On the Listedness of Result Nominals*

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1. Introduction

It is well known that derived nominals can be divided into two types, i. e. process and result nominals, in terms of their readings. They are different in not only their readings, but also their syntactic behaviors. In general, the former exhibit verbal properties, while the latter nominal properties. Thus, the contrast between the process nominal *examination* in (1b-c) and the corresponding result nominal in (1d-e) illustrates a difference in argument-taking property.[1]

(1) a. They examined the students.
b. The examination of the students will take several hours.
c. *The examination will take several hours.
d. *The examination of the students was printed on pink paper.
e. The examination was printed on pink paper.

(Abney 1987: 116)

Where this sort of syntactic difference comes from has been extensively discussed in the generative literature. The primary concern of previous studies, however, has been to investigate the derivation of process nominals and to account for their distinctive verb-like properties, and little attention has been given to the analysis of result nominalization (cf. Grimshaw 1990, Fu, Roeper and Borer 1995, Borer 1997, Engelhardt 2000, among others). As

for process nominals, Grimshaw (1990) argues that they are formed in the lexicon by adding to verbs a suffix with the Ev(ent) argument, which allows argument inheritance. On the other hand, Fu, Roeper and Borer (1995), Borer (1997) and Engelhardt (2000) argue that they are formed by syntactic affixation, as a result of which they contain a VP structure just like sentences. As for result nominals, however, all the studies explain their nominal properties only by assuming the application of nominalization in the lexicon, without discussing in detail what kind of morphological process it is. Therefore, their analyses of result nominalization cannot be satisfactory. In addition, a closer look at result nominalization from a morphological perspective might question even the existence of such a formal operation. It seems that result nominalization cannot be characterized as a semantically uniform operation but its outputs range over those with various meanings, as shown in (2).

(2) a. *assignment, decision, establishment*

b. *government, environment, attraction*

The nominals in (2a) refer to the objects of their base verbs, whereas those in (2b) refer to the subjects of their base verbs. This state of affairs will deserve explaining, as well as nominal behaviors like (1d-e) exhibited by result nominals.

The purpose of this paper is to clarify the mechanism of the derivation of derived nominals from a slightly different point of view from the ones taken in the previous work. In particular, focusing on result nominals, I would like to examine how they are derived on the basis of a data-oriented investigation, which will shed new light on the current issue. It is claimed that contrary to the standard view taken in the previous studies, result nominals, but not process nominals, are not outputs of a morphological operation but all listed in the lexicon.

2. The Listing Condition on Morphological Operations

The aim of this section is to outline the status of morphological operations and to discuss some assumptions on the organization of the lexicon. It is shown that morphological operations contained in the lexicon should be regular and productive to the extent that speakers can predict what form is a potential word and what meaning it has. The discussion here will be crucial in investigating various morphological properties of result nominalization, as we will see in section 3.

Let us first discuss the following hypothesis concerning the outputs of morphological operations, which has been proposed by Aronoff (1976: 22), Scalise (1984: 137), and Plag (1999: 49), among others.

(3) The Unitary Output Hypothesis

> . . . the derivatives formed on the basis of a certain word formation process can be characterized uniquely in terms of their phonological, semantic, and syntactic properties.
>
> (Plag 1999: 49)

This hypothesis requires that word formation processes show some uniformity or regularity so that the form and the meaning of their outputs can be predicted. If this hypothesis is on the right track, every process, which can be characterized as well-defined word formation in the literature, should exhibit such regularity. The actual state of affairs, however, seems to be complicated.

Lieber (1998), for instance, observes that forms of word formation can fall roughly into the categories of (4) in terms of semantic regularity.

(4) a. Semantically determinate
  b. Semantically indeterminate
    i. No fixed LCS
    ii. Partially fixed LCS

(Lieber 1998 : 15)

According to Lieber, semantically determinate processes include the affixes *-able*, *-er*, and so on, and they can create new words with fully predictable meanings. The adjective-forming affix *-able*, for instance, externalizes the internal argument of its base verb, as far as argument structure is concerned. On the other hand, the outputs of semantically indeterminate processes are not formed in a semantically uniform way, as a result of which variations in meanings of the outputs are observed, though the degree of the variations depends on some intrinsic property of each affix. For instance, Lieber argues that the verb-forming affix *-ize* has partially fixed Lexical Conceptual Structure (in the sense of Jackendoff 1990), whereas the zero affix associated with N to V conversion has no fixed one, apart from the information that verbs are created.

If the hypothesis in (3) is taken to be one of the defining characteristics of word formation itself, then Lieber's (1998) observation might cast some doubt on its adequacy, since word formation that can be classified in (4b), especially in (4b, i), does not conform to (3). At the same time, the categorization in (4) will lead us to reconsider the status of word formation itself and the organization of the lexicon. If the lexicon is seen as a component which contains not only lists of words, but also rules (i.e. word formation) (cf. Di Sciullo and Williams 1987 and Jackendoff 1997),[2] the derivatives in (4b), whose meaning is not predictable from the relevant rules, may be listed in the lexicon in the same way as underived words. Significantly, such semantically irregular processes also tend to be unproductive, which further opens the possibility that their outputs are listed, even though they appear to be formed by some morphological operation because of their apparently complex internal structures.

Aronoff (1976) and Giegerich (1999), among others, observe that semantic regularity (or transparency) and productivity are closely linked, as de-

scribed explicitly in (5).[3]

(5) a. (First) productivity goes hand in hand with semantic coherence.
(Aronoff 1976 : 45)

b. Unproductive morphological processes are more likely to display [the semantic] irregularity than fully productive processes are.
(Giegerich 1999 : 15)

To illustrate this relationship, let us consider traditional discussion on differences in productivity and semantic regularity between the suffixes *-ity* and *-ness*. These suffixes are similar to each other in that they create abstract nouns from adjectives (e.g. *popularity* and *goodness*). They are different, however, with respect to productivity and semantic regularity : *-ness* forms are more attested than *-ity* forms ; *-ity* forms are more likely to exhibit semantic irregularity than *-ness* forms. Specifically, Morita (1993) notes that 2607 *-ness* forms and 993 *-ity* forms are listed in the *OED*; *-ity* forms such as (6) show non-abstract meanings.

(6) *curiosity, oddity, fatality, variety, opportunity*
(Giegerich 1999 : 15)

This close relationship between productivity and semantic regularity is taken to indicate that the suffix *-ness* tends to be used to create new nouns from adjectives, since their meanings are fully predictable from the combination of the suffix with its base (Aronoff 1976 : 39).

Given that semantically irregular morphological processes are also unproductive, it follows that when speakers use such processes to create a new word, they cannot predict what output is well-formed and even if well-formed, what meaning is expressed. Evidently, this is not the case with regular and productive processes, which are amenable to (3) and are classified in (4a). For example, *-er* suffixation is a quite general process (cf. Levin and Rappaport 1988, Rappaport and Levin 1992, and Di Sciullo 1996). Consequently, given a verb, we automatically know that it has the *-er* form

and what meaning it has, since *-er* suffixation does not require word by word specifications but applies across the board to a whole category. Therefore, the consideration of economy and simplicity forces *-er* nominals not to be listed in the lexicon, since if they are listed, it will lead to the redundancy of the content in the lexicon. However, several researchers argue explicitly or implicitly that the outputs of unproductive and irregular processes need to be listed in some way in the lexicon. Thus, Jackendoff (1997 : 121) states as in (7) :

(7) That is, the outputs of semiproductive rules must be either individually listed or understood by virtue of context. By contrast, productive processes predict the existence and form of all derived forms, which need not therefore be listed.

What we see from this remark, then, is that the complex internal structure (e.g. a base + an affix) shown by the outputs of a given morphological process does not necessarily mean that the existence of such a process is readily guaranteed and that its outputs need not be listed, if it is an irregular and non-uniform process. Given this, it is necessary to reexamine the status of word formation that appears to exhibit somewhat irregular aspects and to determine whether or not such an irregular formation should be characterized as a formal operation contained in the lexicon.

In what follows, we investigate various morphological properties of result nominalization, which can be one of the instances included among irregular and unproductive formations. It is shown that the nominalization in question is not governed by any formal rule, contrary to the assumption of the previous studies.

3. An Empirical Investigation of Result Nominalization

As briefly noted in (2), result nominalization seems not to be uniform

with respect to semantic regularity. Given the discussion in the previous section, this will have some influence on the productivity of the relevant operation. In this section, we examine to what extent result nominalization is a regular and productive operation.

As mentioned above, the previous studies only claim that result nominals are derived by some morphological operation, which is distinct from an operation relevant for process nominals. They do not discuss result nominalization from a morphological point of view. Our alternative and detailed analysis of result nominalization is proposed on the basis of a large amount of data from The *Oxford English Dictionary Second Edition* on CD -ROM. We focus on the three suffixes, *-(at)ion*, *-ment*, and *-al*, and collect their listed derivatives which have result readings. The number of the lexical items collected amounts to 714.[4]

Before going into details, it is first necessary to mention our precise definition of result nominals. They are defined in the literature as referring to a thing as exemplified in (8), in contrast to process nominals referring to a process or an event.

(8) 'The Sony Walkman is one of the great *inventions* of the late 20th century . . .'

(*Today*, October 6, 1992)

As the term "result nominal" itself implies, such nominals typically refer to the result of the action, or the internal (object) argument of their base verbs. As noted by Abney (1987) and Shimamura (1990) and observed above in (2), however, there is a terminological confusion. The term is also used to cover nominals like *government* in (9).

(9) 'The *government* withdraws new legal aid plans.'

(*Today*, December 16, 1999)

Evidently, such a nominal does not refer to the result of the action. Here, we follow Abney (1987 : 116) and Shimamura (1990 : 87) in assuming that

the term "result nominal" covers all derived nominals referring to a thing (concrete or abstract) relevant to the action of their base verbs.[5]

Another comment is needed about a general policy taken in collecting the relevant nominals. We ignore the nominals labeled as "rare" or "obsolete." The nominals whose corresponding verbs are labeled as such are also ignored, because the main purpose of our study is to discuss whether or not the standard assumption is correct that result nominals are formed by adding a suffix to a verb, under which it is presupposed that the relevant verb is used in normal situations. In addition, along the same reasoning, the nominals formed by the combination of suffixes with bound morphemes are excluded from the discussion.

Now, we are ready to enter into the discussion of morphological properties of result nominalization. Let us first consider its semantic regularity. This does not claim that other regularities such as morphological and phonological ones are not significant for the consideration of word formation processes. As mentioned at length below, however, their irrelevance is evident from the fact that result nominals have the same morphology as process nominals, and that they are subject to the same "Blocking" (in the sense of Aronoff 1976) constraints in some intuitive sense with respect to morphological and phonological ones. The approach we assume here to capture semantic regularity of word formation is based on argument structure. The studies employing such an approach include Levin and Rappaport (1988), Rappaport and Levin (1992) and Bresnan (1996), among others. Levin and Rappaport (1988) and Rappaport and Levin (1992), for instance, propose that *-er* nominals always correspond to the external argument of their base verbs.[6]

Following the argument structure analysis, we classify result nominals into three groups. The three classes are the followings : nominals referring to the internal argument of base verbs, those referring to the external

argument and those referring to neither of the two arguments. If result nominalization is semantically regular, then it would be predicted that most nominals are classified into the "Internal Argument" type. The figures in (10), however, are obtained from the investigation of the *OED*.[7]

(10)

	-(at)ion	*-ment*	*-al*
Internal Argument	341	77	9
External Argument	152	48	3
Non-Argument	62	19	2

Some examples of each class are given in (11), (12) and (13), respectively.

(11) Internal Argument (e.g. *establishment*: something that is established; a public institution, a school, etc., according to the *OED*)

a. *possession, intention, equipment, investment, arrival*

(12) External Argument (e.g. *distraction*: something that distracts (or diverts) the mind or attention, according to the *OED)*

a. *attraction, examination, government, environment, disposal*

(13) Non-Argument

a. *compensation*: amends or recompense for loss or damage

b. *ablution*: a building containing facilities for washing oneself

c. *retirement*: a place or abode characterized by seclusion or privacy (according to the *OED*)

It is easy to see from these findings that many of the result nominals indeed refer to the internal argument of base verbs, as predicted from the term "result nominal." However, result nominals referring to the external argument and those referring to none of the arguments of base verbs are not rare, but rather abundant. Therefore, it is not plausible to regard them as exceptions to the alleged semantic regularity of result nominalization. Rather, our data lead us to argue against the assumption that there is a

regular morphological operation to form result nominals.

One might argue, however, that a diachronic perspective sheds some light on the semantic irregularity of result nominalization. It might be that result nominalization was semantically regular at first, but a change in its application led to its semantic irregularity observed in Present-day English. This line of argument, however, is not on the right track, as illustrated in (14).

(14)

Internal Argument		External Argument	
accomplishment	(1425)	government	(1380)
intertwinement	(1889)	enlivenment	(1883)
intention	(1375)	protection	(1388)
alphabetization	(1881)	attraction	(1889)

The figures in (14), which are from the *Kenkyusha Dictionary of English Etymology*, show when each nominal was introduced in the history of English. For instance, the result nominal *accomplishment*, which corresponds to the internal argument of *accomplish*, was introduced in 1425; *government*, which corresponds to the external argument, was in 1380. As is obvious, there is no correlation between the nominals' construals and the periods when they were coined. Hence, it is clear that the semantic irregularity of result nominalization is not due to a change in its application.

Given the discussion so far, it can be concluded that result nominals are not formed in a semantically regular and uniform way.[8] As mentioned in section 2, this kind of semantic irregularity of word formation is not an isolated case. Recall that as Lieber (1998) argues, *-ize* causativization and N to V conversion also behave like result nominalization with respect to their semantic behaviors. The observed irregularity of result nominalization, however, is a quite peculiar case, compared with other similar morphological processes that derive nouns from verbs. Thus, *-er* and *-ee* formations are governed by the regular and uniform mechanism (see Levin

and Rappaport 1988 and Rappaport and Levin 1992 for *-er* formation, Barker 1998 for *-ee* formation, and Di Sciullo 1996 for both). If there is no semantic regularity in result nominalization as in *-er* and *-ee* formations, it will be impossible to predict what kind of meaning the created result nominals have. This will therefore lead us to assume that the outputs of result nominalization must be listed in the lexicon.

Let us next turn to the productivity of result nominalization. Given the discussion in section 2, it would be predicted that the relevant process is not productive because of its semantic irregularity. This prediction seems to be borne out. Kastovsky (1986 : 597) notes that compared with process nominalization, result nominalization is not productive. The comparison between the right members with the left ones in (15) will help to illustrate this point clearly.

(15) a. Result Reading	b. *Result Reading
puzzlement	teasement
acquirement	procurement
defacement	blemishment
embarrassment	bewilderment

Although the base verbs of each pair in (15) (e.g. *puzzle* and *tease*) have similar meanings and argument structures (cf. Levin 1993), only the derived nominals in the left column have result readings. If the suffix *-ment* selects their bases productively, then it would be the case that the (b) members have result readings as well as the (a) members. But our data suggest that they do not, indicating that result nominalization is not productive but it is governed under word by word specifications.

One might suspect, however, that these irregular selections of the bases by *-ment* do not necessarily mean that result nominals are not formed in a regular and uniform way. As Aronoff (1976 : 37) points out that 'the productivity of a WFR [Word Formation Rule] is the result of the interplay

of a complex of factors,' the base selection in (15) might be restricted by some rule-governed conditions. For instance, since the verb-forming *-en* selects bases that are monosyllabic and end in an obstruent, *black-en* is a well-formed output but **dry-en* is not (Katamba 1993 : 74). Similarly, latinate suffixes such as *-ity* and *-ive* select latinate bases, not Germanic ones. Therefore, it might be suggested that conditions like these phonological and morphological ones have some influence on the base selection in the case of result nominalization as well, yielding its apparent irregular behaviors. The successful explanation along these lines would further indicate that result nominalization is a regular and uniform word formation rather than an irregular one. It is not possible, however, to explain the irregular base selection in (15) by appealing to such conditions. Note that according to the *OED*, the examples in (15b) have process readings, which strongly excludes the possibility that suffixation to their base verbs itself is prohibited by some morphological and, or phonological conditions. Consequently, it follows that the base selection in result nominalization does not hold of the relevant (sub)category as a whole, and therefore cannot be predicted at all.

With this all in mind, it will be reasonable to argue that result nominalization is a quite irregular and unproductive morphological process. Given its irregularity, it is difficult to capture the observed behaviors of result nominalization by appealing to a purely formal operation which can be contained in the lexicon, as proposed in the previous studies. Therefore, I propose that the lexicon does not contain a derivational morphology to form result nominals and that all of them are listed as such in the lexicon. If they are listed in the same way as underived nouns like *book* and *car*, it immediately follows that they exhibit various nominal properties, contrary to process nominals, as observed in (1) above and note 1. It is not the case, however, that English does not have suffixes such as *-(at)ion*, *-ment* and

-al. As for process nominals, following the previous studies discussed earlier, we assume the null hypothesis that these suffixes are responsible for their nominalization, whether it takes place in the lexicon or in the syntax. Our arguments developed here do not necessarily suggest that all of the outputs of irregular and unproductive morphological operations must be listed in the lexicon. It is evident that there are not only two degrees of productivity and regularity (i.e. productive or unproductive/regular or irregular). It should be emphasized that we are dealing with a continuum of a degree of productivity and regularity. Therefore, much detailed investigations on the relevant processes, especially those in gray area, should be made to determine whether or not they are irregular and idiosyncratic processes enough to be listed in the lexicon. As discussed so far, what we argue for here is that result nominalization is such a process because of its high irregularity.[9]

In the reminder of this paper, we will further provide two pieces of independent evidence for our listing analysis of result nominalization. It will be shown that some otherwise intractable phenomena concerning derived nominals can be naturally accounted for under the analysis presented here.

4. Evidence for the Listedness of Result Nominals

4.1. Level Ordering

The first evidence concerns a well-known bracketing paradox involving the suffixes *-ment* and *-al*. According to the Level Ordering Hypothesis (cf. Siegel 1974, Kiparsky 1982, Katamba 1993 and Giegerich 1999), derivational and inflectional processes are organized in a series of levels, and therefore the ordering of levels determines the possible ordering of processes. The following examples in (16) would thus apparently violate the legitimate

ordering of word formation, which requires that level 1 affixes should appear inside level 2 affixes.

(16) a. governmental
b. environmental
c. developmental
d. judgemental
e. departmental

If the suffix *-ment* is classified into a level 2 affix because of its stress neutrality and *-al* is classified into a level 1 affix because of its stress non-neutrality, as shown in (17), the derivatives in (16) would not be formed, since the order of the suffixes *-ment* and *-al* should be reversed.

(17) a. 'govern, 'government *-ment* = Level 2 affix
b. 'commerce, com'mercial *-al* = Level 1 affix

This problem, however, receives a straightforward account by the proposal that result nominals are listed in the lexicon. Aronoff (1976 : 55) and Kiparsky (1982 : 83) examine nominals such as *government* in (16) on the basis of their semantics, arguing that they are not process nominals but result nominals, to which *-al* is attached. Given that they are result nominals, which are listed in the lexicon as proposed here, it is possible to assume that the derivatives have the internal structure in (18a), but not in (18b).

(18) a. [[government]-*al*]
b. *[[[govern]-*ment*]-*al*]

Result nominals can thus function as the bases for the suffix *-al* without a violation concerning the ordering of word formation.

An alternative explanation might be possible to solve the bracketing paradox in (16). Thus, Giegerich (1999) argues recently that *-ment* can be regarded as belonging to both level 1 and level 2, and that the level 1 *-ment* is responsible for word formation in (16). This kind of argument seems to

be plausible, since *-ment* can be attached to not only words (i.e. verbs) but also roots (e.g. *ornament, increment*). Even though we adopt Giegerich's assumption that *-ment* suffixation can apply at level 1 in some cases, it still gives support for our listing analysis of result nominals. Actually, Giegerich suggests that every output of word formation at level 1 (stratum 1 in his terms) is listed in the lexicon. This suggestion, coupled with Aronoff's and Kiparsky's observation that the *-ment* nominals in (16) are result nominals, implies that such nominals are included in those items that Giegerich assumes to be listed, which is the idea that we are proposing here. Consequently, this line of argument also conforms the adequacy of the present analysis.

However, note that the previous studies on derived nominals cannot explain the examples in (16), since they assume that result nominals are formed by combining suffixes with verbs, thereby yielding the structure in (18b). Hence, the examples in (16) favor the present hypothesis that result nominals are not deverbal.

4.2. Conversion

The second supporting evidence comes from conversion. Let us start our discussion by considering the following verbs.

(19) a. commission_V (cf. commission_N)
b. provision_V (cf. provision_N)
c. supplement_V (cf. supplement_N)
d. medicament_V (cf. medicament_N)

These verbs can be considered to be formed from their corresponding derived nominals by conversion. As Niwa (1996) observes, however, this kind of word formation appears to violate the principle in (20), which is proposed by Allen (1978).[10]

(20) Filtering Function 1 (FF1)

[-LIS (-Lexical Insertion, Strong)] is the specification to be assigned to morphologically well-formed but non-occurring words.

The feature [-LIS] is assigned to any complex morphological item of the form

$[[[[. . .]_{I}. . .]_{I+1}. . .]_{I+2}. . .]_{I+n}$

where A) two (or more) bracketings have the same category label.

B) . . . indicates the presence of morphological material.

(Allen 1978 : 208)

Thus, if the base nominals in (19) are deverbal, the converted verbs would have the internal structure in (21).

(21) $*[[[\text{commit}]_{V}\ \textit{-ion}]_{N}\text{-}\phi]_{V}$

Therefore, according to Allen's principle, which bans the nominal *commission*$_{N}$ from being converted into the same verbal category *commission*$_{V}$ as its underlying verb *commit*$_{V}$, the verbs in (19) should not exist and their existence remains a mystery.

The history of English, however, seems to give us a solution to this mystery. From a diachronic perspective, Niwa (1993, 1996) argues that in Middle English (ME) derived nominals were borrowed into English from Latin and French with result readings and that their process readings were not available until Modern English (ModE). It is also pointed out that there were a lot of verbs converted from derived nominals in ME, most of which are obsolete in present-day English. Here are examples from Niwa (1996 : 549).

(22) *reference*$_{V}$, *difference*$_{V}$, *pavement*$_{V}$, *marginal*$_{V}$, *quittance*$_{V}$, *alliance*$_{V}$, *exception*$_{V}$, *intercession*$_{V}$, *competition*$_{V}$. . .

To account for this kind of productive word formation in ME, Niwa (1996) assumes that nominal suffixes such as *-ment* were not taken to be bound morphemes in ME and that their status as bound morphemes was estab-

lished after ModE. This implies that derived nominals were not regarded as deverbal in ME, from which it follows that the converted verbs in (22) are derived from nouns without a violation of Allen's principle.

This explanation is consistent with the analysis proposed here on synchronic grounds, which can be extended to the examples in (19). Recall that we assume that result nominals are not deverbal and they are listed in the lexicon. Then, the converted verbs in (19) can be successfully derived from result nominals without violating Allen's principle. Hence, the existence of converted verbs such as (19) favors the present analysis over the previous ones, in which it has been assumed that derived nominals are deverbal, regardless of whether they are process or result nominals.

5. Concluding Remarks

In this paper, we have tried to explore the mechanism of word formation of result nominals. It was argued, on the basis of a large amount of data, that they are not formed by some morphological operation but listed in the lexicon. This proposal would lead to the enlargement of the lexicon, which clearly does not fit in well with the general consideration of economy in the recent minimalist framework. If the organization of the lexicon is subject to some economy principle, one might argue that result nominals are deverbal as well as process nominals, as suggested in the previous studies. As discussed extensively, however, things prove not so straightforward. Irregular aspects of result nominalization cannot be characterized in terms of a formal morphological operation. We concluded therefore that result nominals are all listed in the lexicon and that the enlargement of the lexicon is indispensable.

Our view of the organization of the lexicon is not essentially inconsistent with the perspective taken in the framework of "Distributed Morphology

(DM)" developed in Halle and Marantz (1993) and Harley and Noyer (1998), a theory which is widely accepted by minimalist linguists. DM indeed posits that morphology is a component after the syntax, and tries to simplify the traditional lexicon. It claims that what is called "Pure Lexicon," which is located before the syntax, includes only universal features, which become inputs to the syntactic computation. This view of DM, however, is crucially motivated by the idea that the lexicon, an input to the syntax, must be simple in order to reduce computational complexity of the syntax as much as possible. To put it another way, DM is a syntax-oriented theory of morphology. The simplicity of the pre-syntactic lexicon thus is not self-motivated and the goal of the enterprise undertaken in DM is not to dispense completely with lexical idiosyncrasies. Hence, DM is forced to posit two additional post-syntactic lexical components, Vocabulary and Encyclopedia. In this paper, we have assumed the standard lexicon, which is not separated into three subcomponents as in DM. But if our analysis is restated along the lines of DM, putting aside technical details, we would claim that the idiosyncratic information of result nominals is contained in the Encyclopedia. Therefore, we could safely conclude that even under DM, a minimalist theory, the organization of the lexicon does not have to conform to the same economy principle as in the syntax.

Notes

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1 Borer (1997 : 11-12) summarizes salient syntactic differences between result

and process nominals, some of which are given in (i).

(i)	Result	Process
a.	Non-θ-assigners	θ-assigners
	No obligatory arguments	Obligatory arguments
b.	No agent-oriented modifier	Agent-oriented modifier
c.	No implicit argument (event) control	Implicit argument (event) control
d.	No aspectual modifiers	Aspectual modifiers

[2] The influential work by Jackendoff (1975) argues that every word, whether simplex or complex, must be listed in the lexicon. Di Sciullo and Williams (1987) and Jackendoff (1997) himself, however, argue convincingly against such a view, since the listing of a regular form is of no grammatical significance.

[3] A generalization such as (5) seems to be observed cross-linguistically. See Lieber and Baayen (1993) for detailed discussion on Dutch word formation.

[4] Our data do not include all the result nominals with the three suffixes in English. Our purpose here is not to show how many result nominals there are in English. But the relevant data will be rich enough to allow us to reach a certain adequate conclusion.

[5] Following Higginbotham's (1985) proposal that state is a subtype of event, we assume that derived nominals like (i), which express the result state of their base verbs, are classified into process nominals as well. Therefore, such nominals are put aside from consideration.

(i) 'To the *astonishment* of everyone there, the Queen Mother danced into the room singing *Dancing Time*,. . .'

(*Today*, August 4, 1994)

Note also that we take "state" nominals to be different from abstract nominals such as *intention*, *decision* and *conclusion*, which are classified into result nominals here.

[6] Rappaport and Levin (1992) themselves notice that there are some apparent counterexamples such as *best-seller* and *roaster*, which correspond to the internal arguments of their base verbs. But they note that the number of such examples is very few and argue that they should be analyzed as lexicalized items.

[7] Note that some result nominals have multiple interpretations and therefore

they belong to two or more classes simultaneously.

[8] Note that although we have reached this conclusion on the basis of the argument structure analysis, the same conclusion will be obtained even if another approaches are adopted. Among those are Di Sciullo's (1996) and Lieber's (1998) approaches. The former proposes that the function of affixes is stated in terms of configurational relations, i.e. Spec-Head and Head-Complement relations. For instance, she claims that the suffix *-er* specifies the Specifier position of the verbal projection to which it attaches. On the other hand, the latter develops the lexical semantics analysis using Lexical Conceptual Structure. If result nominals are classified along these lines, they will be analyzed as specifying the "Spec" or "Complement" type under the former framework, and as occupying different argument slots in LCSs under the latter one.

[9] One might argue that result nominalization can show regularity to the extent that its outputs are classified into three groups as in (10). Actually, however, the members included in the third "Non-Argument" group are semantically sporadic, though along the line of the argument structure analysis, I classify into one group those nominals which cannot count as "Internal" or "External Argument." Therefore, I consider result nominalization to be highly irregular.

[10] See Scalise (1984 : 159) for a similar constraint to Allen's.

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Synopsis

On the Listedness of Result Nominals

Shinichi Nimura

Various differences like (1) between the two types of derived nominals, i.e. process and result nominals, have invoked much discussion on why such differences are observed.

(1) a. The examination of the students will take several hours.
(*examination* = process, argument-taking property)

b. The examination was printed on pink paper.
(*examination* = result, no argument-taking property)

Although previous studies extensively discuss distinctive verb-like properties of process nominals as in (1a), they pay little attention to certain properties of result nominals.

This paper focuses on result nominals and investigates not only their syntactic properties but also their idiosyncratic morphological properties, as shown in (2).

(2) a. *establishment, equipment*

b. *government, environment*

The result nominals in (2a) refer to the internal argument of their base verbs, whereas those in (2b) refer to the external argument of their base verbs. This fact indicates that result nominalization is at least semantically non-uniform word formation.

It is shown, on the basis of an analysis of a large amount of data, that result nominalization is a highly irregular and unproductive process and that it cannot be characterized in terms of a formal operation contained in the lexicon. Then I propose that result nominals are not formed by a morphological operation but are all listed in the lexicon, arguing against the standard view taken by previous studies that they are derived by some morphological operation.

This listing analysis of result nominals can account for nominal properties

like (1b) in a straightforward way. It is also shown that some otherwise intractable phenomena concerning derived nominals can be naturally accounted for under the analysis presented here.