For example, they don't allow a possessive dative argument (which is possible with an internal argument) (i), and they do not allow simple inversion between the adjective and the subject (ii):

(i) *\*ha-agartal šavur le-dina.*  
the-vase broken to-Dina  
intended meaning: 'Dina's vase is broken'.  
(ii) *\*švurim šney agartalim.*  
broken two vases

I will show how the data regarding the entailment of an Action is also predicted by the proposed analysis.

Since I am claiming that adjectival passives and adjectival decausatives are derived by the same operations which derive passive and unaccusative verbs, respectively, I will make a small digression from the discussion of the adjectival system, and in the following two chapters I will discuss operations in the verbal system. In my analysis of these operations I will be using Reinhart's (2000, 2002) Theta-System. Therefore, I will now sketch briefly its relevant details.

Reinhart treats theta-roles not as atomic elements, but as a composition of binary features. In her system, there are two such features:  $\pm c$ (ause change) and  $\pm m$ (ental state relevant). A theta-role can have specified values for both features, or be underspecified for one feature or for both. Thus we get, among others, the roles presented in 29:

(29) [+c +m] – Agent (a participant that causes change, and his mental state is relevant to the event).

[+c] – Cause (which can be realized either as an Agent [+c +m] or as a cause lacking mental state/Instrument [+c –m])

[+m] – Experiencer / Sentient (which, in principle, can be interpreted either as causing change or not)

[-c –m] – Theme (a participant that doesn't cause change and his mental state isn't relevant to the event)

[-c+m] – Experiencer (a participant whose mental state is relevant to the event, but does not cause change)

In defining the operations which generate the two types of verbs, I will try to answer three questions:

(a) What is the set of passive/unaccusative verbs? Meaning – what group of transitive verbs have passive/unaccusative alternates?

(b) What is the nature of the operation? What is the direction of derivation, and in what ways does the operation change the input to create the output?

(c) What is the locus of application of the operation? In which component of the grammar does the operation take place? As mentioned in the introduction, I believe the lexicon to be

an operative component of the grammar, and not a mere list of entries. I adopt Reinhart and Siloni's (2005) **Lexicon-Syntax Parameter** formulated in 30:

(30) Lexicon-Syntax Parameter:

UG allows for thematic arity operations to apply in the lexicon or in the syntax.

Given that both the lexicon and the syntax are possible "locations" for arity operations, it is interesting to try and determine for every operation the component of the grammar in which it applies. Application in distinct components can, in many cases, explain many differences between two operations.

#### 4. Verbal passive formation

In this chapter I will address the three questions mentioned above, with regard to the operation that forms verbal passives.

##### 4.1 The nature of the operation

It is widely assumed (Chierchia (1995), Reinhart (2000, 2002), among many others) that the operation of verbal passivization takes as input a transitive verb, and does the following: syntactically, it prevents the external argument from being mapped to its canonical position, and cancels the verb's ability to assign accusative Case (these two features are connected according to Burzio's Generalization (1986)). Semantically, it performs an existential closure on the external argument. Following Reinhart (2000, 2002) I will refer to this operation as Saturation: the external argument is saturated. Thus, the interpretation of 31a is 31b.

(31)a. The gangster was murdered.

b.  $\exists e \exists x (\text{Murder}(e) \wedge \text{Agent}(e, x) \wedge \text{Theme}(e, \text{the gangster}))$

The two main features of Saturation are therefore:

(a) Accusative Case absorption.

(b) Marking of the external thematic role to be assigned in the semantics (to an existentially bound variable), and not syntactically.

These two features can account for the properties of verbal passives; the subject cannot be mapped to spec,VP because it will not receive a thematic role in the syntax. The object cannot stay in a VP-internal position since it will not receive Case, and therefore it must move to spec,IP. And in the semantics of passive sentences, the external thematic role, which was marked during the derivation to be assigned semantically, is assigned to an existentially bound variable.

The common assumption is that Saturation simply introduces a new variable, which is existentially bound, and is interpreted as bearing the external theta-role of the transitive alternate, just like I have explained above. But I believe that the situation is a bit more complex. What is the interpretation of 32?

(32) *ha-kadur gulgal.*

the-ball was rolled

The external theta-role of *gilgel* ('roll') is [+c] – the Cause role, which can be interpreted either as an Agent ([+c+m]), or as an inanimate Cause ([+c–m]). Therefore, the interpretation of 32 should be 33:

(33)  $\exists e \exists x (\text{Roll}(e) \wedge \text{Cause}(e, x) \wedge \text{Theme}(e, \text{the ball}))$

But, according to judgments I received, Hebrew speakers strongly tend to interpret the missing argument as an Agent. According to the judgments, 32 can be used to relate a situation in which Max rolled the ball; it cannot normally be used to relate a situation in which the wind rolled the ball. The judgments are the same for other passives that are derived from verbs whose external theta-role is [+c]. The claim that the missing argument in passives has to be interpreted as an Agent was already made with regard to Hebrew in Doron (2003). So, the interpretation of passive verbs, at least in Hebrew, always contains an Agent, whether it appeared in the active alternate or not. This seems to call for a change in the definition of Saturation: instead of saying that it introduces an existentially bound variable which is assigned the external thematic role of the verb, we must now conclude that it introduces a variable which realizes, invariably, the Agent role. This second operation seems to better account for the Hebrew data.

One problem seems to arise though, if we adopt the idea that the new variable realizes the Agent role without consideration of the original external role of the verb. As will become clear in section 4.3, there are good reasons to believe that verbal Passivization is an operation that takes place in the syntax. Siloni (2002) suggests the following guideline regarding the component in which an operation applies:

(34) **The Lexicon Interface Guideline** (Siloni 2002):

The syntactic component cannot manipulate theta-grids: elimination, modification or addition of a theta-role are illicit in the syntax.

If we adopt 34, syntactic Saturation might seem problematic, since it may involve modification of a theta-role, say from [+c] to Agent ([+c+m]), an operation which is illicit in the syntax. But, this 'modification' of a thematic role can be looked at differently: what Saturation does is not to change a theta-role, but simply to fully interpret it as an Agent. Namely, there is some constraint which forces the external thematic role which is assigned to the bound variable to be an Agent, [+c+m]. As will become clear shortly, Saturation cannot just take any verb and change its external theta-role into an Agent; it can only take verbs

whose external theta roles are compatible with an Agent interpretation, and interpret the roles this way. Saturation, therefore, indeed always involves an Agent interpretation, but not via modification of thematic roles. Rather, it achieves the Agent interpretation via 'forcing' the Agent realization upon (possibly) underspecified clusters.

I would like to propose that this requirement for an Agentive interpretation is a basic feature of Saturation, and in the next section I will elaborate this point further, and show that it is this requirement which in fact determines which transitive verbs will undergo Passivization.<sup>9</sup> To summarize this section, I presented an analysis for verbal passive formation which states that verbal passives are derived by Saturation: an operation whose main features are Case absorption, and marking of the external thematic role to be assigned in the semantics, fully interpreted as an Agent.

#### 4.2 Definition of the set of passive verbs

The exact definition of the set of passive verbs is not trivial. In addition it is, at least to some extent, language specific. Consider the following examples:

(35) a. Max built a house on the hill.

b. A house was built on the hill.

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<sup>9</sup> There are sentences that seem to contradict the claim made here, namely, that passive sentences are interpreted as if the external argument must be an Agent. I am referring to sentences such as (i):

(i) *\*/?ha-kadur gulgal al-yedey ha-ru'ax.*  
the-ball was rolled by the-wind

The status of such sentences is not clear. Some speakers find them ungrammatical, but others find them acceptable, even if not perfect. Doron (2003) states that such sentences are ungrammatical in Hebrew, but possible in English. Even if such sentences are accepted, I don't think that they pose a real problem to my analysis of Saturation. According to my analysis, the missing argument in passive sentences is interpreted as an Agent. In these sentences, there is an adjunct *by*-phrase, which introduces an inanimate object as a Cause of the event. This, according to my analysis, should lead to certain "uneasiness", since the "desired", expected interpretation is not achieved. However, my analysis does not have to predict such sentences to be ungrammatical. Consider (ii):

(ii) *\*The wind wrote a letter.*

(ii) is clearly ungrammatical, the reason for this being a failure in theta-assignment, and therefore a violation of the theta criterion. *Write* has an Agent role which must be assigned, but *the wind*, as an NP representing an inanimate object, cannot realize this role, which contains the [+m] feature. This results in an unassigned role, and an argument without a role. The situation in (i) is different. The first theta role is saturated and assigned in the semantics to a variable (interpreted as an Agent); the NP introduced by the *by*-phrase is an adjunct, and does not have to receive a theta-role. Therefore, there is no violation of the theta criterion, and no unequivocal feeling of ungrammaticality.

This result can be supported by data from Fox and Grodzinsky (1998). In their paper, the authors present data gathered in an experiment they conducted. According to this data, children aged 3.5-5.5 can understand all passive sentences without *by*-phrases, and passive sentences with a *by*-phrase, only when the *by*-phrase introduces an Agent. The reason for this might be that children at this age cannot settle the mismatch which I showed that exists in the interpretation, when the *by*-phrase presents a non-Agent. More generally, their experiment shows that the Agentive interpretation for the saturated role is undoubtedly the most natural and unmarked interpretation.

c. *bayit nivna al ha-giv'a.*

(a) house was built on the-hill

(36) a. Max / a gust of wind opened the door.

b. The door was opened.<sup>10</sup>

c. *ha-delet niftexa.*

the-door was+opened

(37) a. Max heard/hated this song.

b. This song was heard/hated.

c. *?ha-šir nišma / \*nisna.*

the-song was+heard / hated

What I would like to do here is define precisely the group of transitive verbs that can undergo passivization in Hebrew, using Reinhart's Theta-System.

#### 4.2.1 First hypothesis: accusative assigning verbs undergo Saturation

As mentioned above, one of the features of verbal passivization is the absorption of accusative Case. Most verbs that do not assign accusative Case (either intransitive verbs, or verbs that have only indirect objects) do not passivize in Hebrew. Therefore, I will take the requirement of accusative Case assignment as an inherent, necessary feature of the input for Saturation, which means that only transitive verbs that assign accusative Case are 'candidates' for passivization. Let me suggest, for the moment, the hypothesis that **all** accusative assigning verbs can undergo Saturation.

Which verbs assign accusative Case? Reinhart (2002) suggests the following generalization:

(38) A verb assigns accusative Case if it has in its theta grid a [+] cluster, and a fully specified cluster containing the value /-c.

A [+] cluster is a feature cluster where all values are positive. Such clusters are [+c+m], [+c] and [+m]. The second demand in 38 requires that the verb have a theta-role which is either [-c-m] (theme), or [-c+m] (experiencer). These requirements predict that a verb with one of the following six theta-grids will assign accusative Case:

(39)a.  $\theta_1$  [+c+m],  $\theta_2$  [-c-m] e.g. *katav* 'write'

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<sup>10</sup> I do not claim that the external argument in 36b can be interpreted either as an Agent or as a Cause, like in 36a. Sentences 36(a-b) merely show that verbs whose first thematic role is Cause can passivize, as well as verbs whose first thematic role is Agent (as in 35). The interpretation of the output passive verbs was discussed in section 4.1.

- b.  $\theta_1$  [+c],  $\theta_2$  [-c-m] e.g. *patax* 'open'
- c.  $\theta_1$  [+m],  $\theta_2$  [-c-m] ('subject-Experiencer') e.g. *sana* 'hate'
- d.  $\theta_1$  [+c],  $\theta_2$  [-c+m] ('object-Experiencer') e.g. *hirciz* 'annoy'
- e.  $\theta_1$  [+c+m],  $\theta_2$  [-c+m] unattested
- f.  $\theta_1$  [+m],  $\theta_2$  [-c+m] unattested

As noted above, there are no verbs whose theta-grid is the one in 39(e-f). Why this is the case remains an unanswered question. But verbs whose theta-grid belong to 39(a-d) do exist and assign accusative Case. The question now arises whether the hypothesis suggested above is accurate: do they all undergo Saturation and have passive alternates?

Regarding verbs of types 39(a-b), the answer is simple: yes. As far as I can see, all verbs of these types have verbal passive alternates (examples are given in 35-36 above). As shown in the previous section, the interpretation of these verbal passives includes an Agent, even when the thematic grid of the original verb did not include this role, but rather the Cause ([+c]) role.

What about verbs of types 39(c-d)? As accusative marking verbs, the hypothesis suggested above predicts that subject- and object-Experiencer verbs should undergo passivization as well. But is this the case?

#### 4.2.2 Passivization of subject-Experiencer verbs

Some examples of subject-Experiencer Hebrew verbs are: *kibed* ('respect'), *he'edif* ('prefer'), *hikir* ('know, recognize'), *he'erix* ('appreciate, evaluate'), *hevin* ('understand'), *yada* ('know'), *sana* ('hate'), *ahav* ('love'), *raca* ('want'), *xibev* ('like'), *ra'a* ('see').

While in English all subject-Experiencer verbs have a verbal passive form, in Hebrew some of them have such a form, while others lack it. Some existent and non-existent forms are given in 40:

(40) verbs that have a passive form: *kibed* – *kubad* ('was respected'), *he'edif* – *hu'adaf* ('was preferred'), *hikir* – *hukar* ('was known, was recognized'), *he'erix* – *hu'arax* ('was appreciated / evaluated'), *tixnen* – *tuxnan* ('was planned').

Verbs that lack a passive form: *sana* - *\*nisna* ('was hated'), *ahav* – *\*ne'ehav* ('was loved'), *raca* - *\*nirca* ('was wanted'), *xibev* - *\*xubav* ('was liked'), *ra'a* - *\*nir'a* ('was seen').

The thematic grid of subject-Experiencer verbs includes an Experiencer argument, which is external, and a theme. In Reinhart's Theta-System, the thematic grid of these verbs is represented as in 41:

(41) *hate*:  $\theta_1$  [+m],  $\theta_2$  [-c-m]

The first thematic role in the representation above, the Experiencer role, is represented as [+m], and not as [-c+m]. This is in part a result of theoretical considerations: since these verbs assign accusative Case, they must have a [+] cluster in their thematic grid, not a mixed cluster, in order to comply with the generalization regarding accusative Case assignment given in 38 above. Nevertheless, keep in mind that the [+m] role allows for two different realizations: either an Agent – [+c+m], or an Experiencer which does not cause change – [-c+m].

Taking this into consideration, I would like to explain the facts regarding passive forms of these verbs in Hebrew. What I would like to show is, first, that when a passive form is available, the missing argument is interpreted as an Agent; and, moreover, that it is this requirement of Agent interpretation that determines which of these verbs will have a passive form. \_

If we consider verbs such as *kibed* 'respect', *he'erix* 'appreciate, evaluate' *he'edif* 'prefer', and others, it seems that their [+m] role can really have two realizations, two different interpretations. When the role is realized as [-c+m], the argument that bears it is a participant in the event only mentally – it undergoes some mental process, has some feelings or thoughts, but they do not bear any consequences on the world outside it, in actions. When the role is realized as [+c+m], the argument that bears it, besides being involved mentally in the event, is also acting, causing change in the world. This ambiguity is very clear in the case of *he'erix*, as can be seen in 42:

(42) *ha-morim he'erixu et ha-talmid ha-ze.*  
 the-teachers appreciated / evaluated the-student the-this  
 'The teachers appreciated / evaluated this student.'

One meaning of 42 is that the teachers thought highly of the student, without doing anything to show it. The other meaning is that the teachers have given their evaluations of the student. Consider next 43:

(43) *max ma'adif et lucy al pney matilda.*

Max prefers Lucy over Matilda

The ambiguity is more subtle here, but I believe it still exists. One reading of 43 simply discusses Max's mental state, his preferences. The other reading has to do with Max's behavior – Max behaves better to Lucy than he does to Matilda. The same is true for the verbs *kibed* 'respect', *tixnen* 'plan' and others.

Now let us consider the sentences in 44:

(44)a. *ha-student hu'arax (al-yedey ha-morim).*

the-student was appreciated / evaluated (by the-teachers)

'The student was evaluated (by the teachers).'

b. *lucy hu'adfa (al-yedey max).*

'Lucy was preferred (by Max).'

The speakers I have consulted with all had the intuition, that as far as the sentences in 44 are grammatical, the missing argument has to be interpreted in the Agentive manner. That is, these sentences do not merely report the mental state of someone that appreciates the student, or prefers Lucy. They report some actions that took place in the world.

What we see here, then, is a case similar to that of [+c] verbs. Although the underspecified theta-role allows for two different realizations with the active verb, the passive verb "forces" an Agent interpretation.

#### 4.2.3 Second hypothesis: Agentive interpretation

In the previous sections I have shown that the passive alternates of different types of verbs must be interpreted as containing an Agent.

Let me now suggest that the requirement of Agent interpretation is in fact another factor in determining which verbs will undergo passivization. Namely, Saturation can apply to transitive verbs that, first, assign accusative Case, and, second, have as their external theta-role a role that can be interpreted as an Agent. Saturation can apply to all such verbs, and only to them.

At first glance, the two constraints on the input seem to overlap according to Reinhart's Theta-System, since accusative assigning verbs must have as their external theta role a [+] cluster ([+c], [+m] or [+c+m]), and all [+] clusters can be fully interpreted as an Agent. But a closer look reveals some subtleties, which I will discuss now.

Let us first return to subject-Experiencer verbs. As noted above, the first thematic role of these verbs is represented in the Theta-System as [+m], therefore allowing in principle for an Agent interpretation. It was shown, further, that some of these verbs, such as *he'edif* ('prefer'), do in fact have an Agentive reading. But for other verbs in the group, such as *sana* ('hate'), *raca* ('want') and others, it is almost impossible to attribute an Agentive reading. This is shown in 45-48: certain additions to the sentence, such as an Instrument argument or a purpose clause, that were presented above as identifying the presence of an Agent, are completely impossible with these verbs, while they are natural with the [+m] verbs discussed above.

(45)a. *max kibed et lucy kedey še-titnaheg elav yafe.*

Max respected Lucy so that she-will-behave. to+him nice

'Max respected Lucy so that she'll behave nicely to him.'

b. \**max ahav et lucy kedey še-titnaheg elav yafe.*

Max loved Lucy so that she-will-behave. to+him nice

'Max loved Lucy so that she'll behave nicely to him.'

(46)a. *max tixnen et ha-tiul kedey še-lo yihiyu hafta'ot.*

Max planned the-trip so that-no will+be surprises

'Max planned the trip so that there'll be no surprises.'

b. \**max sana et ha-tiul kedey lo lacet elav.*

Max hated the-trip in order not to-go-out to-it

'Max hated the trip in order not to go to it.'

(47)a. *max hevin et ha-xomer be-ezrat /be-emca'ut sefer targilim.*

Max understood the-material with-help-of book exercises

'Max understood the material using an exercise book.'

b. \**max yada et ha-xomer be-ezrat /be-emcaut sefer targilim.*

Max knew the-material with-help-of book exercises

'Max knew the material using an exercise book.'

(48)a. *max hikir et ha-binyan be-ezrat / be-emcaut madrix tiulim.*

Max knew/recognized the-building with-help if guide trips

'Max recognized the building using a tourist guide.'

b. \**max raca et ha-xulca be-ezrat / be-emca'ut katalog.*

Max wanted the-shirt with-help-of catalogue

'Max wanted the shirt using a catalogue.'

Therefore, it seems that the group of verbs whose external theta role is [+m] is not homogenous. While all these verbs are predicted according to Reinhart's Theta-System to allow their external argument to be realized as an Agent, the fact is that only some of them allow for such a realization. The interesting fact is that it is precisely these verbs that allow for an Agent interpretation of their external role, which also have a verbal passive (presented in 40 above). The verbs in the a. sentences of 45-48, where they show an Agentive behavior, have passive counterparts, while those in the b. sentences lack both an Agent interpretation and a passive alternate. What we see here then, is that there is a strong correlation between the possibility of an Agent interpretation of the external argument and the existence of a passive form. Although Reinhart's Theta-System in its current shape cannot represent the difference between the two types of [+m] verbs, it is clear that such a difference does exist, and bears implications on the existence of a verbal passive form. The difference between the two groups of [+m] verbs points at the need to specify the input for Saturation not merely as accusative assigning verbs (since all [+m] verbs assign accusative Case), but as verbs which, on top of that, can have an Agentive interpretation.

A second case where there is no overlap between accusative Case assignment and a possibility of Agentive interpretation is the case with object-Experiencer verbs. This case is discussed in the following section.

#### 4.2.4 Passivization of object-Experiencer verbs

In this section I will discuss object-Experiencer verbs – verbs like *worry*, *excite*, *frighten* etc., whose Experiencer argument is internal. Reinhart (2002) argues convincingly that the thematic grid of such verbs is the one given in 49:

(49) *worry*  $\theta_1$  [+c],  $\theta_2$  [-c+m],  $\theta_3$  [-m]

The complete argumentation as to why this is the thematic grid of object-Experiencer verbs is complex, and I will not repeat it here. I will just highlight some aspects of it that are relevant for the current discussion. From sentences such as 50(a-b), we can conclude that the external thematic role of such verbs is [+c], which can be realized either as an Agent or as an inanimate Cause:

(50)a. The doctor worried Lucy.

b. The situation worried Lucy.

Notice that when an argument receives that [+c] role, it is interpreted as the **cause** of the event. But the sentences in 50 have another interpretation (which is especially prominent in 50b), in which *the doctor* or *the situation* are not the cause of Lucy's worrying; rather, they are the content, the **subject matter** of her worrying.<sup>11</sup> When this reading is considered, it can be shown that the subject matter argument is an internal argument. Consider 51:

(51) Hisi health worries every studenti.

The binding phenomenon exemplified in 51 suggests that the subject in the sentence originates inside the VP, in a position where it is bound by the experiencer argument. Reinhart represents the subject matter role in her system with the cluster [-m]. This representation conveys the intuition that an argument bearing this role can either be the cause of the event or not. Consider next 52:

(52) \*The doctor worried Max about his health.

The ungrammaticality of sentences such as 52 (cited first in Pesetsky (1995)) led Reinhart to a generalization regarding the co-occurrence of different thematic roles in a sentence. Specifically, she claims that the [+c] and the [-m] roles can never be both realized in a sentence. So, the thematic grid given in 49 is never fully manifested in a single sentence.

Object-Experiencer verbs fall under Reinhart's generalization about accusative Case marking. They assign accusative Case since they have in their thematic grid a [+] cluster, and a fully specified role containing the value /-c – in this case, the Experiencer role.

Returning to the generalization proposed above regarding the input for verbal passivization, it seems at first sight that object-Experiencer verbs are predicted to all have passive alternates. I proposed that any transitive verb which assigns accusative Case and whose external thematic role can be realized as an Agent will be able to undergo passivization. Object-Experiencer verbs assign accusative Case, and their external role is [+c], which, in principle, can be realized as an Agent – [+c+m]. Yet, not all object-Experiencer verbs have a passive counterpart. I will now discuss separately object-Experiencer verbs that do not have a passive alternate, and the ones that do, and show that the existence / non-existence of a passive alternate is predicted by the current hypothesis.

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<sup>11</sup> The theta-role Subject Matter was discovered and labeled by Pesetsky (1995).

#### 4.2.4.1 Object-Experiencer verbs without verbal passive alternates

Landau (2002) divides the group of object-Experiencer verbs into three subgroups, according to their behavior with regard to passive formation. The first group is of verbs that have no passive form at all. These are given in 53:

- (53) *hilhiv*/\**hulhav* 'excite', *hiršim*/\**huršam* 'impress', *higiz*/\**hurgaz* 'annoy', *ci'er*/\**co'ar* 'sadden', *hitmiha*/\**hutma* 'puzzle', *hidhim*/\**hudham* 'amaze', *hirgi'a*/\**hurga* 'calm down', *hamam*/\**nehemam* 'shock', *sime'ax*/\**sumax* 'delight', *ye'eš*/\**yo'aš* 'despair', *inyen*/\**unyan* 'interest' (does not appear in Landau (2002)).

Landau notes that many Hebrew object-Experiencer verbs belong to this group, and do not have a passive alternate. He does not offer an explanation for this fact. According to my proposal, the presence or absence of a passive form has to do with accusative Case assignment, and with the ability or inability of the external thematic role of the verb to be realized as an Agent. Since all object-Experiencer verbs assign accusative Case, the second feature is the relevant one here. It is interesting to notice, then, that most of the verbs in 53 do not exhibit an Agentive reading. Again, I am testing the presence of an Agent using the addition of an Agent oriented adverb (*bexavana* 'on purpose') and purpose clauses.

- (54)a. *lucy ?hilhiva /?hiršima /?ci'ara /\*hitmiha/\*hidhima/?hirgi'a /?simxa*  
 Lucy excited / impressed / saddened / puzzled / amazed / calmed down / delighted  
 ? *ye'aša* / \**inyena et max be-xavana*.  
 despaired / interested Max on purpose
- b. \**max hiršim et ha-bos šelo kedey še-hu yiten lo ha'ala'a*.  
 Max impressed the-boss his so that-he will give him a raise  
 'Max impressed his boss in order for him to give him a raise.'
- c. \**ha-mora hitmiha et ha-talmidim kedey še-yit'anyenu ba-ši'ur*.  
 the-teacher puzzled the-students so that-they will be interested in+the-lesson  
 'The teacher puzzled the students in order for them to be interested in the lesson.'

It is important to notice that the generalization proposed above regarding the connection between an Agent realization and the existence of a passive form works both ways. Object-Experiencer verbs in Hebrew that do have passive alternates allow for an Agentive reading

of their external role. So, there are object-Experiencer verbs which do allow the addition of *be-xavana* ('on purpose'), or of purpose clauses:

(55)a. *lucy gerta / he'eliva / hišpila / hevixa / zi'aze'a et max be-xavana.*

Lucy stimulated / insulted / humiliated / embarrassed / shocked Max on purpose

b. *lucy hišpila et max kedey še-ya'azov ota.*

'Lucy humiliated Max so that he will leave her.'

What we see in 54-55 is that the group of object-Experiencer verbs, much like the group of subject-Experiencer verbs, is not homogenous. Some of these verbs allow an Agent realization of their external thematic role, while others do not.

In the case of subject-Experiencer verbs, I noted that I see no way in which Reinhart's Theta-System can account for this split behavior. But the case of object-Experiencer verbs is different, and there might be a way to account for the non uniform behavior of this group within the Theta-System.

Friedemann (2000) shows some data from French, English and Hebrew that further exemplifies the split behavior of object-Experiencer verbs with regard to an Agent interpretation. Recall that Reinhart claims that object-Experiencer verbs have three thematic roles, as shown in 56:

(56) *worry*  $\theta_1$  [+c],  $\theta_2$  [-c+m],  $\theta_3$  [-m]

It is obvious that when an Agent interpretation is available, it can only be a realization of the [+c] role, not of the [-m] role. Therefore, Friedemann suggests that when a verb does not allow an Agent interpretation, it is because the realization of the [+c] role is barred. This does not mean that these verbs do not have the [+c] role as part of their thematic grid: if this was the case, such verbs would not assign accusative Case and would behave like unaccusatives. So, the [+c] role is present in the thematic grid of these verbs, but it can never be realized; such verbal entries are 'frozen' in the sense used by Horvath and Sioni (to appear), which define an entry as 'frozen' if one of its theta-roles is inert, that is, inaccessible outside the lexicon. As will become clear in section 4.3, Horvath and Sioni (to appear) argue that verbal passivization is a syntactic operation: the transitive verb is inserted into the syntax, and there the external role is saturated. If the external role of a verb cannot be inserted into syntactic derivations, since it is inert, then it is clear why this verb will not have a passive alternate: there will be no role to saturate. So, the assumption that the [+c] role of

some object-Experiencer verbs is inert can account for them not having a verbal passive alternate. It also accounts for the fact that these verbs do not have an Agent interpretation. Again we see a connection between these two features.

#### 4.2.4.2 Object-Experiencer verbs with verbal passive alternates

As mentioned above, Landau (2002) divides the group of object-Experiencer verbs into three subgroups, according to their behavior with regard to passive formation. The first subgroup, discussed above, consists of verbs that do not have a passive form at all. The other two subgroups are presented in 57:

(57)a. Verbs that form morphological passive only in the Agentive use (meaning, that their missing external argument must be interpreted as an Agent): *kišef/kušaf* 'enchant', *ina/una* 'torment', *gira/gura* 'stimulate', *hifxid/?hufxad* 'scare', *he'eliv/hu'alav* 'insult', *šixne'a/šuxna* 'convince', *hišpil/hušpal* 'humiliate', *hesit/husat* 'incite'.

b. Verbs that form (also) morphological non-Agentive passive with *me-* 'of, from': *hifiti'a/hufta* 'surprise', *hitrid/hutrad* 'bother', *hevix/huvax* 'embarrass', *zi'aze'a/zu'aza* 'shock', *hiksim/huksam* 'charm', *sixrer/suxrar* 'dazzle'.

The behavior of these two groups of verbs, which seems puzzling at first, is in fact completely predictable according to my analysis. Group 57a consists of verbs whose passive can only be interpreted as if its missing argument is an Agent. According to my claim this is trivial, since all Hebrew passives are interpreted this way. In this respect, the verbs in group 57a are not different than other, non-Experiencer, [+c] verbs such as *hipil* ('drop') and *gilgel* ('roll'): the interpretation of the passive forms of all these verbs contains an implicit Agent.

Notice that the verbs in 57a both assign accusative Case, and can be interpreted Agentively, as was shown in 55 above.

What about the verbs in group 57b? How come they allow a non-Agentive interpretation? Landau claims that the forms in group 57b are not passive but unaccusative, with abnormal passive morphology. He suggests that these are verbs that were derived through Decausativization – the operation which derives unaccusative verbs and will be discussed in the next chapter - and labels these verbs 'fake-passives'.

What I would like to claim here is something slightly different. I believe that the forms in group 57b are ambiguous: they function both as passives and as unaccusatives. The main fact that point quite clearly to the direction of the forms in the second group being ambiguous is that these forms allow both the addition of *me-* ('of, from'), which is impossible with passives, while always possible with unaccusatives, and the addition of a *by*-phrase (which is possible with passives, and impossible with unaccusatives):

(58)a. \**ha-kadur hupal* / *gulgal me-ha-ru'ax*.

the-ball was dropped / was rolled of/from-the-wind

b. *ha-kadur nafal* / *hitgalgel me-ha-ru'ax*.

the-ball dropped / rolled of/from-the-wind

(59)a. *ha-kadur hupal* / *gulgal al-yedey max*.

the-ball was dropped / was rolled by Max

b. \**ha-kadur nafal* / *hitgalgel al-yedey max*.

the-ball dropped / rolled by Max.

Landau notes that these verbs are possible with *me-*, and takes this as a diagnostics for their unaccusative nature. But his analysis does not account for the fact that the verbs are also possible with *al-yedey*. My analysis, namely that the forms are ambiguous, naturally predicts the data. Furthermore, the fact that these forms, though bearing typical passive morphology, can also serve as unaccusatives is not as surprising as it might seem at first. Hebrew, despite its rich morphology, has other examples of forms that are ambiguous between passive and unaccusative, as was mentioned in section 3.3 above. Such are, for example, the following forms in the *niCCaC* template: *niftax* ('was opened / opened'), *nisgar* ('was closed / closed'), *nišbar* ('was broken / broke') and others. In fact, if the forms of 57b were only passive (which for some reason allow for a non-Agentive reading), we would have a much more serious problem: according to the Reinhart's (1996, 2000, 2002) analysis of unaccusative verbs which I will present in the following chapter, every verb whose external thematic role is [+c] is predicted to have an unaccusative alternate. But many of the verbs of group 57b above do not have a morphological unaccusative alternate: as Landau notes, there are no such forms as *nifta* ('was surprised, unacc.'), or *niksam* ('was charmed, unacc.'). It is a much more satisfying solution to assume that the morphological passive of these verbs represents also the unaccusative entry, than to label these verbs as exceptions to the generalization

about the input for unaccusative verb formation (of course, taking into consideration their unaccusative behavior).

Note, also, that the verbs in group 57a, which have a passive form that allow only an Agentive interpretation (as predicted by my analysis), do have morphologically distinct unaccusative forms, which are possible with *me-*. Such are, for example, *hitgara* ('was stimulated, unacc.), *ne'elav* ('was insulted, unacc.), *hištaxne'a* ('was convinced, unacc.'). etc.

One last remark is in order here. I claimed above that there is a connection between the possibility of an Agent interpretation and the existence of a passive alternate for a verb. I also claimed that this connection works both ways: a verb that can be understood in an Agentive way will have a passive alternate, and vice versa. But, there are some verbs that seem at first sight to contradict this generalization. Consider, for example, 60:

(60)a. \**lucy hiksima et max be-xavana*.

Lucy charmed Max on purpose

b. *max huksam*.

Max was charmed

What we see in 60 is a verb that does not have an Agentive interpretation, yet does seem to have a passive alternate, contrary to the generalization made above. But, a closer look reveals that *huksam* 'was charmed', though bearing passive morphology, cannot serve as a passive, but only as an unaccusative. This can be seen in 61:

(61) ?/\* *max huksam al-yedey lucy*.

Max was charmed by Lucy

Even speakers who judge 61 as grammatical do not assign an Agentive interpretation to *Lucy*. The reason they do not judge the sentence as ungrammatical was discussed in footnote 9. So, verbs like *hiksim* ('charm') are actually no exception to the generalization made above. They are 'frozen' object-Experiencer verbs with an inert [+c] role, and since this role is never mapped to the syntax, they cannot undergo passivization, which, as will be argued in the following section, is a syntactic operation. But since, as will be argued in the following chapter, unaccusative verb formation is a lexical operation, such verbs can undergo this operation and have unaccusative alternates. The only exceptional thing about these verbs is that for some reason, their unaccusative alternates bear passive morphology. Other than that, they are not different from other object-Experiencer verbs with an inert [+c] role, which I

have already discussed, like *hirgi'a* ('calm down'), for example. *hirgi'a*, too, does not have a passive alternate, but as a verb whose external role is [+c] it can undergo Decausativization, and it has an unaccusative alternate, *nirga* ('calmed down').

I began these sections about object-Experiencer verbs with the classification of these verbs to three subgroups, made by Landau (2002): one subgroup consists of verbs that do not have a passive alternate at all, the second consists of verbs that have a passive with an Agentive interpretation only, and the third consists of verbs that seemingly have a passive alternate that allows a non-Agentive reading as well. This behavior, that seems random at first, is captured by the analysis presented here. The verbs in the first subgroup have an inert [+c] role, a role that can never be realized in the syntax (and therefore, can never be realized as an Agent), which predicts the fact that they lack passive alternates. The verbs in the second and third subgroups have a regular [+c] role, which can be realized as an Agent, and therefore they have passive alternates, that, like all passive verbs, allow only an Agent interpretation. The fact that the verbs of the third subgroup seem to allow also a non-Agent interpretation for their passive alternate is explained if we accept the suggestion that the morphologically passive forms of these verbs are ambiguous between a passive and an unaccusative reading. If this is indeed the case, the non-Agentive reading emerges from the unaccusative reading, not from the passive one.

To conclude this section about the input for passivization: first, I proposed that only verbs that assign accusative Case can form passive verbs. Then I proposed, according to speakers' judgments, that all Hebrew passive verbs are interpreted as though containing an Agent. I further claimed that it is this feature of passive verbs that actually determines the input for passivization: only verbs whose first thematic role can be realized as an Agent will undergo passivization. If the first thematic role cannot be realized as an Agent, or cannot be realized at all, the transitive verb will have no passive alternate.

### **4.3 The locus of application**

The last question regarding verbal passive formation that needs to be answered is - where does it apply? Does this operation apply in the lexicon or in the syntax?

Horvath and Siloni (to appear) present strong arguments in favor of the claim that this operation takes place in the syntax. I will not go into the details of their argumentation here.

In short, Horvath and Sioni show that numerous differences between verbal and adjectival passives can be naturally accounted for by assuming that adjectival passive formation is lexical, while verbal passive formation is syntactic. Their arguments are based, among other things, on semantic drifts and idioms.

## 5. Formation of unaccusative verbs

In addressing the three questions mentioned in section 3.3.2 with regard to unaccusative verb formation, I follow Reinhart (1996, 2000, 2002), and Reinhart and Siloni (2005). Following them, I will refer to the operation of unaccusative verb formation as Decausativization.

### 5.1 The nature of the operation

In chapter 3, it has become clear that unlike Saturation, Decausativization does not leave the external argument of the transitive verb accessible semantically. Reinhart (1996) suggests that this operation **reduces** the external theta-role, thus creating a one-place predicate from a two-place predicate. The reduced role does not get mapped to the syntax, and does not exist in the interpretation either. This aspect of the operation contrasts with what we saw with regard to Saturation: here, there is a **total reduction**, an elimination of a theta-role, and it has no residue in the syntax or in the semantics. We can formulate the operation schematically as in 62:

(62) Decausativization:  $V(\theta_1, \theta_2) \rightarrow V(\theta_2)$

Decausativization, like Saturation, is responsible for accusative Case absorption.

For full argumentation regarding the nature of Decausativization, see Reinhart (1996, 2000, 2002).

### 5.2 Definition of the set of unaccusative verbs

Reinhart (1996, 2000, 2002) suggests that unaccusative verbs are derived from the corresponding two-place verbs and not the other way round (see also Chierchia (1999, 2004), Levin and Rappaport (1990)). Reinhart shows that the group of two-place predicates that serve as input to this operation is determined by the thematic grid of these verbs; this contrasts with other accounts that tried to define this group on the basis of the aspectual properties of the verbs. Specifically, Reinhart suggest that the input for Decausativization consists of verbs whose external theta-role is [+c]. Namely, verbs whose external theta-role is underspecified with regard to the [ $\pm$ m] feature, and can be realized either as Agent or as inanimate Cause. Transitive verbs like *open*, *close*, *break*, *roll* and *sink* have unaccusative alternates, because their first theta-role is [+c], as shown in 63:

(63) a. The captain / the storm sank the ship.

b. The ship sank.

Transitive verbs like *eat*, *write* and *shave* do not have unaccusative versions, because their first theta-role is Agent [+c +m], and not just [+c]:

(64) a. Max / \*the pen wrote the poem.

b. \*The poem wrote.

### 5.3 The locus of application

Where does Decausativization apply? Does it apply in the lexicon or in the syntax? Following Siloni (2002) I will suggest here that Decausativization must apply in the lexicon. Recall the Lexicon Interface Guideline presented in 34 above, repeated here for convenience:

(65) **The Lexicon Interface Guideline** (Siloni 2002):

The syntactic component cannot manipulate theta-grids: elimination, modification or addition of a theta-role are illicit in the syntax.

If we adopt 65, it immediately follows that Decausativization cannot apply in the syntax, since it involves elimination of a theta-role. Therefore, this operation must apply in the lexicon.

## 6. Reinforcement of the analysis

In the two previous chapters I have presented the operations which I believe derive passive and unaccusative verbs: Saturation and Decausativization. Saturation applies to any accusative assigning verb whose first thematic role can be interpreted as an Agent. Decausativization applies to verbs whose external theta-role is [+c].

In this chapter I will focus on two implications of the generalizations regarding the input for these operations. First, accusative assigning verbs whose external theta-role is [+c+m] are predicted to serve as input to Saturation and have a passive alternate, but are not predicted to serve as input to Decausativisation. Second, accusative assigning verbs whose external theta-role is [+c] (that can be interpreted as an Agent) are predicted to be able to undergo both Saturation and Decausativization, and have both passive and unaccusative alternates. These two predictions are indeed borne out in the verbal system, as exemplified in 66-67:

(66) a. Max/ \*the paint painted the picture.

b. The picture was painted.

c. \*The picture painted.

(67) a. Max / a gust of wind opened the door.

b. The door was opened.

c. The door opened.

I suggested that adjectival passives and adjectival decausatives are derived by the same operations that derive passive and unaccusative verbs. If this is indeed the case, then the restrictions regarding the input for the operations should be relevant in the adjectival system as well. That is, if we found out that the situation in the adjectival system, with regard to the existing and non-existing adjectival forms that correspond to different input verbs, parallels the situation in the verbal system, it would reinforce the idea that the same operations are operative in both cases. In this chapter I will show that this is indeed the case. Specifically, I will show the following:

- a. Transitive accusative assigning verbs whose external theta-role is Agent ([+c+m]) can undergo Saturation (since they assign accusative Case and, of course, have an Agent interpretation), and cannot undergo Decausativization. And indeed, they have adjectival passive alternates, but no adjectival decausative alternates.
- b. Transitive accusative assigning verbs whose external theta-role is [+c] (that can be

interpreted as an Agent) can serve as input to both Saturation and Decausativization. And as predicted, they have both adjectival passive and adjectival decausative alternates.<sup>12</sup>

Let us examine each case separately.

### 6.1 Transitive verbs whose external theta-role is Agent

In this section, I am dealing with verbs like *katav* ('write'), *kašar* ('tie'), *šamar* ('guard'), *nigev* ('wipe dry'), *hidpis* ('type'), *talaš* ('tear off, tear out'), *cilem* ('photograph'), *bišel* ('cook'), *pisel* ('sculpt'), *xavat* ('beat'), etc. Such verbs assign accusative Case and have an Agent theta-role and therefore, are predicted to undergo Saturation and have adjectival passive alternates, which show accessibility of the saturated external argument. I believe that this prediction is indeed borne out. Out of the ten verbs mentioned above, eight have an adjectival alternate which show the presence of an external argument. The two exceptions are *taluš* ('plucked, torn out') and *xavut* ('beaten'). I will deal with exceptions like these in section 7.5. The eight remaining adjectives all pass at least one test that detects the presence of an external argument. The two tests I am using here are two of the ones presented in chapter 3: realization of the Instrument theta-role, and use of Agent-oriented adverbs. Again, for the adjectives that pass only one test, I will show in section 7.5 that there are independent reasons why they do not pass the other one. Consider 68:

(68)a. *hamixtav katuv be-et / be-kišaron.*

the-letter written in-pen / in-talent

b. *ha-kelev kašur be-recu'a.*

the-dog tied in-leash

c. *ha-ictadion šamur bi-kfida.*

the-stadium guarded impeccably

d. *kšetagi'u, ha-šulxan yihiye menugav be-yesudiyut / ?be-matlit.*

when-you arrive, the-table will+be wiped in-thoroughness / in-cloth

e. *max natan li daf mudpas be-rašlanut / be-mexonat ktiva.*

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<sup>12</sup> Another prediction that seems to be relevant concerns verbs whose external theta-role is [+m] (that can be interpreted as an Agent). In principle, these verbs are predicted to undergo Saturation and have an adjectival passive alternate, but not to undergo Decausativization. But, regarding these verbs an additional constraint seems to be in action, which disallows them to create adjectival passives because of their aspectual properties. This issue will be discussed further in section 7.3.4.

Max gave to+me paper typed in-carelessness / in-typewriter  
 f. *ha-tmunot ba-sefer ha-ze meculamot be-mikco'anut / be-*  
 the-photos in+the-book the-this photographed in-professionality / in  
*maclama digitalit.*

camera digital

g. *axalnu ba-mis'ada 'of mevušal be-tanur.*

we+ate in+the-restaurant chicken cooked in-oven<sup>13</sup>

h. *?'david' šel michaelangelo mefusal be-regišut.*

'David' by Michaelangelo sculpted in-sensitivity

Since these adjectives have a semantically active external argument, they are ('true') adjectival passives.

In addition to the accessibility of the external argument, all ten adjectives mentioned above must entail an Action. For example, something cannot be written if it was never acted upon in an action of writing. This shows that these forms are unambiguously passive, and cannot be decausative, since adjectival decausatives do not entail an Action.

As can be seen from the examples given, there is no specific template in which adjectival passives appear. The template of the adjectival passive is determined according to the template of the corresponding transitive verb. In the sample given, there are forms from the first, second and fourth group mentioned in chapter 2 above. Forms from the third group are, as mentioned before, rare for adjectives.

Verbs like the ones discussed in this section, namely, those whose external theta-role is Agent, are not predicted to undergo Decausativization, and therefore are not predicted to have adjectival decausative alternates. This means that they are not predicted to have another corresponding adjectival form that can function as a decausative, and that their passive form will be unambiguous, and will not be interpreted as a decausative – and indeed we have seen that it always entails an Action.

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<sup>13</sup> One can argue that *in the oven* here functions as a location, and not as an Instrument. I don't think that this is the case. In order to check that, we could try and replace the possibly locative *be-* ('in'), with the instrumental *be-emca'ut* ('by means of'). The result (i) is not so good, but I don't think it is worse than its active alternate (ii):

(i) *?axalnu ba-mis'ada of mevušal be-emca'ut tanur.*  
 we+ate in+the-restaurant chicken cooked by means of oven

(ii) *?ha-tabax bišel et ha-of be-emca'ut tanur.*  
 the-cook cooked the-chicken by-means of oven

## 6.2 Transitive verbs whose external theta-role is [+c]

Let us turn now to the second case I described above: verbs whose external theta-role is [+c] (which can be interpreted as an Agent), and are thus predicted to have both a saturated alternate (adjectival passive) and a decausativized alternate (adjectival decausative). There is, in fact, a substantial group of such verbs which manifest these two alternates in two morphologically different forms. Such verbs will be discussed in 6.2.1. But, not all transitive verbs whose external theta-role is [+c] have two such forms as their adjectival passive/decausative alternates. Some of them have two morphologically different adjectival alternates, where one form is unambiguously decausative, and the other is ambiguous between a passive and a decausative. These verbs will be discussed in 6.2.2. Others have two corresponding adjectives, one with passive morphology and the other without such morphology. These will be discussed in 6.2.3. The last group of verbs I will discuss consists of verbs that have only one morphological adjectival form, which, I will claim, is ambiguous between an adjectival passive and an adjectival decausative. These verbs will be discussed in 6.2.4.

### 6.2.1 Different forms for adjectival passives and adjectival decausatives

As I mentioned above, there are some transitive verbs that have two corresponding adjectival forms: one passive and one decausative. Such verbs are presented in 69:

(69) <u>transitive verb</u> ( $\theta_1=[+c]$ )	<u>adjectival passive</u>	<u>adjectival decausative</u>
<i>hikpi</i> 'freeze'	<i>mukpa</i> 'frozen'	<i>kafu</i> 'frozen'
<i>nipe'ax</i> 'inflate, blow up'	<i>menupax</i> 'inflated, blown up'	<i>nafu'ax</i> 'swollen, inflated'
<i>histir</i> 'hide'	<i>mustar</i> 'hidden, concealed'	<i>nistar</i> 'hidden, concealed'
<i>pina</i> 'clear off, vacate'	<i>mefune</i> 'vacated, evacuated'	<i>panuy</i> 'vacant, empty'
<i>hidbik</i> 'glue, attach'	<i>mudbak</i> 'glued, attached'	<i>davuk</i> 'attached'
<i>hiciv</i> 'place, grade'	<i>mucav</i> 'placed, positioned'	<i>nicav</i> 'placed, standing'
<i>hevix</i> 'embarrass'	<i>muvax</i> 'embarrassed'	<i>navox</i> 'embarrassed'
<i>hirtiv</i> 'wet'	<i>murtav</i> 'wetted'	<i>ratuv</i> 'wet (adj.)'
<i>pišet</i> 'simplify'	<i>mefušet</i> 'simplified'	<i>pašut</i> 'simple'

The forms in the second column are adjectival passives: their external argument is still accessible. They also entail an Action. The forms in the third column are adjectival

decausatives: there is no evidence for the existence of an external argument, and no entailment of an Action. Consider 70-73 (70-72 are from chapter 3 above):

(70)a. *\*ha-kufsa dvuka be-devek plasti.*

the-box glued in-glue plastic

b. *max natan li kufsa mudbeket be-devek plasti.*

Max gave to+me box glued in-glue plastic

(71)a. *\*ha-rikma kfu'a be-xankan nozli.*

the-tissue frozen in-nitrogen liquid

b. *bet ha-xolim kibel mišlo'ax šel rekamot mukpa'ot be-xankan nozli.*

the-hospital received a shipment of tissues frozen in-nitrogen liquid

(72)a. *\*ha-poster davuk be-rašlanut.*

the-poster glued in-carelessness

b. *max avar leyad poster mudbak be-rašlanut.*

Max passed by a poster glued in-carelessness

(73)a. *\*kibalti kadur nafu'ax be-maš'evat gumi.*

I+received ball inflated in-pump rubber

b. *?kibalti kadur menupax be-maš'evat gumi*

I+received ball inflated in-pump rubber

The a. sentences contain adjectival decausatives. Therefore, we cannot realize an Instrument, or add Agent-oriented adverbs to them. The b. sentences, on the other hand, contain adjectival passives, and we can add an Instrument, or an Agent-oriented adverb to them. Consider next 74-75:

(74) a. *ha-giv'a ha-zo pnuya, lamrot še-af exad lo pina ota.*

the-hill the-this vacant, though that-no one vacated it

b. *ha-giv'a ha-zo mefunu, lamrot še-af exad lo pina ota.* (contradiction)

the-hill the-this vacated, though that-no one vacated it

(75) a. *max navox, lamrot še-af exad lo hevix oto.*

Max embarrassed, though that-no one embarrassed him

b. *max muvax, lamrot še-af exad lo hevix oto.* (contradiction)

Max embarrassed, though that-no one embarrassed him

Again, the a. sentences contain adjectival decausatives. Therefore, there is no entailment of an Action: we can negate the existence of an activity in the second part of the sentence, and the sentence is not contradictory. In the b. sentences, the negation of the existence of an Action leads to a contradiction, because the adjectival passives in them entail its existence. If we examine the morphology of the forms in 69, we find that the adjectival passive is in the template corresponding to the template of the transitive verb. The adjectival decausative is, with one exception, in the *CaCuC* template.

### 6.2.2 Two forms: a decausative form, and an ambiguous form

A second group of [+c] verbs have two adjectival alternates: one which is unambiguously decausative and another which is ambiguous between a passive and a decausative reading. Examples are presented in 76:

(76) <u>transitive verb</u>	<u>ambiguous form</u>	<u>unaccusative form</u>
<i>sibex</i> 'complicate'	<i>mesubax</i> 'complicated, complex'	<i>savux</i> 'complicated, complex'
<i>bike'a</i> 'split, chop'	<i>mevuka</i> 'cracked'	<i>baku'a</i> 'cracked, split'
<i>kivec</i> 'shrink'	<i>mekuvac</i> 'shrunken'	<i>kavuc</i> 'gathered, wrinkled'
<i>pizer</i> 'scatter'	<i>mefuzar</i> 'scattered'	<i>pazur</i> 'scattered'
<i>šilev</i> 'combine'	<i>mešulav</i> 'combined'	<i>šaluv</i> 'integrated, interwoven'
<i>ikem</i> 'bend, twist'	<i>me'ukam</i> 'curved, bent, twisted'	<i>akum</i> 'crooked, twisted, bent'
<i>kimet</i> 'wrinkle'	<i>mekumat</i> 'wrinkled'	<i>kamut</i> 'wrinkled'
<i>hitrid</i> 'bother'	<i>mutrad</i> 'bothered'	<i>tarud</i> 'bothered'

My claim is that the forms in the third column, in the *CaCuC* template, are decausative (just like in the first group of verbs, discussed in 6.2.1). The forms in the second column can be either passive or decausative. Consider the following sentences:

(77)a. ?*ha-sukar al ha-uga yihiye mefuzar be-nedivut.*

the-sugar on the-cake will+be scattered in-generosity

b. \**ha-sukar al ha-uga yihiye pazur be-nedivut.*

the-sugar on the-cake will+be scattered in-generosity

(78)a. *mot ha-barzel nir'e me'ukam be-ko'ax.*<sup>14</sup>

pole the-iron seems bent in-power

'The iron pole seems forcefully bent.'

b. \**mot ha-barzel nir'e akum be-ko'ax.*

pole the-iron seems bent in-power

In 77a and 78a we can see that the forms of the second column behave like passives - they allow use of Agent-oriented adverbs. The forms of the third column do not allow this (77b-78b), and therefore are decausatives. Now consider 79-80:

(79) *ha-alim mefuzarim / pzurim po, lamrot še-af'exad lo pizer otam.*

the-leaves scattered here, although that-no one scattered them

(80) *ha-anaf ha-ze me'ukam / akum, lamrot še-af'exad lo ikem oto.*

the-branch the-this bent, although that-no one bent it

These sentences show that both forms behave like decausatives in that they do not entail the existence of an Action induced by someone.

So, we see that the forms of the second column can behave either as passives (showing accessibility of the external argument) or as decausatives (not entailing an Action). Therefore, I suggest that these forms are ambiguous.

Morphologically, the decausative adjectives in this group are in the *CaCuC* template. The ambiguous form, which can be interpreted either as passive or as decausative, is in the template corresponding to the active verb.

### 6.2.3 Adjectival decausatives without passive morphology

Until now, all the examples I have given for adjectival passives and adjectival decausatives had passive morphology, i.e. – were in one of the templates I presented in chapter 2 as passive templates. But I would like to draw attention to the following fact: while the English translations of all the 'true' (unambiguous) adjectival passives presented here also had passive morphology, there were quite a few adjectival decausatives, bearing passive morphology in Hebrew, which did not have passive morphology in English. Such were, for

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<sup>14</sup> I am using here another context which is known to force an adjectival reading: the complement of *nir'e* ('seem'). This test is discussed in Wasow (1977) regarding English, and seems to be relevant to Hebrew as well, as can be seen in (i):

(i) *ha-ma'amar ha-ze nir'e me'anyen (\*'et ha-studentim).*  
the-paper the-this seems interesting ( Acc. the-students)

example: *panuy* ('vacant, empty'), *meluxlax* ('dirty'), *ratuv* ('wet'), *pašut* ('simple'), *patu'ax* ('open'), *savux / mesubax* ('complex'), *acuv* ('sad'). I think that this fact can be taken as another piece of evidence that there indeed are two different operations that form adjectives. Saturation, whether creating a verb or an adjective, must be marked with passive morphology. Decausativization, on the other hand, can be marked with such morphology, but does not have to. Of course, it would be interesting to define exactly in what cases of Decausativization passive morphology is used and in what cases it is not, but I will not address this question here. The idea is that passive morphology is not essential for expressing unaccusativity (or, in other words, the result of Decausativization). So even if some adjectival decausative is formed with passive morphology in some language, it need not have a passive form in some other language, as shown in the examples above. I believe that in Hebrew too there are some verbs whose adjectival decausative alternate does not have a passive form.<sup>15</sup> Such are, for example, the following:

(81) <u>transitive verb</u>	<u>adjectival passive</u>	<u>adjectival decausative</u>
<i>kicer</i> 'shorten'	<i>mekucar</i> 'shortened'	<i>kacar</i> 'short'
<i>ximem</i> 'heat'	<i>mexumam</i> 'heated'	<i>xam</i> 'hot'
<i>kerer</i> 'cool'	<i>mekurar</i> 'cooled'	<i>kar</i> 'cold'
<i>higbi'ha</i> 'lift, elevate'	<i>mugba</i> 'elevated'	<i>gavoħa</i> 'tall, elevated'

The adjectives in the third column above, though not bearing passive morphology, share the other properties with the adjectival decausatives discussed so far: they have a transitive alternate whose external theta-role is [+c], and this theta-role seem to have been totally eliminated during the derivation – in the interpretation of these adjectives there is no residue of an Agent, and no entailment that an Action has taken place. Whether these adjectives are derived from the corresponding verbs through Decausativization, like adjectival decausatives that do have passive morphology, is an interesting question, which I will address in section 8.2. In principle, there are two theoretical options regarding the derivation of these adjectives. The first one is assuming, since these adjectives do not, intuitively, look derived morphologically, that they are "base generated", underived adjectives. On the other hand, it is possible that they are derived by Decausativization as well, but lack passive morphology, which is not an essential part of the operation.

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<sup>15</sup> In section 8.2 I will reconsider such forms, and whether they should be labeled adjectival decausatives.

#### 6.2.4 An ambiguous form: passive / decausative

The last group of verbs I will discuss consists of verbs like *saraf* ('burn'), *šavar* ('break'), *sagar* ('close'), *patax* ('open'), *gilgel* ('roll'), *lixlex* ('dirty, sully'), *kilkel* ('damage, spoil'), *nipec* ('smash'). These verbs have a [+c] role, and only one corresponding adjectival form. This form seems at first sight to behave like a decausative: in its most natural interpretation it does not entail an Action (82), and it is very hard to come up with grammatical sentences with such adjectives and a realized Instrument role, or an Agent-oriented adverb (83):

(82)a. *ha-kufsa sgura, lamrot še-af exad lo sagar ota.* (not contradictory)

the-box closed, though that-no one closed it

b. *ha-tanur mekulkal, lamrot še-af exad lo kilkel oto.* (not contradictory)

the-oven broken (out of order), though that-no one damaged it

(83)a. \**ha-delet ptuxa be-mafte'ax.*

the-door open in-key

b. \**ha-kise šavur be-alimut.*

the-chair broken in-violence

But there are some examples which seem to show that even in this case, the external argument can be traced. Such examples are given in 84:

(84)a. *ha-xalonot sgurim be-rašlanut.*

the-windows closed in-carelessness

b. *max me'ašen sigaria megulgelet be-meyumanut.*

Max is smoking a cigarette rolled in-skill

Such examples are, as I mentioned before, very hard to find.

Theoretically, there are two possible ways to analyze this case: either, for some reason, these verbs (or most of them) only have an adjectival decausative alternate, and not a passive one; or - these adjectival forms are ambiguous between a passive and a decausative reading, and for some reason do not pass the tests for the existence of an external argument. I think that the second analysis is much more appealing, since it maintains uniformity in the group of [+c] verbs, (namely, that all of them can undergo both Saturation and Decausativization). I believe that there is also a good argument that supports this analysis. A very good argument in favor of these forms being ambiguous would be if there was no other option, meaning, if

there were morphological reasons why the two types of adjectives should take the same form. And I believe that this is the case here. From the last sections we can draw some conclusions about the morphology of the adjectives I am discussing: an adjectival passive of a verb is in the passive template related to the verb's template. An adjectival decausative is generally in the *CaCuC* template (or in non-passive morphology).

Now let us look at the verbs listed in the beginning of this section. Some of them are in the *CaCaC* template. There are two passive templates that are related to this template: *niCCaC* and *CaCuC*. I have already mentioned in chapter 2 that for some reason, the *niCCaC* template is in general very rare for adjectives. Therefore, verbs in the *CaCaC* template are predicted to have an adjectival passive alternate in the remaining related template: *CaCuC*. But since this is also the general template for adjectival decausatives, such forms will be ambiguous between passive and decausative.

The rest of the verbs mentioned in the beginning of the section (with one exception – *nipeC* 'smash') are verbs with four consonants in the root. Their verbal passive alternate will be in the predicted form, in the passive template related to the template in which they appear (*CiCeC*). But their decausative alternate cannot be in the predicted *CaCuC* template, because this template cannot "host" four-consonantal roots.<sup>16</sup> So, the passive form is used to express the decausative meaning as well.

The overwhelming majority of the verbs in this group fall in one of the two cases discussed above, meaning that for almost all of them there is a morphological reason why there should only be one adjectival form.

I would like to draw attention to the fact that in the verbal system as well there are several forms which are ambiguous between passive and unaccusative. Some of them are *nišbar* ('broke/was broken'), *nisgar* ('closed/was closed'), *niftax* ('opened/was opened'), *nisraf* ('burned/was burned'). Notice that they are related to the same verbs discussed in this section – verbs in the *CaCaC* template. These verbs, like the adjectives discussed here, have a strong unaccusative reading, but it is possible to add to them a *by*-phrase, an Instrument argument or an Agent-oriented adverb, which shows that they can function as passives as well. The question that remains to be answered is why these additions, that force a passive reading

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<sup>16</sup> Phonologically, this specific template can host such roots. But the specific template is part of the larger paradigm of the first, or "kal" template in Hebrew, which does not allow four consonantal roots in general, because of phonological violations that such roots cause in some of the forms in the paradigm.

over the unaccusative one, are not possible, or at least are harder, with adjectives. It is possible that these adjectives coincidentally do not pass the tests for existence of an external argument for independent reasons (I discuss these reasons in section 7.5).

To summarize this section: I believe that the simplest analysis of verbs that have only one adjectival alternate is that this adjective is ambiguous – that the saturated adjective and the decausativized adjective take the same form. I showed that the fact they take the same form is not accidental for almost all of these verbs. I still cannot explain why the decausative reading is, for most of them, so strong that it almost 'overrides' the passive one.

In the last sections I have shown that verbs whose external argument is Agent and verbs whose external argument is [+c] behave, with regard to the existence of an adjectival passive and an adjectival decausative alternate to them, just like verbs. This fact reinforces the analysis proposed here, namely, that the two types of adjectives are derived by the same operations which derive passive and unaccusative verbs.

## **7. The operation that forms adjectival passives**

In this chapter and the next I will discuss and define the operations that form adjectival passives and adjectival decausatives. I have already established that the formation of adjectival passives involves Saturation, and the formation of adjectival decausatives involves Decausativization. But some questions still remain to be answered: in which component of the grammar does the formation of these adjectives happen? What is the input to the derivation? Is it the same input as that of the derivation of passive and unaccusative verbs? And what exactly does the operation do?

My basic assumption when discussing the formation of the two types of adjectives is that it is, wherever it can be, identical to the formation of the corresponding verbs. Of course, some differences between the derivations must exist, the most prominent one resulting from the difference in category between adjectives and verbs. Still, the guideline to my analysis remains the parallelism between adjectival passives / decausatives and passive / unaccusative verbs.

Before beginning the actual discussion, I will state in section 7.1 some assumptions I make regarding the lexicon and the different properties of lexical categories and entries. Then, I will turn to the operations that form adjectival passives and adjectival decausatives. Regarding each of the two operations, I will propose an answer the questions presented above: where does the operation apply? What is its input? And what does it do?

### **7.1 Some assumptions regarding the lexicon**

As already stated above, I consider the lexicon to be more than a mere list of entries. Rather, it is an operational component, which forms the interface between the conceptual system and the computational system.

The conceptual system consists of concepts – abstract entities which can denote individuals or events, but lack grammatical features. So, a concept might be some abstract representation of, say, *chair* or *destruction*, but this representation lacks grammatical features such as category specification, Case features, gender features, morphological form, etc.. When a concept denotes an event, though, it does have a thematic grid, since a thematic grid is not merely a formal grammatical feature, but part of the meaning of the concept. Of course, concepts cannot be inserted directly to syntactic derivation; only lexical items can.

The lexicon contains items of a number of categories, from which I will focus here on verbs and adjectives. Since I am adopting the Lexicalist Hypothesis, I believe that lexical items do exist, and have morphological forms.<sup>17</sup> The exact nature and properties of verbs and adjectives are a topic for continuous discussions. What I propose here are simply certain minimal assumptions that have to do with the discussion of adjectival passive / decausative formation.

Regarding verbs, I assume that they are marked by the category label V; they all have thematic grids; and they all (whether denoting a telic or an atelic event) have an event variable.

Regarding adjectives, I assume that they are marked by the category label A and that they all lack an event variable. I assume this because adjectives, unlike verbs, do not allow for the addition of event modifiers. Compare, for example 85a and 85b:<sup>18</sup>

(85)a. *ha-ma'im kaf'u pa'ama'im ha-šavu'a.*

the-water froze twice this week

b. *\*ha-ma'im kfu'im pa'ama'im ha-šavu'a.*

the-water are frozen (adj.) twice this week

As to whether adjectives have a thematic grid or not, I suggest that at least some of them do. It is possible that all of them do, but this point is not crucial to my analysis. I assume that at least some adjectives have thematic grids based on examples like those in 86, where an internal thematic role is realized within an adjective phrase:

(86)a. *male ma'yim*

full (of) water

b. *camud la-kir*

attached/adjacent to+the-wall

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<sup>17</sup> Clearly, this approach stands in sharp contrast to the assumptions of Distributed Morphology theory (as presented in Halle and Marantz (1993, 1994)), where lexical items lack phonological and morphological properties, and all phonological and morphological processes happen post-syntactically.

<sup>18</sup> The test using an event modifier is not completely satisfying for distinguishing verbs from adjectives, since there are some verbs (subject-Experiencer verbs, for the most part) that do not readily allow the addition of an event modifier:

(i) *\*/? max yada et ha-tšuva la-xida pa'ama'im ha-šavu'a.*

Max knew the-answer to+the-riddle twice this-week

It is possible that such verbs lack an event variable, then. Still, for simplicity, I will assume where possible that all verbs have an event variable.

Notice, though, that adjectives always have (at least) one thematic role less than their verbal alternates. One role is not realized in its canonical position; it is gapped in order to create predication. In this respect, adjectives resemble relative clauses: a missing argument is used to generate modification. In order to exemplify this, let us consider the intuitive representations in 87:

- (87) *bilbel*, V 'confused'  $\theta_1$  [+c],  $\theta_2$  [-c+m]  
*mevalbel*, A 'confusing'  $\lambda x$ . x confuses  $\theta_2$   
*mevulbal*, A 'confused'  $\lambda x$ .  $\theta_1$  confuses x

The representations above are not accurate, but they convey the idea that Adjectivization makes a two-place relation into a one-place predicate (and a three-place relation into a two-place one, etc.). It turns a transitive verb into a property, by abstracting over one of the thematic roles. The role that correlates to the gap is often referred to as 'externalized' (Levin & Rappaport (1986) and others).

Under these assumptions, when I say that an adjective is derived from a verb, I mean that the verb loses its event variable, changes its category to A and one of its thematic roles is "externalized" – gapped in order to create predication. When I say that an adjective is derived directly from a concept, I mean that this entry gets the label A (I will refer to this as 'category setting'), and if the concept has thematic roles, an "externalization" has to take place here as well. Notice that category setting must take place in the lexicon, since concepts cannot enter syntactic derivations.

Since verbs in the lexicon already have a morphological form, adjectivization of a verb includes morphological derivation. Concepts have no morphology, and therefore adjectives derived from concepts do not appear morphologically derived.

## 7.2 The locus of application

In what component of the grammar does adjectival passive formation take place? Does it take place in the lexicon or in the syntax?

I believe that there are two good reasons to think that the operation takes place in the lexicon. First, Siloni (2002) argues convincingly that all category-changing operations apply in the lexicon. I still haven't discussed the category of the input for this operation, but two plausible candidates are transitive verbs, or concepts which are unspecified for category. In

both cases, creating an adjective involves category change (which, according to Siloni (2002) is lexical), or category setting (which, as I have argued in the previous section, must be lexical as well). Second, as mentioned in section 4.3, Horvath and Siloni (to appear) show that an array of differences between verbal and adjectival passives can be easily accounted for by the assumption that verbal passive formation is syntactic, while adjectival passive formation is lexical.

### **7.3 The input for the operation**

When discussing verbal passive formation, I suggested that the input for this operation has the properties in 88:

(88)a. The input consists of transitive verbs, which:

- b. Assign accusative Case, and
- c. Their external theta-role can be interpreted as an Agent.

In this section I will examine the input for adjectival passive formation, in light of the properties presented in 88. After discussing the categorical nature of the input, I will turn to the constraints presented in 88(b-c), and check whether they are relevant in the adjectival system as well. I will then discuss another constraint on the input that exists only for the formation of adjectives, and not for the formation of verbs.

#### **7.3.1 The categorical nature of the input**

When considering the categorical nature of the input for adjectival passive formation, three options come to mind: either the input consists of transitive verbs, or it consists of concepts, or of passive verbs.

The third alternative of the above can be eliminated right away: as mentioned in the previous section, Horvath and Siloni (to appear) present some strong arguments that verbal passive formation is syntactic, while adjectival passive formation is lexical. If we accept this, it is clear that adjectival passives cannot be derived from verbal passives, since verbal passives are not available in the lexicon at all.

The question remains then, whether adjectival passives are derived from transitive verbs or directly from concepts. A good strategy in order to answer this question is to look for gaps in the paradigm. For example, if we found a group of adjectival passives that do not have verbal alternates, we could argue that the reason is that these adjectives are derived straight from the concept, and therefore the existence of a verb is not a necessary condition for the existence of an adjective. Alternatively, if we found that for the same concept several types of verb alternates exist in the lexicon, and the same number of adjectival alternates also exists, a natural assumption would be that the different adjectives are derived from the different verbs, and not directly from the concept.

In the current case of adjectival passives, I believe the answer to the question can come from data regarding the passivization of causative verbs.

Examples for causative verbs are *he'exil* ('feed'), *hilbiš* ('dress'), *hošiv* ('sit someone down') etc. Reinhart's (2000, 2002) analysis of these verbs is roughly that they are derived from transitive verbs like *axal* ('eat') and *lavaš* ('wear, put on') by the addition of an Agent role. According to the Lexicon Interface Guideline, such an operation must take place in the lexicon, since it involves manipulation of thematic grids – an addition of a role. Therefore, causative verbs are part of the lexical inventory. But, although these verbs have verbal passive alternates, they systematically lack adjectival passive alternates:

(89)a. *ha-yeladim hulbešu likrat ha-mesiba.*

the-children were dressed for the-party

b. \**maxar ba-erev ha-yeladim yihyu mulbašim.*

tomorrow in+the-evening the-children will-be dressed

(90)a. *ha-parot mu'axalot kol yom al-yedey mitnadvim.*

the-cows are fed each day by volunteers

b. \**parot mu'axalot šoklot yoter mi-parot še-oxlot levad.*

cows fed weigh more than-cows that-eat alone

'Fed cows weigh more than cows that eat on their own'.

Notice that causative verbs are transitive, they assign accusative Case, and their external theta-role can (in fact, must) be interpreted as an Agent<sup>19</sup>. Therefore, they seem to form a natural input for Saturation. The fact that they lack adjectival passive alternates, therefore,

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<sup>19</sup> Causative verbs also meet the additional constraint regarding input for adjectival passive formation, discussed in 7.3.4 - they denote telic events that affect their object.

might seem mysterious. But, this fact can easily be accounted for by the following hypothesis: adjectival passive formation does not apply to transitive verbs, it applies to concepts. Assuming that there are no causative concepts, there will be no adjectival passive alternates for them. The assumption that there are no causative concepts is natural if we take concepts to denote basic events or entities, and not complex, derived ones<sup>20</sup>. Notice that this hypothesis regarding the input for the operation holds only for adjectival passives, not for verbal ones. Since verbal passives are derived in the syntax, the operation that forms them must take as input syntactic entities, specified for category. Specifically, it can take as input causative verbs.

To conclude this discussion: the lack of adjectival passive alternates for causative verbs seems to suggest that the input for adjectival passive formation does not consist of transitive verbs (since this would predict that causative verbs could undergo the operation as well), but rather of concepts, unspecified for category. Since there are no causative concepts, there are no causative adjectival passives.

### **7.3.2 Accusative Case assignment**

Having established that the input for adjectival passive formation consists of concepts, one can still ask what type of concepts it consists of. I argued in chapter 4 that a verb which assigns accusative Case and whose external theta-role can be interpreted as an Agent can undergo verbal passive formation. Let us check whether these constraints are relevant in the adjectival system as well.

The input for adjectival passive formation is concepts, and it is clear that concepts do not assign accusative Case. But, as the reader may remember, Reinhart (2000, 2002) suggests a generalization (repeated in 91) that ties accusative Case assignment with the thematic grid of the verb. Since concepts can have thematic grids as well, we can use this generalization when discussing concepts as well.

(91) A verb assigns accusative Case if it has in its theta grid a [+] cluster, and a fully specified cluster containing the value /-c.

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<sup>20</sup> The assumption that there are no causative concepts, only causative verbs, can create a problem with a different aspect of Reinhart's theta-system – the principles for mapping thematic roles into syntactic positions. One way of predicting the correct mapping of causative verbs involves assuming that they form new concepts, separate from the original transitive ones (for further discussion see Reinhart (2000, 2002)). But there might be other ways of predicting the mapping of causative verbs correctly, without assuming causative concepts.

In chapter 4 I have specified six thematic grids which answer the requirements of 91. Out of them, two are unattested. The remaining four are listed in 92:

- (92)a.  $\theta_1$  [+c+m],  $\theta_2$  [-c-m] e.g. *katav* 'write'  
 b.  $\theta_1$  [+c],  $\theta_2$  [-c-m] e.g. *patax* 'open'  
 c.  $\theta_1$  [+m],  $\theta_2$  [-c-m] ('Subject Experiencer') e.g. *sana* 'hate'  
 d.  $\theta_1$  [+c],  $\theta_2$  [-c+m] ('Object Experiencer') e.g. *hirciz* 'annoy'

It looks as if all the thematic grid types in 92 can serve as input to adjectival passive formation.<sup>21</sup> Namely, if there is a difference in the requirement of accusative Case assignment between verbs and adjectives, it does not restrict the input further, but rather allows for more concepts to be passivized – not only for accusative assigning ones. And, at first look, it does seem that other concepts, whose thematic grid will not allow for accusative Case assignment, and which do not form verbal passives, form adjectival passives. Some representative examples I found for this case are given in 93:

(93) <u>transitive verb (concept)</u>	<u>verbal passive</u>	<u>adjectival passive</u>
a. <i>batax be-</i> 'trust (in)'	* <i>nivtax</i> 'was trusted'	<i>batu'ax</i> 'safe'
<i>pikpek be-</i> 'doubt (in)'	* <i>pukpak</i> 'was doubted'	<i>mefukpak</i> 'dubious'
<i>cipa le-</i> 'anticipate (to)'	* <i>cupa</i> 'was anticipated'	<i>mecupe</i> 'anticipated'
b. <i>i'yem al-</i> 'threaten (on)'	* <i>u'yam</i> 'was threatened'	<i>me'uyam</i> 'threatened'
c. <i>hivxin be-</i> 'observe (in)'	* <i>huvxan</i> 'was observed'	<i>muvxan</i> 'distinguished'
<i>hifri'a le-</i> 'interrupt (to)'	* <i>hufra</i> 'was interrupted'	<i>mufra</i> 'disturbed, wild'

What I would like to claim is that all the adjectival passive forms in 93 are not, in fact, passive, in spite of their passive morphology. Remember that adjectival passives are only those which are interpreted as if their external argument was saturated.

The forms in 93a, despite their morphology, do not have the interpretation of a regular adjectival passive. As discussed above, the semantics of verbal (and adjectival) passives includes existential closure upon the external argument. This is exemplified in 94:

(94) *ha-bayit banuy* 'the house is built' ↔ someone built the house.

However, this is not the case with the adjectives in 93a, as can be seen in 95:

<sup>21</sup> Actually, concepts with the thematic grid in 92c do not form adjectival passives, as will be shown shortly. But, I do not believe that this is a reason to restrict further the requirement for accusative Case assignment as such. The reason they do not form adjectival passives has to do with different constraint dealing with the aspectual properties of the input. This issue is discussed in section 7.3.4.

(95) *ze eru'a mecupe* 'this is an anticipated event' → someone anticipated the event.

But:

Someone anticipated the event → *ze eru'a mecupe* 'this is an anticipated event'.

What can be seen in 95 is that it is not enough for someone to anticipate an event for it to be *mecupe* 'anticipated', or for someone to trust a car for it to be *batu'ax* 'safe'. Actually, the semantics of such adjectives seems to involve some sort of universal quantification, not existential one. Only when everyone waits eagerly for some event can it be called *mecupe* ('anticipated').<sup>22</sup> The same is true, in fact, for all subject-Experiencer verbs. Their 'adjectival passive' alternate is actually interpreted as involving universal binding. This observation appears already in Doron (2000).<sup>23</sup>

The form in 93b, *me'uyam* 'threatened' is not passive as well. Despite its passive morphology, it is an adjectival decausative, since its missing argument can never be interpreted as an Agent. Consider 96:

(96) a. *max me'uyam me-ha-macav.*

Max is intimidated of/from-the-situation

b. *?max me'uyam al-yedey Lucy.*

Max is threatened/intimidated by Lucy

Even if we accept 96b, with a *by*-phrase that introduces an animate argument, we cannot give it the interpretation that Lucy threatened Max on purpose, only that something about her intimidates him.

Regarding the forms in 93c, again, they are not passive. Consider 97:

(97)a. *ha-yeladim hifri'u la-ši'ur.*

the-children interrupted to+the-class.

b. *\*ze ši'ur mufra.*

this class interrupted

'This is an interrupted class.'

c. *ze yeled mufra.*

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<sup>22</sup> In the case of *batu'ax* ('safe'), I doubt if even everyone trusting something is a sufficient condition for it to be labeled as such. I believe this is a case in which some semantic drift occurred, like the cases of 93c which will be discussed shortly.

<sup>23</sup> I have shown that what looks like the adjectival passive of subject-Experiencer verbs is not in fact passive. At this point, some questions arise: what is the operation that derives these forms? Why does it operate only on subject-Experiencer verbs, and not on any other verb? And why isn't it operative in the verbal system? I will not deal with these questions in this work.

this boy disturbed

'This is a wild boy.'

In 97 we can see that *mufra* 'disturbed, wild' clearly does not have the meaning it should have had if it simply underwent Saturation. A semantic drift has occurred in this case, and the meaning is not predicted. Therefore, though bearing passive morphology, the forms in 93c are not 'true' passives.

What I have shown above is that apparent cases where verbs (or concepts) which are not accusative Case assigners seem to have adjectival passive alternates are not in fact such cases, since the adjectival passives are not 'true' passives with regard to their interpretation. The fact is that a lot of verbs that do not assign accusative Case and do not have a verbal passive alternate, lack an adjectival passive alternate as well. Some examples are given in 98:

(98) <u>transitive verb (concept)</u>	<u>verbal passive</u>	<u>adjectival passive</u>
<i>he'emin le-</i> 'believe (to)'	* <i>hu'aman</i> 'was believed'	* <i>mu'aman</i> 'believed'
<i>baha be-</i> 'stare (in)'	* <i>nivha</i> 'was stared at'	* <i>bahuy</i> 'stared at'
<i>azar le-</i> 'help (to)'	* <i>ne'ezar</i> 'was helped'	* <i>azur</i> 'helped'

Therefore, it seems that the constraint which states that the input for Saturation must consist of entries which have the thematic grid of accusative Case assigners is relevant not only in the formation of verbal passives, but in the formation of adjectival passives as well.

### 7.3.3 Agentive interpretation

In chapter 4 I argued that only accusative assigning verbs whose external theta-role can be interpreted as an Agent can serve as input for Saturation. According to speakers' judgments, the missing argument in passive constructions is always interpreted as an Agent, even when the original role could be interpreted as an inanimate cause, for example. Based on this, I claimed that Saturation can only introduce a variable that receives the Agent theta-role. I further claimed that this feature of Saturation in fact determines the input for the operation: the input will consist only of verbs whose external theta-role is compatible with an Agent interpretation. The reader may recall that the demand for Agent interpretation of the external theta-role seems at first superfluous: accusative assigning verbs, according to Reinhart, are only those whose external theta role is either [+c+m], [+c], or [+m]; and all these roles seem

theoretically to have the possibility to be interpreted as an Agent – [+c+m]. Still, as shown in chapter 4, this is not the case. Both some subject-Experiencer and some object-Experiencer verbs cannot be interpreted as having the Agent role, and the same verbs do not have a verbal passive alternate.

The question arises whether the constraint of Agent interpretation is relevant for adjectival passive formation as well. In order to answer that, we must first check whether the generalization that the missing argument in passive constructions is interpreted as an Agent (regardless of the original theta-role) is valid with regard to adjectives as well. This seems to indeed be the case. For example, consider 99:

(99) a. *yeš ba-kos ma'im mexumamim.*

there+is in+the-glass water heated

'There is heated water in the glass.'

99 can be uttered, for example, in a case where someone heated the water in a pot to make coffee. It cannot be uttered in a case where the speaker refers to a glass of water that was left in the sun. That is to say, it cannot be uttered in a situation where something (the sun, in this case), and not someone, heated the water. The same is true for other examples. This means that the interpretation of adjectival passives parallels that of verbal passives with regard to the Agent interpretation. In fact, since I have already suggested that adjectival passives are derived by Saturation as well, this is not surprising, since I proposed that Agentive interpretation is an inherent feature of Saturation. And since adjectival passives are derived by Saturation, and the compatibility with an Agent interpretation is a property of the input of Saturation itself, the constraint of Agent interpretation should be operative in the adjectival case as well.

Looking at empirical data regarding Experiencer verbs reinforces this conclusion.

The data one must look at are the 'problematic' sets of subject- and object-Experiencer verbs (or concepts) whose external theta-role cannot be interpreted as an Agent; we must check whether they have adjectival passive alternates, where the prediction would be that they will not.

Regarding subject-Experiencer verbs, I have already discussed some examples which show that they lack an adjectival passive alternate. In section 7.3.4 I will return to this issue and claim that all these verbs lack adjectival passive alternates because of their aspectual

properties, with no connection to the possibility of Agent interpretation. Therefore, this group of verbs cannot shed light on the problem at hand.

Turning next to object-Experiencer verbs, in chapter 4 I have discussed a subgroup of those, whose external theta-role cannot be interpreted as an Agent, and which lack verbal passive alternates. These verbs are repeated in 100 for convenience:

(100) *hilhiv*/\**hulhav* 'excite', *hiršim*/\**huršam* 'impress', *higiz*/\**hurgaz* 'annoy', *ci'er*/\**co'ar* 'sadden', *hitmiha*/\**hutma* 'puzzle', *hidhim*/\**hudham* 'amaze', *hirgi'a*/\**hurga* 'calm down', *hamam*/\**nehemam* 'shock', *sime'ax*/\**sumax* 'delight', *ye'eš*/\**yo'aš* 'despair', *inyen*/\**unyan* 'interest'.

Do the verbs in 100 have adjectival passive alternates? For most of them it is very easy to see that they do not. There are no such forms as \**mulhav* ('excited'), \**muršam* ('impressed'), \**murgaz* ('annoyed'), \**meco'ar* ('saddened'), \**mutma* ('puzzled'), \**mudham* ('amazed'), *murga* ('calmed down') and *mesumax* ('delighted').<sup>24</sup> The three remaining ones have what looks like an adjectival passive alternate: *hamum* ('shocked'), *meyo'aš* ('in despair, desperate, hopeless') and *me'unyan* ('interested'). But regarding these forms as well, it is clear that they cannot be passive. If they were passive, they would have an Agent entailment. Namely, if *max meyo'aš* ('Max is desperate') was a sentence containing a passive adjective, it would entail that 'someone despaired Max'. But, as I have already shown in chapter 4, *ye'eš* ('despair') does not have an Agent interpretation. Therefore, forms like *meyo'aš* are not passive.

So, the possibility for an Agent interpretation and the existence of a passive alternate seem to be tied in the adjectival system as well. Remember that in discussing object-Experiencer verbs in chapter 4, I presented a suggestion of Friedemann (2000), that some of these verbs lack an Agent interpretation because their [+c] role is inert, and is not accessible outside of the lexicon. Since verbal passive formation is a syntactic operation which makes use of the thematic roles of the verb that are inserted into the syntax, it is clear why it cannot make use of this role, and therefore why there are no verbal passive alternates for these verbs. But, as argued above, adjectival passive formation is a lexical operation. Why then can't it use the [+c] role, which does exist in the lexical entry of these verbs? In other words, if lexical Saturation simply has to mark some thematic role in the lexicon as assigned to an

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<sup>24</sup> Notice that the external theta-role of these verbs is [+c], and therefore they are predicted to undergo Decausativeization and have adjectival decausative alternates. This is indeed the case for most of the verbs. The adjectival decausatives corresponding to the verbs in 100 are *nilhav* 'enthusiastic', *nirgaz* 'annoyed, angry, furious', *tameha* 'amazed, astounded', *nidham* 'amazed', *ragu'a* 'calm' and *sime'ax* 'happy'.

existentially bound variable, why should it matter that this thematic role is inert? Notice that other lexical operations, such as Decausativization, **can** make use of this role, even though it is frozen. The answer to this, suggested by Horvath and Siloni (to appear), is that adjectival passive formation cannot apply to such verbs because their [+c] role does need to be available outside of the lexicon. Although the marking of the role as Saturated happens in the lexicon, its actual assignment to a bound variable takes place in the semantics. But since in these cases the role is inert, it is not accessible in the semantics. Therefore, Saturation cannot apply here.

To conclude, we have seen that in the adjectival system as well there is a strong relation between the possibility for an Agentive interpretation of a verb and the existence of a passive alternate for it.

#### 7.3.4 Additional constraints on the input

In addition to the constraints discussed above, which are also relevant for the derivation of verbal passives, it is clear that there are some constraints which hold only for the derivation of adjectival passives. As Doron (2000) notes, there are many concepts that have a verbal passive alternate, but not an adjectival passive one. Some examples are given in 101:

- (101) a. *menugan* 'played', *mešudar* 'broadcasted', *meru'ayan* 'interviewed'.  
 b. \**xakur* 'interrogated', \**akuf* 'bypassed', \**tarum* 'donated', \**balu'a* 'swallowed'.  
 c. *mukar* 'familiar, known, recognized', *mexubad* 'respected, honorable', *mu'arax* 'appreciated', *mu'adaf* 'preferred, favored'.

Notice that the forms in 101a do exist, but they are only interpreted as verbal passives, not as adjectival ones. They cannot be inserted into adjectival contexts, like those presented in chapter 2 above:

- (102)a. \**ne'ima menugenet yafa yoter mi-ne'ima še-šarim ota*.  
 tune played beautiful more from-tune that-sing it  
 'A tune played (by instruments) is more beautiful than a tune which is sung.'  
 b. \**ha-sar yihiye meru'ayan maxar ba'erev*.  
 the-minister will-be interviewed tomorrow in+the-evening  
 'The minister will be interviewed (adjectival reading) tomorrow evening.'

The forms in 101b do not exist at all, and the forms in 101c, derived from subject-Experiencer verbs, are, as I have shown in section 7.3.2, not passive. As Doron notes, their interpretation does not include existential closure. Rather, it includes a universal one. So, all the verbs (or concepts) in 101 above do not have adjectival passive alternates, even though they are accusative Case assigners and their external thematic role can be interpreted as an Agent. This suggests that an additional constraint is present here. Doron (2000) tries to define this constraint. Her analysis has to do with the aspectual properties of the input entries for adjectival passive formation. Roughly, what she suggests is that only a verb which denotes a telic event, and entails a change in the state of its object, may become an adjectival passive. *nigen* ('play') does not have an adjectival passive alternate because it denotes an atelic event. *akaf* ('bypass') does not have an adjectival passive alternate because it does not entail a change of state of its object: when someone bypasses some obstacle, it does not have any effect on the obstacle itself. This hypothesis can also explain the data in 101c above. *he'erix* ('appreciate, evaluate') is both atelic, and does not entail a change in its object's state, which predicts the lack of an adjectival passive alternate of it.

What I presented here is a very simplified version of Doron's analysis, which involves specifications for various types of verbs and aspectual properties. The analysis, even in its simplified version, predicts much of the data regarding the existence / non-existence of adjectival passive alternates of verbs in Hebrew. But, there are also many cases where its predictions are wrong. For example, *muklat* 'recorded' is a passive form which can be adjectival, though it is not clear how the event of recording affects or changes the state of the thing being recorded. The same is true for *meyusam* 'applied, implemented': it is the adjectival passive form of the verb *yisem* 'apply, implement', though, again, it is not clear whether the verb entails a change of state of its object; when someone implements some program, does it affect the program? The problem lies perhaps in the fact that the idea of "affectedness", which Doron uses, is not defined in an exact way. Another example which Doron's analysis does not predict is *šamur* 'guarded, kept': it is the adjectival passive alternate of the verb *šamar* 'guard, keep', which is atelic, and therefore not predicted to have this alternate. So, it seems that Doron's analysis needs further refinement.

I leave this issue of the additional constraint on the input for adjectival passive formation open at the moment. I believe that one thing is clear though: that this additional constraint

emerges from the difference between verbs and adjectives - while verbs denote events, adjectives denote states. Specifically – adjectival passives denote the state of the object of the active verb. This difference projects on the possible input entries. For example, a verb that describes an atelic event which has no stative end point will not serve as input for adjectival passive formation because the meaning of the verb must include some result state for it to have an adjectival alternate. I will not discuss this issue further here.

#### **7.4 The nature of the operation**

We are now ready to discuss the actual operation of adjectival passive formation in Hebrew. My main idea is that the derivation of adjectival passives is identical to the derivation of verbal passives, but of course also involves category change, or, in this case, since the input is unspecified for category, category setting. So, adjectival passive formation includes two operations:

- a. Adjectivization
- b. Saturation

I assume here that these operations are not ordered in any way; this is the null hypothesis, and I do not see a reason for assuming a specific order between them. Let us assume, then, that both operations take place simultaneously, and see how their combination affects an input entry – a concept with its thematic grid.

What Adjectivization does is, first, to reduce an event variable, since adjectives do not have event variables. Since concepts do not have event variables, this operation is vacuous in this case. Secondly, Adjectivization must "externalize" or abstract over one of the thematic roles in the input's thematic grid. What role should that be? It is clear that the external thematic role cannot be the one that's externalized: since this is the saturated role, it cannot be the one that creates the modification. So, an internal role must be the 'target' for externalization. If there is more than one internal theta role, the one that will be externalized is the one that will be realized by a DP. This is so because otherwise, it will not be possible to realize this DP for lack of Case. So, it is the direct object that will be 'gapped'. The observation that it is only direct objects which can be externalized, because of Case considerations, appears in Levin and Rappaport (1986).

What does Saturation do? When discussing Saturation with regard to the verbal system, I mentioned that it does two things: syntactically, it cancels a verb's ability to assign accusative Case, and prevents the mapping of the subject to its canonical position; semantically, it marks the external thematic role so that it will be interpreted as given to an existentially bound variable in the semantics. In the case of adjectival passive formation, the input entry does not have accusative Case to begin with (neither concepts nor Hebrew adjectives have Case), and thus no Case reduction takes place. What does happen is that the external theta-role is marked to be given to an existentially bound variable in the semantics. The whole process is summarized schematically in 103, with a two-place relation as input.

(103) input entry – two place relation	$R(\theta_1, \theta_2)$	e.g. <i>katav</i> 'write'
	<u>Adjectivization</u>	<u>Saturation</u>
	• category setting – A	• Case reduction – vacuous
	• deletion of event variable – vacuous	• marking of the external
	• gapping over an argument (the	theta-role to be assigned
	internal DP argument)	in the semantics
output - predicate	$A, \lambda x. R'(\theta_1^*, x)^{25}$	<i>katuv</i> 'written'

When the input contains more than one internal theta-role in its thematic grid, only the DP internal argument can be "externalized". The input and the output of the operation in such cases are exemplified in 104:

(104) input – three-place relation	$R(\theta_1, \theta_2(DP), \theta_3(PP))$	e.g. <i>heni'ax</i> 'place'
output – predicate	$\lambda x. R'(\theta_1^*, x, \theta_3)$	<i>munax</i> 'placed'
(one role externalized, the other will be realized internally)		

Notice that in the representations of the outputs above there is an external thematic role. And although it will not be realized syntactically in its position, it will be present in the semantics. This fact accounts for various phenomena we have observed in chapter 3: adjectival passives allow the addition of arguments bearing the Instrument theta-role, Agent-oriented adverbs etc.

The output, then, is an adjective that has a thematic grid. What does that mean? Thematic roles are usually regarded as roles of participants in an event; an adjective describes a state,

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<sup>25</sup> The sign \* in this case represents that the thematic role is saturated – marked to be assigned in the semantics.

not an event. But, the fact is that many thematic roles can be assigned to participants in a state. For example, consider 105:

(105) *ha-et yihiye munax ba-megeera.*

the-pen will+be placed in+the-drawer

The locative thematic role, which is realized here as 'in the drawer', does not necessarily refer to a participant in an act of placing. It can just as well refer to a participant in the resultant state, when the pen is in the drawer.

But, in all adjectival passives there is also an external thematic role, which I have shown to be interpreted as an Agent. This role, as far as I can see, cannot be interpreted as assigned to a participant in a resultant state. An Agent is an actor in some event. This is the reason why adjectival passives entail an Action, as I have shown in chapter 3. Since their semantics includes an Agent role, but does not include an event variable, an event must be stipulated, or "reconstructed" in order to assign the Agent role. The "reconstruction" of an event is a last resort mechanism: events cannot just be stipulated without a reason. The only condition under which an event can (and must) be reconstructed is when there is a thematic role that could not otherwise be assigned. This is always the case with adjectival passives, and therefore they all entail an Action.

To conclude this section, I have shown here how the properties of adjectival passives can be accounted for by assuming simply that adjectival passive formation consists of Adjectivization and Saturation. Adjectivization is responsible for gapping an internal thematic role. Saturation is responsible for marking the external role to be assigned in the semantics. Case reduction and deletion of an event variable are vacuous. The facts that adjectival passives show accessibility of an external argument and entail an Action naturally follow.

### **7.5 Explanation of the counter examples**

The analysis I presented above makes certain predictions about the behavior of adjectival passives. One prediction that seems to have many counter examples is that all adjectival passives will behave as if they have a semantically active external argument. This means, that we can freely add to sentences containing them an argument bearing the Instrument role, an Agent-oriented adverb, a *by*-phrase or a purpose clause. This prediction is indeed borne

out in many cases, but there are many sentences that seem to contradict it. Compare 106 with 107:

(106)a. *ha-mixtav katuv be-et / be-kišaron.*

the-letter written in-pen / in-talent

b. *ha-kelev kašur be-recu'a.*

the-dog tied in-leash

c. *ha-poster mudbak be-rašlanut.*

the-poster glued in-carelessness

d. *ha-ictadion šamur al-yedey šotrim xamušim.*

the-stadium guarded by policemen armed

'The stadium is guarded by armed policemen.'

(107)a. *\*ha-kise šavur be-patiš / be-alimut.*

the-chair broken in-hammer / in-violence

b. *\*yeladim mukim be-xagora sovlim me'od.*

children beaten in-belt suffer a lot

c. *\*ha-delet sgura be-zadon / al-yedey max.*

the-door closed in-evil / by Max

Why are the sentences in 107 ungrammatical, while those in 106 are grammatical? According to my analysis, the adjectives in 107 **do** contain an Agent in their interpretation (or at least in one of their interpretations, in the case of *šavur* 'broken' and *sagur* 'closed', which I have claimed to be ambiguous). I have also shown that these adjectives always entail an Action, an event. So, if we have an event, and an Agent, why aren't the additions of Instruments, adverbs etc. grammatical, like they are with verbs (as seen in 108)?

(108) *max šavar et ha-kise be-patiš / be-alimut.*

Max broke The-chair in-hammer / in-violence

The difference between verbs and adjectival passives is that verbs describe events, and have an event variable; adjectives, on the other hand, describe states; and even when there is an entailment of an event, the event is merely 'reconstructed' as a last resort, in order to accommodate an otherwise "eventless" Agent. The event that is reconstructed must be minimal - we cannot modify it using adverbs, purpose clauses etc. Bear in mind that the adjectival passive does not denote an event, but a state resulting from an event.

I suggest the 'Detectability Condition' (given in 109) as a constraint on the addition of Instruments, Agent-oriented adverbs, purpose clauses and *by*-phrases to sentences containing adjectival passives.

(109) The Detectability Condition

Arguments, adverbs, purpose clauses and *by*-phrases can only be added to a sentence containing a reconstructed event when they are 'detectable' from its resultant state.

The Detectability Condition actually states that an Instrument, an adverbial description, a purpose clause or the suppressed Agent (of the *by*-phrase) must still be relevant, in a way 'visible', in the state that the adjective denotes. In this way, the reconstructed event is kept minimal – we do not know anything about it, except that it led to the state denoted by the adjective.

The following examples will make my point clear. Let us look first at the Instrument role, comparing 106b with 107b, repeated here for convenience, with their active counterparts:

(110)a. *max kašar et ha-kelev be-recu'a.*

Max tied the-dog in-leash

b. *ha-kelev kašur be-recu'a.*

the-dog tied in-leash

(111)a. *ha-šxenim hiku et ha-yeled be-maklot.*

the-neighbors beat the-child in-sticks

b. *\*yeladim mukim be-xagora sovlim me'od.*

children beaten in-belt suffer a lot

In both 110a and 111a the instrument participates in the event. But when we look at the b. sentences, we can see that only in 110b the Instrument is still involved in the state. When we see a tied dog, we also see what it is tied with. In 111b, on the other hand, the instrument is not involved in the state. If we see a boy which was hit, we can perhaps only guess what he was hit with, but the instrument is no longer 'visible' or detectable, and it is not a part of the state. The same is true for the other example above: *katuv be-et* ('written with a pen') is fine, since the pen-writing is a part of the written letter – we know when looking at the letter that it was written with a pen. *šavur be-patiš* ('broken with a hammer') is not good, since the hammer is not a participant in the state of a broken chair. Consider, finally, 112 and 113: (Julia Horvath, p.c.)

(112)\* *ha-mixtav katuv be-et yafe.*

the-letter written in-pen beautiful

'The letter is written in a beautiful pen.'

(113) *ha-mixtav katuv be-et šaxor.*

the-letter written in-pen black

'The letter is written in a black pen.'

112 is ungrammatical because the pen being beautiful cannot be detected from looking at the written letter. 113, on the other hand, is grammatical, but we interpret it in a very specific way: the sentence claims that the ink in the pen is black, not that the pen itself is black. The reason is the same as in the previous examples: the pen itself being black is not detectable from the resulting state. But, the ink in the pen being black is detectable from the written letter, and therefore the use of Instrument role is grammatical, and this is the interpretation that we assign to the sentence.

Now let us look at the use of Agent-oriented adverbs. Consider 114 and 115:

(114)a. *max hidbik et ha-poster be-rašlanut.*

Max glued the-poster in-carelessness

b. *avarti leyad poster mudbak be-rašlanut.*

I+passed by a poster glued in-carelessness

(115)a. *max sagar et ha-delet be-zadon.*

Max closed the-door in-evil

b. \**ha-delet sgura be-zadon.*

the-door closed in-evil

Again, both a. sentences are grammatical, and the adverb describes the manner in which the action took place. Now let us look at the b. sentences. 114b is fine, because the adverb is still relevant to the state. By looking at a glued poster we can tell if it has been glued carelessly, maybe because it is glued unevenly, has loose ends, etc. On the other hand, when we look at a closed door, we cannot tell if it was closed with good or bad intentions. Therefore, the adverb *maliciously* cannot describe the state of a closed door. That's why 115b is ungrammatical. Notice, that 114b can be uttered if I see a poster that looks as if it was glued carelessly, even if, in fact, it was glued most carefully, but I do not know it and have no way of telling it from looking at the poster. So, the adverb refers to what I can detect from the

state. The situation is similar in the other examples. *katuv be-kišaron* ('written with talent') is fine, because we can tell from reading a written letter whether it was written with talent or not. *šavur be-ko'ax* ('broken with force') is ungrammatical because this manner of breaking is not still present when observing a broken chair. It is not detectable in the state.<sup>26</sup>

The same holds for *by*-phrases. In order for them to be realized with an adjectival passive, the suppressed Agent must be detectable, or 'visible', in the state. Consider 116 and 117:

(116) *ha-ictadion šamur al-yedey šotrim xamušim.*

the-stadium guarded by policemen armed

'The stadium is guarded by armed policemen.'

(117) \**ha-delet sgura al-yedey max.*

the-door closed by Max

116 is grammatical because the armed policemen participate in the state described by the adjective 'guarded'. Seeing a guarded stadium, we can see who guards it.<sup>27</sup> 117, on the other hand, is ungrammatical because from observing a broken chair, we cannot tell who broke it.

The last thing left to explain is why it seems that adjectival passives never allow adjunction of purpose clauses, as was discussed in section 3.1.4. Consider the following example:

(118) \**ha-agam mukpa kedey [PRO le-haxlik alav].*

the-lake frozen in order [PRO to-ice skate on+it]

118 exemplifies the general problem with adjoining purpose clauses to sentences with adjectival passives. According to the Detectability Condition, a purpose clause must still be relevant to the state, be detectable from it, in order for its adjunction to be grammatical. But, as far as I can see, only actions have purposes, not states. The purpose of an action cannot be inferred from looking at the result of it. The purpose is never present, "visible", in the state.<sup>28</sup>

To summarize this section, I have dealt here with sentences that could have been used as counter examples to my analysis – sentences with adjectival passives, which, according to

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<sup>26</sup> At this point, the Detectability Condition is rather intuitive, since I have not defined precisely what 'detectable' means. In the case of Instruments, it can simply mean that the instrument is literally visible, participating in the state. For an adverbial description the formalization of detectability is harder, and has to be further studied.

<sup>27</sup> This fact results, maybe, from the fact that 'guard' denotes an atelic event, and therefore its adjectival passive denotes an ongoing state, and not a resultant state.

<sup>28</sup> In the case of purpose clauses there might be another reason why they are illicit with adjectival passives. It was suggested (Williams (1985), Lasnik (1988)), that purpose clauses are only licensed by an event variable. In the case of adjectival passives there is no event variable, as explained above, and therefore a purpose clause cannot be licensed.

my analysis have an Agent in their interpretation, but still do not allow realization of an Instrument role, of Agent-oriented adverbs, of a *by*-phrase or of purpose clauses. What I claimed is that although the presence of an Agent is indeed necessary in order to realize such phrases, it is not sufficient. The other condition is that the Instrument, the manner, the suppressed Agent or the purpose of the action can still be detectable in the state that the adjective describes. A further formalization of the conditions under which something is 'detectable' is required.

## **8. The operation that forms adjectival decausatives**

### **8.1 The locus of application**

Like in the case of adjectival passive formation, I believe that there are two reasons to believe that adjectival decausative formation takes place in the lexicon, and not in the syntax. First, like adjectival passive formation, this operation involves category change, or category setting, which, as discussed in section 7.2, must be lexical.

Second, as discussed before, adjectival decausative formation must involve Decausativization: total elimination of the external thematic role of the transitive verb. According to Siloni's Lexicon Interface Guideline, which states that the syntax cannot manipulate thematic grids, such an operation must apply in the lexicon.

### **8.2 The input for the operation**

In trying to define the input for adjectival decausative formation, the first question that arises regards the categorical nature of this input. And again, three options come to mind: either the adjective is formed from a transitive verb, or it is formed from the unaccusative alternate, or directly from a concept, which is unspecified for category.

How can we decide between the three options in the case of adjectival decausatives?

As explained in section 7.3 above, one promising way to do this is to look for gaps in the paradigm. For example, if some transitive verbs do not have unaccusative verb alternates, but do have adjectival decausative alternates, this could suggest that the input is not unaccusative verbs, since their existence is not a necessary condition for the existence of the adjectives. Unfortunately, in the current case, I could observe no such gaps. Therefore, this diagnostics cannot answer the question of the input category at this stage.

I believe, though, that there is a reason to assume that the input for adjectival decausative formation is concepts, and not verbs. But before presenting it, let me define the exact group of adjectival decausatives.

Let us first consider the features of the adjectival decausatives discussed so far. These are presented in 119:

(119) Features of adjectival decausatives:

- a. They are adjectives: they describe states.
- b. They have a transitive verb alternate whose external theta role is [+c].

c. The [+c] role of the transitive alternate is not present in the interpretation of the adjective.

d. They bear typical passive morphology.

The question now arises whether all the features in 119 are necessary in order for something to be called an adjectival decausative. More specifically, what about entries that were discussed in section 6.2.3, which have the features 119(a-c), but do not bear passive morphology? Take for example *yaveš* ('dry'): it is an adjective; it has a transitive verb alternate whose external theta role is [+c], *yibeš* ('dry'); the external role of the verb is no longer present in the adjective interpretation (we can not add to it adverbials, etc.); but, it does not bear passive morphology. Should it be considered an adjectival decausative? I believe that if I want to pursue the line of thought presented in this work, the answer must be yes. One of the main ideas of the analysis presented above is that morphology is not always consistently tied to meaning or interpretation, and relying on morphology alone can even result in misleading generalizations. If we consider, for example, the adjectives *acuv* ('sad') and *same'ax* ('happy'), we can easily be convinced that they are identical in their distribution, behavior and interpretation, even though in Hebrew, one of them carries passive morphology and the other does not. Based on these considerations, I will refer to all entries that have features 119(a-c) above as adjectival decausatives, whether or not they bear passive morphology.

It is possible that there is a finer distinction among the group of adjectival decausatives which I have just defined. It seems as if some of these adjectival decausatives entail an event, while others do not. Notice that I am not referring here to an entailment of an Action, which I have defined as an event in which an Agent participates. I am referring to an entailment of any type of event, possibly without any Agent or even Cause. Consider 120:

(120)a. *ha-kadur ha-ze gadol, lamrot še-hu me-olam lo gadal.*

the-ball the-this big, though that-it never not grew

'This ball is big, though it never grew/increased/expanded.'

b. *ha-agam ha-ze kafu, lamrot še-hu me-olam lo kafa.*

the-lake the-this frozen, though that-it never not froze

'This lake is frozen, though it never froze.'

While 120a is perfectly grammatical and logical, 120b is, at least for some speakers, a contradiction. This suggests that a difference exists between *gadol* 'big', and *kafu* 'frozen' – the first describes a state without entailing any event that led to it, while the second, though not entailing an Action, entails an (maybe 'Agent-less') event of freezing. Note also that the adjective which does not entail an event lacks passive morphology, while the one that does bears it. So, perhaps, adjectival decausatives should be considered only those with passive morphology, which are distinct from adjectives without passive morphology with respect to the entailment of an event. This is an interesting possibility, which I will not pursue here. Let me just remark that the distinction just discussed is indeed fine and judgments regarding it are very difficult. For example, it is unclear whether 120b is a contradiction because of the event being actually a part of the semantics of *kafu* 'frozen', or merely because our knowledge or beliefs about the world tell us that things are not created frozen. Also, it does not seem to be the case that all adjectival decausatives that have passive morphology entail an event. Consider for example 121:

(121) *ha-anaf akum, lamrot še-hu me-olam lo hit'akem.*

the-branch bent, though that-it never not bent

'The branch is bent, though it never bent.'

Some speakers accept 121 as non-contradictory, which suggests that *akum* 'bent', though bearing passive morphology, does not entail an event. Again, judgments in this area are very subtle. In addition, tying the entailment of an event to passive morphology is problematic when we consider cross-linguistic data since, as observed in section 6.2.3 above, the same adjectival decausatives can have passive morphology in one language and non-passive morphology in another, though their interpretation seems identical. I will not deal with this issue further in this work. For my purposes, adjectives can be referred to as decausatives whether bearing passive morphology or not, and whether entailing an event or not (of course, the distinction with regard to the entailment of an Action still holds).

Now, let us consider several adjectival decausatives which lack passive morphology: *xam* ('hot') *kar* ('cold'), *rek* ('empty'). These are all monosyllabic words. Monosyllabic words in Hebrew are rare and marked, since they diverge from the unmarked demand for binary feet. Therefore, prosodically speaking, these adjectives cannot be derived, since productive derivation processes never create a marked pattern, only unmarked ones. Therefore, at least

with regard to these adjectives, it is impossible to say that they are derived from the corresponding verbs. They have to be "base generated". According to my definition, this means that they have to be derived from a concept, which doesn't have a morphological form yet, and therefore their derivation is not morphological or phonological.

So, we see that for some adjectival decausatives there is a good reason to believe that they are not derived from verbs, but from concepts. We have also seen the same thing regarding adjectival passives. So, it seems economic to assume for all adjectival decausatives that they are derived from a concept, and not from a verb. But there is no clear-cut evidence in any direction, and I leave the question open.

Regardless of the categorical nature of the input (verbs or concepts) we should still ask what types of verbs or concepts can serve as input for adjectival decausative formation. Regarding verbal unaccusative formation, I have mentioned that Reinhart (1996) showed that they are derived from transitive verbs whose external theta role is [+c]. As far as I can see, there is no reason to assume that the input for adjectival decausative formation is different with regard to thematic information. The only difference in the input is that in this case, as in the case of adjectival passive formation, there are some aspectual constraints on the input entries, which are exemplified in 122-123 (122 taken from Doron (2000)):

(122)a. *ha-sigaria megulgelet*.

the-cigarette is rolled

b. *\*ha-kadur megugal*.

the-ball is rolled

(123) *\*ha-nadneda menudnedet*.

the-swing is swung

*gilgel* ('roll') and *nidned* ('swing') have [+c] as their external theta-role, and four root consonants. Therefore, the analysis would predict the forms in 122-123 to be ambiguous between a passive reading and a decausative one. But, no matter what reading we assign them, the sentences above are ungrammatical. Again, it seems roughly as if the input must denote a telic event, and an event that affects its object. I will not discuss these constraints further in this paper.

### 8.3 The nature of the operation

As with adjectival passives, I suggest that adjectival decausatives are derived much like their verbal correspondents. That is, they are derived by Adjectivization and Decausativization, which are not ordered in any way. Adjectivization reduces the event variable of the input, if there is one, and must "externalize" one of the input's thematic roles. Again, the role which is externalized cannot be the external one, since it is the one that's eliminated by Decausativization, so it must be internal. If there are two internal arguments, the DP one will be gapped, since it has no way of being realized without Case.

Decausativization reduces accusative Case, if it exists, and eliminates the external thematic role of the input. An example derivation is given in 124:

(124) input entry – two place relation	(V) $R(\theta_1, \theta_2)$	e.g. <i>hikpi</i> 'freeze'
	<u>Adjectivization</u>	<u>Decausativization</u>
	• category setting/change – A	• Case reduction – possibly vacuous
	• deletion of an event variable – possibly vacuous	• deletion of the external theta-role
	• gapping over the internal DP argument	
output - predicate	$A, \lambda x. R'(x)$	<i>kafu</i> 'frozen'

Depending on whether the input is a verb or a concept, category change or setting to A must take place, respectively. Adjectivization also deletes the event variable in the case of a verbal input, and performs abstraction over the direct object. If the input is a verb, its Case will be reduced by Decausativization. The result is a predicate.

Note that here there is no external thematic role in the output. Even if other roles, such as location, goal, etc. will exist in the output, the external role will never be part of it, since it is eliminated in the derivation. Therefore, there is no need for a "reconstruction" of an event in this case. Thematic roles such as location can be interpreted as assigned to participants in a state. No event therefore needs to be stipulated.



## 9. Future research and theoretical implications

### 9.1. The cross-linguistic perspective

Having established the fact that there are two distinct types of adjectival passives in Hebrew, a natural question arises: is this phenomenon unique to Hebrew, or does it exist in other languages as well. Theoretically, there is no a priori reason why these two types of adjectives should not exist in other languages. Given the analysis presented here, the two types of adjectives are derived through Saturation and Decausativization: the operations that form passive and unaccusative verbs. It is very well known that passive and unaccusative verbs exist in many languages, meaning that these two operations are operative in the verbal system of many languages. Unless there is some feature of the adjectival system which prevents these operations (or one of them) from applying in it, the prediction is that Saturation and Decausativization will derive adjectives as well. Therefore, it will be very interesting to examine other languages and check whether they manifest the two types of adjectival passives as well. Two languages I have looked at are Hungarian and English.

#### 9.1.1 Hungarian

As was shown in chapter 6 above, the distinction between adjectival passives and adjectival decausatives in Hebrew is very clear in some cases, since they are realized through two morphologically distinct forms. Another language which marks morphologically the two types of adjectives is Hungarian. Some examples are given in (125) (Horvath and Siloni (to appear))

(125) <u>Transitive Verb</u>	<u>Adjectival Passive</u>	<u>Adjectival Decausative</u>
<i>olvaszt</i> 'melt'	<i>olvaszt-ott</i> 'melted'	<i>olvad-t</i> 'melted'
<i>megszárít</i> 'dry'	<i>megszárít-ott</i> 'dried'	<i>megszárad-t</i> 'dried'
<i>kifáraszt</i> 'tire'	<i>kifáraszt-ott</i> 'made tired'	<i>kifárad-t</i> 'tired'
<i>kinyit</i> 'open up'	<i>kinyit-ott</i> 'opened up'	<i>kinyíl-t</i> 'opened up'
<i>fagyaszt</i> 'freeze'	<i>fagyasztott-ott</i> 'frozen'	<i>fagy-ott</i> 'frozen'
<i>megrongál</i> 'damage'	<i>megrongál-t</i> 'damaged'	<i>megrongálód-ott</i> 'damaged'
<i>felold</i> 'dissolve'	<i>felold-ott</i> 'dissolved'	<i>feloldód-ott</i> 'dissolved'

As can be seen from the following noun phrases, the forms of the second column allow addition of Agent-oriented adverbs and Instruments, while those in the third do not:

(126) a. *a szándékosan befagyasztott tó*  
the intentionally in-freeze-caus.-adj.part. pond

'the intentionally frozen pond'

b. a (*\*szándékosan*) *befagyott tó*  
the intentionally in-freeze-adj.part. pond

(127) a. *a késsel megrongált asztal*  
the knife-with perf.-damage.trans.-adj.part. table

'the damaged with a knife table'

b. a (*\*késsel*) *megrongálódott asztal*  
the knife-with perf.-damage-unacc.-adj.part

The Hungarian data is easily predicted and explained by the analysis presented here. Notice, that all the verbs in 125 have as their external theta role [+c], and are therefore predicted to have two corresponding adjectival forms. The data in fact reinforces the proposed analysis: the forms which I labeled adjectival decausatives are very similar to the forms of the corresponding unaccusative verbs, both containing identical morphemes; for example, compare the forms *olvad* 'melt (unaccusative)', and *olvadt* 'melted (adjectival decausative)'. The shared morphemes may indicate that both forms shared some operation in their derivation, namely Decausativization.

Hungarian, then, systematically derives both adjectival passives and adjectival decausatives using different morphology. I have shown that in Hebrew the situation is more complex: sometimes there are two different forms for the two types of adjectives, and sometimes one form is ambiguous between the two. This indicates a theoretical option for morphologically poor languages: both adjectival passives and adjectival decausatives exist in such languages, but both types of adjectives have an identical form. What I would like to show now is that this is the case with English.

### 9.1.2 English

Embick (2004) presents evidence that in English there are two types of adjectival passives, which he labels 'statives' and 'resultatives'. In many cases, the two types are identical in form; this is the case with *closed*, *broken* and *bent*, for example. In other cases, the two types

have different forms; examples are *open* (stative) – *opened* (resultative), *rotten* – *rotted*, *shaven* – *shaved* and more.

Embick uses four tests that distinguish between the two types of adjectives:

I. Adverbial modification – resultatives, but not statives, allow modification by manner (and other) adverbials:

(128)a. The package remained carefully opened.

b. \*The package remained carefully open.

Notice that in both cases the form in question appears as a complement of *remained*, which is a context that allows only adjectives. Therefore, both forms are adjectival.

II. Complementation of verbs of creation – statives, but not resultatives, can appear as complements of creation verbs such as *build*, *create*, *make*:

(129)a. This door was built open.

b. \*This door was built opened.

III. Use as resultative secondary predicates – statives, but not resultatives, can serve as resultative secondary predicates:

(130)a. John kicked the door open.

b. \*John kicked the door opened.

IV. *Un* prefixation – *un* prefixation is restricted with statives, while it is productive with resultatives:

(131)a. \*unrotten, \*unshrunk

b. unrotted, unshrunk

I would like to show that the two types of adjectives which Embick discusses correspond to adjectival passives and adjectival decausatives. I will first very briefly sketch Embick's analysis of these two types of adjectives, and then show that if we analyze them according to my suggestion, more data can be explained and predicted.

Embick proposes an analysis for the derivation of the two types of adjectives in which both are created syntactically using different functional heads. According to him, both adjectives involve an Asp head – a head which is the locus of participial morphology. Statives are derived using an Asps head, while resultatives are derived using an Aspr head. Embick claims that statives lack an eventivity altogether, and are therefore derived by the merge of the Asp head to the root itself, without any verbal head. Resultatives, on the other hand,

denote a state that results from a prior event, and therefore their structure must include a verbal head. But, according to Embick, resultatives are not agentive, and therefore the verbal head involved in their derivation cannot have the feature AG (agentivity). Rather, it is a verbal head that has the feature FIEN (fientive), that denotes a *becoming*, or *transition* event – an event that moves towards a state.

My suggestion is that the adjectives which Embick labels stative are adjectival decausatives, and those he labels resultatives are adjectival passives. This is a natural conclusion from the first diagnostics of Embick presented above, which is identical to the test presented in chapter 3 to detect the presence of an implicit Agent.

Embick's analysis is problematic in some respects. I leave aside here the bigger issue of the component in which the derivation of the adjectives takes place. As mentioned above, according to my view, both adjectives are formed in the lexicon. But even if we adopt the idea of syntactic derivation, Embick's analysis is inadequate. I will show now some points in which my analysis is preferable to Embick's.

First, Embick states that resultatives do not allow an Agentive reading. He claims that this is visible, for example, in the fact that *by*-phrases denoting the Agent are not licensed. The example he gives is the following:

(132) The metal is hammered by John.

Embick claims that 132 has only a verbal reading, and not an adjectival resultative one. First, the test can become clearer if we force an adjectival reading by an appropriate context, as in 133:

(133) \*The metal remained / seemed hammered by John.

While it is true that 133 is ungrammatical, suggesting that resultatives do not have an implicit Agent, other parallel examples are perfectly fine:

(134)a. The stadium remained guarded by armed guards.

b. The book seems edited by an experienced editor.

The reason why 133 is ungrammatical is, according to my proposal, not that the resultative lacks an implicit Agent, but that the existence of this Agent is not visible in the final state of the hammered metal. Examples like those in 134 show that an Agent is present in the interpretation of resultatives, and therefore Embick's decision not to include a verbal head with an agentivity feature in their derivation is wrong. Considering now my analysis, the

presence of an implicit Agent is acknowledged, and formally represented by the fact that adjectival passives include an Agent role in their thematic grid.

Second, Embick claims that statives lack a verbal head altogether, and this, according to him, accounts for the inability of adverbial modification with them, as observed in 135:

(135) \*The door remained carefully open.

It seems, then, that Embick ties the possibility or impossibility of adverbial modification with the presence or absence of a verbalizing head. But this is clearly wrong. Adverbial modification is not automatically licensed by a verbal head. Consider 136:

(136) \*The door carefully opened.

136 clearly contains a verbal head since it describes an event, but still adverbial modification is impossible here. This is because the adverb here is Agent oriented, but there is no Agent in the sentence. So, the possibility of adverbial modification seems to be tied not only to the presence of a verbal head. At least when the adverb is Agent oriented, the presence of an Agent is necessary as well. According to my analysis, the impossibility of 135, just like the impossibility of 136, is accounted for by the fact that in both sentences an Agent is neither realized, nor inferred. The difference between statives and resultatives (or decausatives and passives, according to my analysis) is not rooted in the presence or absence of a verbal head (or an event variable), but in the presence or absence of the Agent theta-role.

Finally, I believe that the weakest point in Embick's analysis is that it does not predict the set of statives. Embick notes (p. 361) that 'it seems that not all Roots form pure statives. It does not seem possible to form statives on  $\sqrt{\text{DESTROY}}$ ,  $\sqrt{\text{KICK}}$ , and certain other Roots'; but nothing in his analysis accounts for this fact. According to my analysis, on the other hand, this fact is straightforwardly predicted. Only verbs which can undergo Decausativization have adjectival decausative (stative) alternates. Regarding *kick*, since its external thematic role is [+c+m], and not [+c], it is not predicted to undergo Decausativization. The case of *destroy* is somewhat different: the external thematic role of *destroy* is [+c], so we would predict it to have an adjectival decausative alternate. But, as can be seen in 137, *destroy* does not have a verbal unaccusative alternate as well:

(137)a. The army / the storm destroyed the house.

b. \*The house destroyed.

It seems that something blocks the application of Decausativization to *destroy*. Whatever that thing might be, it is the reason for this verb not having an adjectival decausative alternate as well, since the derivation of adjectival decausatives involves the application of Decausativization as well. Hence, my analysis straightforwardly predicts which verbs will have a stative (adjectival decausative) alternate and which will not.

To conclude this section: English data suggest that in English as well there are two types of adjectival passives: 'true' adjectival passives and adjectival decausatives. The fact that the two types of adjectives often have the same morphology can obscure the distinction, but a close look at the behavior and interpretation of these adjectives reveals it.

Again, research of more languages with respect to the existence of adjectival passives and adjectival decausatives in them can be very fruitful, both regarding the phenomenon itself and its possible connections to other phenomena in the language.

## **9.2 Theoretical implications with regard to the 'Little-*v* Hypothesis'**

The data and analysis presented in this work have theoretical implications regarding the 'Little-*v* Hypothesis' (Chomsky (1995), Kratzer (1996) among many others), namely, the hypothesis that the external theta role originates not in the lexical verb, but in a functional category dominating it. Clearly, in this work I did not adopt this hypothesis; rather, my analysis takes the external thematic role to be a part of the thematic grid of the verb, upon which operations like Saturation and Decausativization apply. What I would like to show in this section is that this was not accidental. In fact, the Little-*v* Hypothesis cannot account for two empirical phenomena discussed at length in this work:

- a. The set of adjectival passives and the set of adjectival decausatives.
- b. The existence of an Agent in the interpretation of adjectival passives.

I will now briefly discuss each of the above.

### **9.2.1 Predicting the sets of adjectival passives and decausatives**

As explained in chapter 6 above, the analysis proposed in this work can predict which verbs will have an adjectival passive alternate and an adjectival decausative alternate. The prediction is made based on the external thematic role of the verb. For example, I argued that only verbs whose external theta role is [+c] (and not those external role is [+c+m]) will have

an adjectival decausative alternate. Let us assume for a minute that the external theta role is not part of the thematic grid of a verb. Now let us consider two verbs, *hidpis* ('type') and *hikpi* ('freeze'), and their thematic grids. Under the Little- $\nu$  hypothesis, the thematic grids of these two verbs are identical. Both have an internal Theme role, and an optional Instrument role. What then can account for the fact that *hidpis* 'type' has only an adjectival passive alternate, while *hikpi* 'freeze' has both an adjectival passive and an adjectival decausative alternate?

Of course, the very same problem exists with predicting the sets of passive and unaccusative verbs. Reinhart (1996) shows that the set of unaccusative verbs cannot be defined upon aspectual or other properties; its accurate definition relies on the external thematic role of the verb (specifically, only if this role is [+c] will the verb have an unaccusative alternate). If the external role originates in a separate head and is not specified for each lexical verb, one should find a different generalization that will predict the set of unaccusative verbs. But no such generalization exists; the most adequate generalization remains the one based on the external thematic role of the verb.

The data presented in this paper regarding the sets of passive and decausative adjectives simply 'doubles' the problems of the set of unaccusative verbs: it shows another set of facts that can be easily accounted for by adopting the idea that the external thematic role originates in the lexical verb. Otherwise, a lot of the data remains random and unpredictable.

### **9.2.2 The existence of an Agent in the interpretation of adjectival passives**

The little- $\nu$  Hypothesis ties together the existence of the functional head  $\nu$  with the existence of an Agent, or any external argument, in the sentence. Kratzer (2000, p. 7) states that 'if the external arguments of verbs are introduced by verbal inflection... lack of verbal inflection implies absence of external arguments'. She goes on to state that 'this explains why in adjectival passives, the verb's external argument is truly missing. It's not that it has been eliminated or suppressed. It was never there to begin with'. A large part of chapter 3 above was dedicated to showing that in many cases, adjectival passives **do** have a suppressed external argument. In fact, all 'true' adjectival passives have it. Similar evidence is given by Embick (2004) regarding English. So, it cannot be claimed that the external argument of adjectival passives is truly missing.

The idea that it is a functional verbal head which is responsible for introducing the Agent cannot account for the existence of adjectival passives: these are adjectives, therefore obviously lacking a verbal head, still their meaning includes an Agent.

Of course, this problem can be dealt with by postulating an additional functional head, some sort of "little-*a*" that will introduce the external argument in adjectival projections. But, in my opinion, this is an unnecessary complication of the theory. If we accept that the external argument is part of the thematic grid of a concept, and is not introduced by a different head, it is completely predictable that adjectives will have an external argument, although lacking verbal inflection.

### **9.3 Topics for further research**

In this section I will shortly remind the reader of several unanswered questions that were raised in this work, and also point to some bigger issues emerging from the topics discussed in it.

One phenomenon that needs to be further investigated is the non-uniformity within the group of subject-Experiencer verbs with regard to the possibility of an Agent interpretation. It might turn out that the aspectual properties (telicity or atelicity) of these verbs influence this possibility, in addition to their thematic properties.

With respect to the input for adjectival passive and decausative formation, a further formalization of the aspectual constraints on it is needed.

Further investigation is also required with regard to the morphological questions raised in this work: can we predict what verb will have abnormal morphology when turned into a verbal passive? Why is it that certain morphological forms are ambiguous between an adjectival passive and an adjectival decausative, when another form is available for one of the meanings? Why is it that some adjectival decausatives bear passive morphology while others do not?

The last question relates to a subject discussed in section 8.2, namely, the possibility that there are in fact two groups within the group of adjectival decausatives I have defined – one that consists of verbs which entail an event, and another that consists of verbs which do not have this entailment. If such a distinction indeed exists, more questions arise: what verbs will

have what type of adjectival decausative alternate, and why? And what are the operations that form the two types?

A bigger issue that emerges from this work has to do with the nature of the adjectival system. Are all adjectives derived from concepts, or are some derived from verbs? Do all adjectives have thematic grids, or do some lack them altogether? And are there other verb-forming operations that derive adjectives as well? These and other questions will have to await future research.

## 10. Conclusion

In this work I have done two things: first, I have shown that what is usually referred to as the group of adjectival passives in Hebrew is in fact not a homogenous group, but rather consists of two types of adjectives: 'true' adjectival passives, and adjectival decausatives; second, I defined the operations that form these two types of adjectives.

I began by showing that the group of adjectives which is usually referred to as adjectival passives actually consists of two groups: one type of adjectives behaves as if they lack an external argument altogether. The other type behaves as if an external argument is present in their interpretation. Based on a comparison with the verbal system, specifically with unaccusative and passive verbs, I called the first type **adjectival decausatives**, and the second one – **adjectival passives**. I relied on the verbal system also in defining the operations that derive each of the types, the main idea being that the operations that form these adjectives are the same as the operations that form unaccusative and passive verbs, but also involve category change or setting, to form an adjective. Thus, decausative adjectives are formed through Decausativization: total reduction of the external argument of the transitive verb. Passive adjectives are formed through Saturation: an existential closure is performed upon the external argument of the transitive verb.

I believe that this analysis is better than former attempts to define the adjectival passive formation operation because of two reasons: first, it explains and predicts more empirical data, especially concerning the non-uniform behavior of these adjectives with regard to the presence of an external argument. Second, the analysis makes use of known and established operations to explain a new set of data, without stipulating new processes. In fact, given that we accept the difference between passive and unaccusative verbs, and the need for two distinct operations to derive these two types of verbs, an additional stipulation would be required to prevent both operations from operating in the adjectival system as well.

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