Japanese Morphology and its theoretical consequences: Derivational morphology in Distributed Morphology

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<u>Mark Joseph Volpe</u>

We, the dissertation committee for the above candidate for the

Doctor of Philosophy in Linguistics degree,

hereby recommend acceptance of this dissertation:

_____

Mark Aronoff, Professor, Department of Linguistics and Deputy Provost

_____

Richard K. Larson, Professor, Department of Linguistics

_____

Alice C. Harris, Professor, Department of Linguistics

_____

Heidi Harley, Assistant Professor, University of Arizona, Department of Linguistics

_____

John B. Whitman, Professor, Cornell University, Department of Linguistics

This dissertation is accepted by the Graduate School

_____
Dean of the Graduate School

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Abstract

DISTRIBUTED MORPHOLOGY (DM) (Halle and Marantz, 1993) is a research program in morphology which abandons the traditional generative Lexicon (Chomsky, 1965 and 1995, among many). Recent work argues that all generative processes, including derivational morphology, can be accomplished syntactically, the SINGLE ENGINE HYPOTHESIS (Marantz, 2001).

In **Chapter 1**, I introduce the most recent work within DM which adopts and adapts Chomsky's DERIVATION BY PHASE HYPOTHESIS to lexical-category formation. I then reanalyze some important and well-known data of Aronoff (1976) in order to show that the single engine hypothesis is motivated and explanatory.

Chapter 2 proposes an analysis of two types of common deverbals nominalizations in Japanese. I argue that, actually, only one of the two types is deverbal; the other type is root-derived. Those root-derived nominalizations that contain apparent verbal transitivity markers, the focus of this chapter, raise a paradox for the single engine hypothesis

because of their non-compositional semantics. I resolve it by adopting a proposal of den Dikken (1995)'s: anomalous transitivity markers are AFFIXAL PARTICLES.

Chapter 3 concentrates on lexical causatives in Japanese. There is a widely-held view among linguists (Harley, 1995, 1996, Levin and Rappaport Hovav, 1995, Pinker, 1989, among many), that a lexical causative cannot be derived from a verb which has an agentive subject. Using observations of Matsumoto (1996) and data from idioms in Japanese I argue that no such semantic criterion applies in Japanese. Given the proper pragmatic reading, all verbs with agentive subject can have a mono-clausal causative partner. To put it another way, all verbs, regardless of their lexical semantics have lexical causatives in Japanese. This seemingly unique characteristic of Japanese is argued to be directly related to the fact that apparent transitivity markers in Japanese are affixal particles as argued in Chapter 2.

Chapter 4 concludes with a comparison of transitivity marking in Turkish and Korean with Japanese. I argue differences support the affixal particle analysis for Japanese. The proposed analysis, under standard historical assumptions about Japanese, raises an issue about the diachronic direction of grammaticalizations. With Roberts and Roussou (2003)'s work on grammaticalizations as background, this issue is briefly discussed.

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Acknowledgments

Since I owe so much to so many, on some level this is the most difficult part of my Ph.D. dissertation for me. In line with the tradition, I begin by expressing my gratitude to my dissertation supervisor, Mark Aronoff. For anyone who has the good fortune of knowing Mark on a personal level, rather than just as a famous name within the field of linguistics, the list of praise is endless, but I will try to be brief. The keywords are kindness, humor, quickness of mind, and reasonableness. Without Mark, I would certainly not be where I am now, which is living, living in Japan, doing an enjoyable and well-paid job and putting the final touches on a Ph.D. dissertation in morphology. To put this in context, my main reason for going to Stony Brook after living and working 9 years in Japan was to return to Japan with better career prospects.

As a teacher, he seems to immediately understand what is best for the student. In my case, he quickly realized that I was quirky but serious and accepted that by allowing me to work in my own way, at my own pace, pursuing my personal interests. The one other student in the department who is working with Mark, my classmate Xu, said that Mark was a "very strict teacher" and nicknamed him "The Tiger". I thought this was some kind of joke. This was not the Mark I was working with, but Xu was very serious.

Mark, because of his varied experiences in the field was always quick with a relevant anecdote about the field. This opened up a new world, the world of linguistics to someone who had until arriving at Stony Brook was ignorant of the way linguistics was done in the West. The time we spent together will remain fond memories for me always.

Despite the different framework of morphology I decided eventually to pursue, Mark always remained helpful and interested in the data I was considering. In fact, both our

dissertations and the data contained in them resulted from years of browsing dictionaries. As a linguist, there is nothing to add, his work speaks for itself, but as a teacher, despite the hardly believable demands on his time as Deputy Provost at the university, other positions of responsibility too numerous to list and as a linguist whose research continues to break new ground, he was always willing to give an hour of his time every week to me come rain, come snow, come summer vacation. At the dissertation defense, Mark made the final comments. Though brief, perhaps three or four sentences, it became obvious that the analysis would not explain the data that was most interesting and needed to be changed. From the bottom of my heart, thank you!

Sticking with the theme of faculty members of the Department of Linguistics at Stony Brook University, I thank them all in particular those whose lectures I attended and/or who worked with me on my qualifying papers. Richard Larson contacted me out of the blue one day while I was still working at *Fukuoka University* in Japan. He had some questions to ask about a paper I had included as part of my application to the program. His interest in and his knowledge of Japanese came as a complete surprise to me and he remained helpful to the end serving as the dissertation Chairperson during the oral defense. He also was the best classroom lecturer I have ever experienced. His lectures were always stimulating, well-prepared and word-perfect. Christine Bethin, Ellen Broselow and Alice Harris were a close second, all with there unique personalities which contributed much to making their classes and seminars stimulating and helpful as I tried to reshape my stubborn self into a linguist. Dan Finer was a special case. I had the good fortune to attend several of his syntax seminars. He has the reputation of being hard to follow, but if you did, it was worth every step of the journey. From his seminars I learned

how syntactitians reason, an elite group of which I am not a member, and there were many subtle jokes along the way. Faculty members whose classes, for various reasons, I did not have the opportunity to attend, but would like to thank are Bob Hoberman and Edith Aldridge. They both served as very helpful members, Bob as chairperson, on one of my qualifying papers. Edith, in fact, served on the dissertation defense committee in place of Alice Harris, who was overseas on a research grant. Marie Huffman was a helpful Grad Student Supervisor, Frank Anshen and Lori Repetti shared common interests in morphology and chats about it. This brings me to the final faculty member who deserves special mention, John Bailyn. During the majority of my time at Stony Brook, John was overseas in his beloved Russia on various grants and fellowships. While he was at Stony Brook, I attended the first 2 lectures of his Historical Syntax seminar when I suddenly became ill and was forced to leave Stony Brook. In the end, it was John who engineered the solution that allowed me to officially defend my dissertation. There were many logistical problems involved. I am teaching in Japan, I had two outside members on my dissertation committee, Heidi Harley and John Whitman, and Alice was committed to beginning her overseas research about the time I was finally ready and able to return to the US to defend. To John I owe a special mention of gratitude. He suggested that Edith Aldridge, who has a native-speaker-like knowledge of Japanese and has taught seminars on *Distributed Morphology* at Stony Brook act as a proxy for Alice. To Edith, also, thanks for your help at such short notice.To sum up the Stony Brook faculty, it was a bit of a shock that such kind people could be so strict about linguistics. It was all to my benefit.

To my outside committee members Heidi Harley and John Whitman, who may never know the role they really played in my decision to return to Stony Brook and go the final round in the bout to get a Ph.D., I owe very special thanks. Both, despite the enormous demands on their time, have always been willing to reply to my e-mails and offer sensible encouragement at the times when it was most needed. Both are very kind human beings and as linguists, their body of work speaks for itself. Thank you, Heidi and John.

Two linguists who were incredibly helpful and encouraging especially towards the end of the writing of the dissertation were Marcel den Dikken and Alec Marantz. Their appetite for linguistics can only be described as voracious. The analysis offered in this dissertation changed completely from the analysis I defended. Marcel and Alec played helpful roles. The analysis makes crucial use of a chapter in Marcel's 1995 book. I contacted Marcel with numerous data questions and, as always, he responded promptly with helpful and insightful replies. Alec took an hour out of his hectic schedule as department head and supervisor of numerous dissertations to meet with me in his MIT office in the winter of 2005 to discuss some data. When I told him I would adopt Marcel's analysis later on, he immediately responded with enthusiasm. Both read near final versions of the dissertation contained below and made helpful comments and suggestions. Marcel, in particular, not only gave helpful comments and suggestions, but also pointed out miniscule typos and misusages of terminology. Needless to say, those that remain are completely my fault. To Marcel and Alec, both linguists who were not involved in any official capacity on my dissertation, I offer my special gratitude.

Also jumping in at the very end of the dissertation was Chisato Kitagawa. He somehow became aware of my dissertation-in-progress and expressed his interest in reading it. The

benefit of having Chisato read the near-final version of the dissertation was twofold; first he is an excellent linguist in his own right, second he is a native-speaker of Japanese. Many of his suggestions were incorporated and he saved me from what would have become careless and embarrassing blunders on my part. Thank you, Chisato.

I now attempt to thank in chronological order all those who have helped me on my way to becoming a linguist. First, there was John Klosek, who as department head of The *Multi-Cultural Center, New Jersey City University* at the time I was working on my MA in ESL, was the first linguist I ever knowingly met. He had something that I also wanted to have; that is, he was a trained linguist and therefore had expertise in the knowledge of languages and how they work. He was my original inspiration to learn as much as I could about linguistics. Since John is an alumni of the Grad School, CUNY, let me thank current faculty members Christine Tortora, who taught Syntax 1 to our class, and Bob Fiengo and Bill McClure, who were kind and helpful. Both were among the best speakers among the many visiting speakers while I attended at Stony Brook.

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numerous hours talking about linguistics and whatever was on my mind linguistically at the time could be raised with Hiroaki, almost inevitably resulting in an interesting observation from him. Eiji, in addition to being a talented phonologist, was a native-speaker of *Hakata-ben,* the dialect spoken in Fukuoka. From the very beginning, he encouraged me to pursue the study of the dialect as a serious research endeavor. To all three, special thanks and I look forward to more good times in the near future. My friendship with Nobuaki Nishioka came towards the end of my 9 years in Fukuoka. He was at a different university, Kyushu University, and we therefore had less opportunity to meet, but he remained a dependable e-mail correspondent through my years in Stony Brook, sending crucial data in the pinch. As I write, there is reason to expect that my time and friendship with Nobuaki will increase in the near future. Thanks for all your help over the years.

I first decided that morphology was a field I might be able to work in during the mid-1990s. The 1990s was a period in time when many new books containing competing frameworks were published. I became interested in Bob Beard's *Lexeme-Morpheme Base Morphology*. I applied it a bit to Japanese and discovered that Bob's claims were borne out. I dashed off a quick letter from Japan to *Bucknell University* (at the time I did not use e-mail out of ignorance). Much to my surprise I received an encouraging reply, my first contact with linguists outside of Japan. Bob has been extremely helpful and encouraging since and even invited me to co-write a chapter explaining the LMBM framework which is now published. To Bob also, sincere thanks from the bottom of my heart.

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Allow me to brag a bit about my class-mates, those who entered the *Stony Brook University* Ph.D. program in linguistics in the later summer of 2000. Of those who remained more than 1 semester, all have received, are receiving at the time I write this, or have defended there proposals or dissertations, and everyone will have received their respective Ph.D.s within a year or so. To put this in some context, in the relatively short history of the Ph.D. Program in Linguistics at Stony Brook University, this has never happened although it's expected at departments we are in competition with. In alphabetical order, Franc Marusic (*Lanko*) (sorry I don't have the proper fonts!), Jon (MacDonald), Ruiqin Miao, Julie Weisenberg, and Zheng Xu, thanks and best fortune in the future! Additionally, Jon MacDonald, Rei Quin Miao and Zheng Xu entered the program having never read any linguistics so that they started from zero and have become authentic linguists in their own right in a few years at Stony Brook. Among my

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and advice is crucial to both students and faculty. Undoubtedly, she is the most popular person, bar none, in the department. Sandra is sort of the unofficial historian of the Stony Brook Department of Linguistics and knows all the precedents and all the unprecedented, all the department and university rules and regulations. She was also lots of fun to be with when the department was off-campus for speaker receptions, picnics, etc., etc. To all the above, thank you!

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proud of you, as I am of all my siblings. She, and later with Terry, also allowed me occasionally to squat, thanks and love; the same for all my siblings! Regrettably, my parents Joe and Marilyn both died before seeing many results of their tremendous love as parents. They would be surprised and, of course, proud that I have gotten a Ph.D.

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Chapter 1

Lexical formation from roots vs. lexical formation from words

1. Introduction

In this chapter I argue that recent work in DISTRIBUTED MORPHOLOGY (DM) (Halle and Marantz, 1993) that hypothesizes a crucial distinction between lexemes formed directly from ROOTS, i.e., non-occurring words, and lexemes formed from pre-existing words: nouns, adjectives and verbs, offers an attractive alternative to the traditional view of a generative Lexicon in which word-formation occurs (Chomsky, 1965 and 1995; Matthews, 1994; Aronoff, 1976 and 1994; Lieber, 1992; and Anderson, 1992; among many). What exactly motivates the claim that the generative Lexicon should be abandoned replaced only by a distinction between lexical-formation from roots and lexical-formation from pre-existing words?

A generative language module is very powerful; in fact, it has infinite generative capacity, as is the case for syntax. A linguistic hypothesis which needs to only postulate one 'engine' of infinite generative capacity, i.e., which eliminates the Lexicon as a redundant source of generative capacity, would result in a more constrained, and indeed, more elegant theory[1].

Within DM (Marantz, 1997, 2000, 2001, and 2002, and Arad, 2003), roots are atomic elements, categorically-unspecified syntactically, underspecified semantically to the point that a meaningful gloss can hardly be given and unpronounceable within a given language's phonological system. Pre-existing words, on the other hand, become lexically-

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[1] This is an appeal to *Occam's Razor*. This principle of ontological economy is attributed to William of Occam (13th Century England). It states that "Entities should not be multiplied beyond necessity"; that is, scientific theories should avoid the postulation of concepts that can be explained without their postulation.

categorized by merging with a functional head, *v*, *n* or *a*; are defined semantically; and are pronounceable, often with an accentuation specific to syntactic category.

Arad (2003: 748) states that:

> The first category head merging with the root defines a PHASE (Chomsky, 1999), that is, a stage in the derivation where the element built by the computational system is spelled out both semantically and phonologically.

It would perhaps be no exaggeration to claim that *Word Formation in Generative Grammar* (Aronoff, 1976) is responsible for making morphology a legitimate field of inquiry for late 20th Century linguists and beyond. By critically examining several issues addressed by Aronoff, in the light of recent claims within the DM framework, I provide preliminary support for the SINGLE ENGINE HYPOTHESIS (Marantz, 2000, 2001, and 2002 and Arad, 2003). I attempt in this chapter to demonstrate that interesting semantic and phonological phenomena discussed in Aronoff (1976) can be explained in a straightforward manner if one assumes the difference between root-derived vs. word-derived word-formation.

2. Word vs. Root-based Morphology

The traditional approach to the duality of word-formation, its idiosyncratic non-productive non-compositional lexical aspects, versus its more productive and paradigmatic syntactic aspects, has been to posit two levels of word-formation *derivational morphology* occurring in the Lexicon and a level directly relevant to syntax, *inflectional morphology* (Chomsky, 1965 and 1970 and Kiparsky, 1973, among many). DISTRIBUTED MORPHOLOGY (DM) (Halle and Marantz, 1993 and Harley and Noyer, 1999)

has made concerted efforts to reduce both to syntactic principles, the SINGLE ENGINE HYPOTHESIS (Marantz, 2000).

For DM open classes, L-MORPHEMES (lexical morphemes), are ROOTS in a local relation with the category defining F-MORPHEMES (functional morphemes) *v*, *n* and *a* (read as 'little v", "little n" and "little a", respectively) (Harley and Noyer, 2001). Marantz (2000) argues that lexical category is syntactically derived by merging category-neutral roots with the category-defining functional heads *v*, *n*, and *a*. A well-worn example is the root √*grow*. In a local relation with the category defining head *v* it's a 'verb':

(1)

v grow- Ø

   v   √ *grow*

   Ø
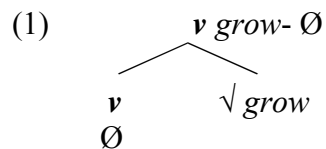
By contrast, √*grow* in a local relation with *n* is a 'noun' (or nominalization):

(2)

n grow-th

   n   √*grow*

 -*th*
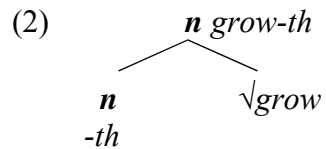
Marantz (2000, 2001 and 2002) is an application of Chomsky (2001)'s DERIVATION BY PHASE to the formation of lexical category. A PHASE for Chomsky is the point in a derivation where INTERPRETABLE FEATURES, phonetic and semantic are sent to their respective interfaces and UNITERPRETABLE FEATURES, i.e., those features which have no semantic or phonetic import, e.g., overt case-markers of the type found in Latin, are erased at the STRONG PHASE boundaries *v* and C. Categories that should be included among the strong phases is an area of ongoing research and debate (See Legate, 2003, Marusic, 2005, among many), but for DM, the functional heads *v*, *n* and *a* are the points in a derivation at which semantic and phonetic properties are assigned to roots; that is,

they too are phases that create lexical categories containing semantic and phonetic propertes.

Marantz (2002: 6-7) hypothesizes that:

> One place to build words is in the domain of a root, attaching a morpheme to the root before attaching a functional head that determines the syntactic category of the word (N, V, Adj). A second place to build words is outside the domain of functional head that determines syntactic category – the little *v*'s, *n*'s, and *a*'s… Derivationally, little *x*'s determine the edge of a cyclic domain (a PHASE in Chomsky's recent terminology). Thus the combination of root and little *x* is shipped off to LF and to PF for phonological and semantic interpretation and the meaning of the root in the context of little x is negotiated, using 'Encyclopedic' knowledge…
>
> Structurally, when a head attaches outside of little *x*, it sees the features of *x* locally, not the features, properties, or identity of the root merged with *x*. So its selectional properties are satisfied by the features of *x*, drawn from the universal syntactic feature set, not the properties of the root, which are idiosyncratic to the language and to the individual speaker. When a head attaches to a root, its selectional requirements must be satisfied by the idiosyncratic properties of the root.

Arad (2003: 747), following Marantz, argues for a locality condition that determines the possible interpretations assigned to roots in different environments:

> Roots are assigned an interpretation in the environment of the first category-assigning head with which they are merged. Once this … is assigned, it is carried

along throughout the derivation.

Further, Arad (2003: 748) writes that:

> The first category head merging with the root defines a PHASE [*Chomsky, 2001*, MV], that is, a stage in the derivation where the element built by the computational system is spelled out both semantically and phonologically.

Thus a crucial distinction between word-formation from roots and word-formation from pre-existing words is predicted. Derivations in which a root is directly merged with a phase-defining head, *v*, *n* or *a*, may be semantically and phonologically idiosyncratic. These will not be operations on argument structure, but on the under-specified semantics of roots which may involve morphological operations, e.g., ADJUSTMENT RULES and TRUNCATION (Aronoff, 1976). The adoption of Chomsky (2001)'s DERIVATION BY PHASE is therefore, crucial to lexical-category formation in DM; category formation from roots, i.e., non-occurring words, may result in non-compositional special meanings.

Words derived from pre-existing words, by contrast, are compositional; the meaning of the new word is based on the meaning of the base plus the semantic characteristics generally associated with the affix.

The lexicalist approach is best exemplified by Aronoff (1976) who states the central hypothesis of WORD-BASED MORPHOLOGY[2]:

> All regular word-formation processes are word-based. A new word is formed by applying a regular rule to a single already existing word. Both the new word and the existing word are members of major lexical classes (ibid: 21).

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[2] Aronoff (1994) substitutes LEXEME for 'word' as used in Aronoff (1976). A lexeme is a member of a major lexical class, verb, noun or adjective; "a sign or set of signs [*of*] form, syntax and meaning bound together" (Aronoff, 1994: 10).

There is no disagreement about the properties of word-formation from pre-existing words between DM and Aronoff's hypothesis. DM, however, claims that word-formation applies also to non-existing words, i.e., roots. Aronoff's approach only allows for new words from pre-existing words in principle, if not in actual practice.

3. Adjustment Rules and Multiple Attachment Sites for Morphemes: the case of English –able

In this section, making crucial use of Aronoff's discussion of the adjectival-forming morpheme –able in English (Aronoff, 1976: 121 – 129) and its relevant ADJUSTMENT RULES (ibid: 87 -112), I propose a reanalysis within DM. Additionally, Aronoff's demonstration that identical phonological pieces may be distinct structurally supports the analysis I propose for the Japanese morpheme –(s)ase- in the next chapters.

Aronoff (1976: 121) provides:

> (A) reasonably detailed account of the phonological properties and some observation on its semantics and syntax [*with its,* MV] higher purpose …to support a particular conception of the nature of morphological boundaries.

Within his theory:

> Boundaries are structural entities … *[that*, MV] reveal their existence in the way they affect phonological and semantic processes (ibid.).

Aronoff (1976) argues that there are two 'morphemes': +*able* and #*able,* that are distinct in how they influence the bases to which they attach phonologically and semantically: consistency of semantics and phonology is more strongly associated with the morpheme #*able*. His first important observation concerns minimal pairs which differ only in the placement of stress:

(3) a.	b.
cómparable	compárable
réparable	repáirable
réfutable	refútable
préferable	preférable
dísputable	dispútable

Aronoff argues that "the words in column (a) must be of the form X+*abl;* those in column (b) are of the form X#*able*" (ibid: 123). Important to note is that the examples in column (b) share their stress with the verbs to which they are related: *compáre, repaír, refúte, prefér, dispúte*, respectively. Additionally, Aronoff (ibid: 127-8) notes semantic differences associated with the differences in stress:

> The meaning of *compárable* is 'capable of being compared' … [e.g.,] *The two models are simply not comparable* … cómparable … has another meaning … which is the same as *equivalent* … e.g., *This is the cómparable model in our line*.

The essential semantic observation is that when the adjective's stress is identical to that of the verb, the semantics are compositional, i.e., 'capable of being X-ed'; they are derived from the verb. When the stress differs from that of the verb, the semantics may be idiosyncratic.

Such phonological and semantic facts are one prediction of DM's single engine hypothesis. Aronoff's +*abl* attaches to roots; the phase-defining head, *a*, is therefore the point of phonological and semantic spell-out. The #*abl* morpheme, by contrast, attaches to a verb which has already been spelled out semantically and phonologically.

In English there exists a root √*compar-*. Merged directly with the phase-defining head *a*, the resulting adjective with the morpheme +*abl* may have phonological and semantic properties independent of the verb. The morpheme #*abl*, on the other hand, combines only with phonologically and semantically interpreted verbs. The two derivations are illustrated in examples (4) and (5) respectively:

(4) a.   **v** *compáre*

           v   √ *compar-*
           Ø

    b.   **a** *cómparable*

          a   √ *compar-*
        +*abl*

(5)   **a** *compárable*

        a   **v** *compáre*
       #*abl*

              v   √ *compar-*
              Ø
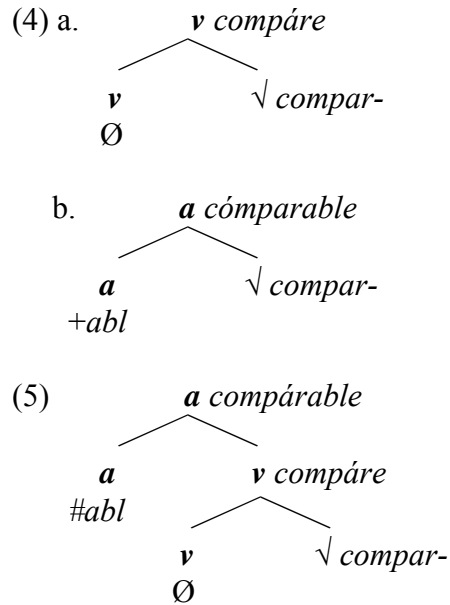
In addition to minimal pairs contrasting only in stress, there are minimal pairs which contrast in terms of allomorphy. In an extensive discussion, Aronoff (1976: 98-114) demonstrates that LATINATE ROOTS[3] display strict allomorphy before the morphemes –*ion*, -*ive*, -*ory*, and –*or*. The data in example 6, below, shows that allomorphy, which is "obligatory and exceptionless in all other cases" (ibid: 124), seems to be optional before the morpheme –*able*:

---

[3] Aronoff (1976: 51-2) motivates the abstract feature *latinate*, opposed to *native*, to account for certain morphological (and phonological) facts in English.

(6) **Verb**	**Allomorphy**	**Non-Allomorphy**
circumscribe	circumscriptable	circumscribable
extend	extensible	extendable
defend	defensible	defendable
perceive	perceptible	perceivable
divide	divisible	dividable
deride	derisible	deridable

Again, there are also semantic differences associated with these doublets. Adjectives with allomorphy may be non-compositional, while those without are interpreted based on the semantics of the verbs from which they are derived:

> One sense of *tolerable* is 'moderately good, fair' … *toleratable* does not have this sense, but only 'capable of being tolerated' … [*e.g.*] *We ate a toler(*at)able lunch* (ibid: 128).

Following Siegel (1974), Aronoff writes:

> If the stem is not an independently occurring word, then the affix is always a + boundary affix (ibid: 125).

Within the framework advocated here, we need only substitute "root" for Aronoff's "stem[4]" since roots are, by definition, semantically and phonologically uninterpreted morphemes. Given this, the semantic and phonological properties observed by Aronoff fall out.

---

[4] The distinction between root and stem will not always be obvious in English since both are often represented identically orthographically. "A root is is what remains when all morphological information has been wrung out of a form [*and is therefore]* morphologically unanalyzable" (Aronoff, 1994: 40). A stem, by contrast, may be morphologically complex (necessarily so for Matthews, 1994: 64) and a single lexeme or word may have more than one stem (Aronoff, 1994), while more than one root is not a possiblity.

Roots that are consonant-final need only have an unspecified consonant, (C), determined according to the morpho-syntactic environment:

(7) a.　　　　*v extend*

　　　　　v　　　*√ exten(C)-*
　　　　　Ø

　　b.　　　*a exentensible*

　　　　　a　　　*√ exten(C)-*
　　　　+abl

(8)　　　　*a extendable*

　　　　a　　　　*v extend*
　　　#abl

　　　　　　　v　　　*√ exten(C)-*
　　　　　　　Ø
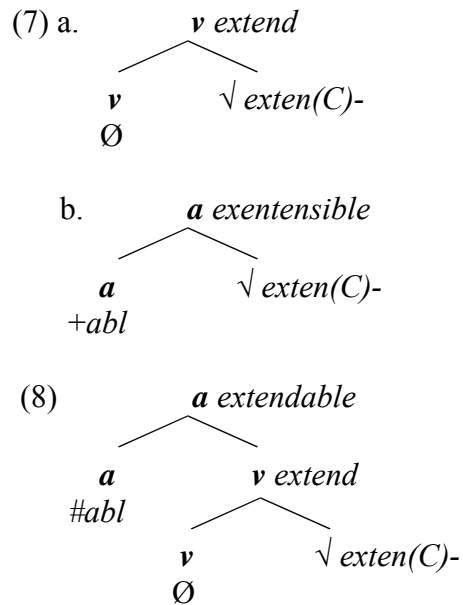
Analogous to the allomorphic minimal pairs above are those in which truncation seems to be optional:

A truncation rule deletes a morpheme which is internal to an affix, in the following general manner:

$[[root + A]_X + B]_Y$

　　1　　2　　3 → 1 $_ø$ 3

(where X and Y are major lexical categories). (Aronoff, 1976: 84)

A partial list from Aronoff (1976: 125) is contained in (10), below:

(10) **Verb**	**Truncation**	**Non-truncation**
cultivate	cultivable	cultivatable
navigate	navigable	navigatable
separate	separable	separatable
operate	operable	operatable

Aronoff (1976: 124) notes that truncation is obligatory in cases where the truncating morph does not belong to the root. He cites the pairs *tolerate – tolerable*, *negotiate – negotiable*, and *demonstrate – demonstrable*, which seem to have obligatory truncation. In these cases the verbs are actually bi-morphemic consisting of a root plus the morpheme *–at*, e.g., √*toler-ate*. Where the phonological piece *–at* is part of the root, truncation can never occur:

> (Truncation) is blocked when there is reason for not analyzing *At* as a morpheme.
> … *At* does not truncate in the word *inflatant* because to posit that *At* is a
> morpheme in the word *inflate* entails that the root be *fl*[5], which is not possible,
> since all [*English*, MV] roots must contain a vowel. (ibid.)

The proper level of abstraction for truncation therefore seems to be the root. A reanalysis of truncation within DM recognizes that truncation is strictly associated with roots. Minimal pairs of the type shown in example 10 represent cases of word-formation from roots (truncation), in contrast with pre-existing words (non-truncation), the types of category-formation recognized by DM. Thus the semantic observations involving apparent cases of truncation are predicted. Respective derivations for truncation / non-truncation are shown in examples (11) and (12), below:

---

[5] Here Aronoff has in mind the bound latinate root *-flat*, which occurs in English only when prefixed, e.g., *inflate*, *deflate* and *conflate*.

(11) a.   **v** *cultivate*

            v   √ *cultiv-*
         -*at*

    b.   **a** *cultivable*

      a   √ *cultiv-*
    +*abl*

(12)   **a** *cultivatable*

      a   **v** *cultivate*
    #*abl*

                v   √ *cultiv-*
                -*at*
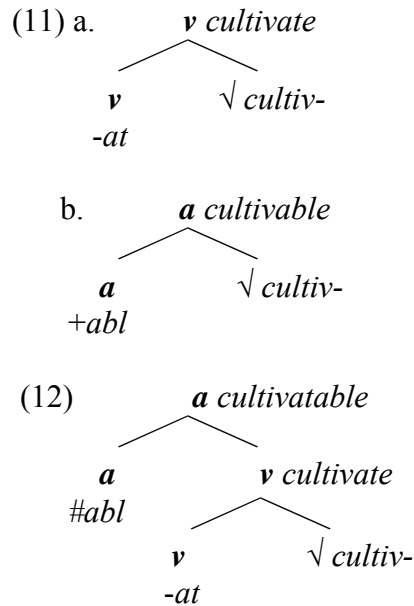
For Aronoff (1976: 122):

> Boundaries [*i.e., + and #*, MV] cannot be merely phonological entities … they are mediations between sound and meaning … they affect the two in parallel manners and are therefore … elements of linguistic structure.

Boundaries and phonological cycles are subsumed by the notion *phase* (Chomsky, 2001), a point in a derivation where semantic and phonological interpretation occurs. They are:

> Elements of linguistic structure … [*which*, MV] affect [*semantics and phonology*, MV] in parallel manners. (Aronoff, 1976: 122)

The semantics and the phonology of stress and allomorphy for –*able* follow from the distinction between words formed from roots and formation from pre-existing words. Aronoff (1976: 26) associates non-compositionality with non-cyclicity, i.e., non-phase-defining morphology, also a crucial prediction of the single engine hypothesis. Another issue of interest in the present context is the relation between mono-morphemic zero-derived nouns and verbs. This issue has been addressed by a number of linguists within competing frameworks, e.g., Kiparsky (1982), Leiber (1992), and Beard (1995).

The very fact that there is no consensus is significant. A partial listing from Aronoff

(1976: 71) is shown below in example (13):

(13) **Noun**	**Verb**
father	father
butter	butter
nail	nail
hammer	hammer

Semantic paradoxes noted by Kiparsky (1982) are associated with the sub-class of zero-

derivations above. For example, *to father a child* does not entail that one act as a *father*.

Aronoff rejects the proposal advocated in Chomsky (1970) that is adopted by Marantz

(1997):

> It is possible to get around this problem of a morpheme having different meanings
>
> in different words without entirely giving up the claim that morphemes are
>
> meaningful. The basic tack is to give morphemes undetermined meanings, with
>
> contextually determined allo-meanings. This is essentially the solution which
>
> Chomsky (1970) adopts. In order to handle the idiosyncratic semantic differences
>
> in verb-noun pairs like *refuse-refusal*, he says that 'the lexical entry may specify
>
> that semantic features are in part dependent on the choice of one or another of
>
> these categorial features' (noun or verb). To the extent that these dependencies are
>
> regular and syntactically motivated, there is virtue in such a device, or a similar
>
> redundancy convention, but to the extent that they are idiosyncratic, which many
>
> of them are, the device merely serves to obscure the truth, that is the words which
>
> are idiosyncratic. Though this system may allow us to preserve the idea that

morphemes are meaningful, it is only at the level of the *individual word* that these

meanings can be fully specified (Aronoff, 1976: 11). (emphasis, MV)

Root semantics is a wide-open area for further research and it is entirely correct that only

at the level of the individual word does meaning become fully specified. However, given

that categorial information, noun, verb or adjective, affects the phonology, why would it

not equally affect the semantics? Aronoff (1976: 122), himself, recognizes the effect of

structural boundaries, i.e., phases, on both phonology and syntax:

[*Boundaries are*, MV] elements of linguistic structure … [*which*, MV] affect

[*semantics and phonology*, MV] in parallel manners. (Aronoff, 1976: 122)

 One need only substitute the phase-defining morphemes, *v*, *n* and *a*, the level of semantic

and phonological interpretation, for Aronoff's "individual word", above.

Arad (2003: 755-57) argues that English zero-related noun-verb pairs fall into two sub-

classes depending on the semantic relation between the two. In example (14), "the

meaning of the verb does not entail the existence of the noun" (Arad, 2003: 756). Verbs

of the type shown in example (15), below, "entail the existence of the corresponding

noun" (ibid). Such a semantic contrast can be accounted for by assuming that the nouns

and verbs in example (14) are derived from common roots without a derivational

relationship between the two, while the verbs in example (15) must be derivationally-

related, i.e., denominal:

(14) a. I paddled a canoe with a copy of the New York Times.

b. String him up with a rope.

c. She anchored the ship with a rock.

d. He hammered the nail with a rock.

(15) a. *She taped the picture to the wall with pushpins.

b. *They chained the prisoner with a rope.

c. *Jim buttoned up his pants with a zipper.

d. *Screw the picture to the wall with nails! (Kiparky, 1982)

The two distinct derivations are shown below in examples (16) and (17):

(16) a.   *v* paddle

           v   √paddle
           Ø

b.   *n* paddle

         n   √ paddle
         Ø

(17)   *v* tape

      n tape   *v*

   n   √tape
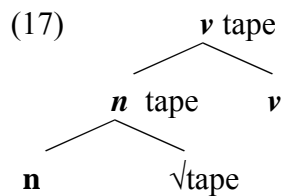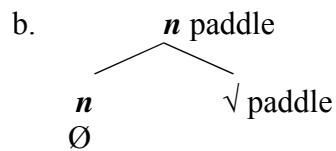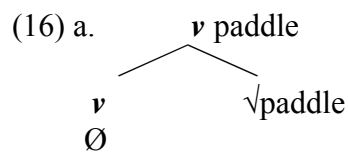
4. Conclusion

Issues addressed in Aronoff (1976) can be reanalyzed in a straightforward and principled manner within DM's single engine hypothesis without the need to postulate a generative Lexicon. The framework is represented by Marantz (2002: 8):

Structure of grammar, the Distributed Morphology/Minimalist Syntax model

Syntax = **Single Generative Engine of Grammar**
("merge," "agree," "move" morphemes)

Morpho-phonology,
insertion of Vocabulary Items   LF
PF

Universal feature set   "fusion" =
(semantic/syntactic features)   bundling   morphemes
                                                           =terminal nodes

Roots (language particular)

merge & move
uninterpretable feature valuation

spellout

post-syntactic merger (lowering/affix hopping)   LF
impoverishment   (semantic
vocabulary insertion (VI)   ??   interpretation)
fission
ordering
post-VI merger = (simple) cliticization

PF

In this chapter, within DM's single engine hypothesis, I proposed reanalyzes of several

issues addressed within Aronoff's word-formation framework. In the next chapter,

Chapter 2, a principled account of the semantic relations between verbs and

nominalizations in Japanese is proposed. One type, I argue, is unrelated derivationally

while the second type is deverbal.

Chapter 2

Japanese Nominalizations: Root-derived vs. Verb-derived

1. Introduction

This chapter proposes an analysis of two common types of nominalizations in Japanese within DISTRIBUTED MORPHOLOGY (DM) (Halle and Marantz, 1993, Marantz, 1997, Harbour, 2000, and Marantz, 2002)'s SINGLE ENGINE HYPOTHESIS. One type is morphologically zero-related to the verb, or more specifically, to the verbal stem, called *renyōkei* in Japanese. An example is the nominalization *oyogi* 'swimming', etymologically-related to the verb *oyog-u* 'swim-NON-PAST'.

The other type consists of verb stems formed with the suffix *–mono*, e.g., *tabe-mono* 'food', derived from the verb *taber-u* 'eat'. Although both are considered deverbal in the literature, I argue that it is only the latter, with the suffix *–mono*, which is in fact deverbal. The first type contains nominalizations etymologically-related to verbs that participate in transitivity alternations. These nominalizations are frequently associated with idiosyncratic meanings despite retaining their overt transitivity-marking morphology. Such nominalizations, under standard assumptions that the transitivity markers are located in the phase-defining head *v*, present a particular challenge, indeed a paradox, for the single engine hypothesis (Marantz, 2000, 2001, and 2002 and Arad, 2003).

Based on the recent decompositional approach to roots (Marantz, 2000, 2001 and 2002 and Harbour, 2000), I argue that apparent markers of transitivity in Japanese are, in fact, AFFIXAL PARTICLES, heads of SMALL CLAUSES (SC) (den Dikken, 1995). Given this analysis, the semantic predictions of the single engine hypothesis are borne out.

Additionally, the affixal particle analysis provides an explanation for the apparent complementary distribution of these two types of nominalizations, i.e., the non-affixed variety versus those affixed with *–mono*.

2. Japanese Verb Morphology

To better understand the data from the Japanese nominalizations a close look at Japanese verbal morphology is in order. Both the Japanese literature, e.g., Sakuma (1936), and the Western literature (Bloch, 1946 and McCawley, 1968) agree that there are two inflecting types. I will refer to them as CONSONANT-FINAL ROOTS (*go-dan katsuyō*) and VOWEL-FINAL ROOTS (*ichi-dan katsuyō*). The vowel-final root is simplest so I begin here.

Roots of the vowel-final type end in a vowel, either *–i* (*kami-ichidan-katsuyō* 'upper one-step inflection') or *–e* (*shimo-ichidan-katsuyō* 'lower one-step inflection') and all inflectional material begins in a consonant. All vowel-final roots, for example √*mi-* 'look, see', indicate non-past finite tense in *–ru*, i.e., *mi-ru* 'see'-NON-PAST-FINITE, and past finite tense in *–ta*, i.e., *mi-ta* 'see'-PAST-FINITE. The additional categories negation and imperative are realized as *–nai,* and *-ro*, respectively, yielding *mi-nai* 'see'-NEG-NON-PAST-FINITE, and *mi-ro* 'look'-IMP:

Table 1 Vowel-final Roots

Root	Non-past finite	Non-past finite Negation	Imperative	Nominalization
√*abare-*	*abare-ru* 'act violently'	*abare-nai*	*abare-ro*	*abare* 'a rowdy'
√*obi-*	*obi-ru* 'wear'	*obi-nai*	*obi-ro*	*obi* 'a sash'
√*samatage-*	*samatage-ru* 'disrupt, hinder'	*samatage-nai*	*samatage-ro*	*samatage* 'hindrance'

The point to notice for vowel roots is that the root is homonymous with the nominalization. Both are equivalent to the verb stem called *renyōkei* in Japanese and often given the infelicitous translation "infinitive" when referred to in the Western literature.

The consonant-final root is somewhat idiosyncratic, particularly in the past tense. The root ends in a consonant and in some cases the inflectional material deletes this final consonant and/or employs an epenthetic vowel in order to conform to Japanese phonological requirements. Important to note is that all nominalizations of consonant-final roots employ the epenthetic vowel –*i*, thus also making them homonymous with their *renyōkei* verb stems.

The consonant-final root √*oyog*- 'swim' has the nominalization *oyog-i* 'swimming'. The non-past finite morpheme is –*u* for consonant-final roots, thus *oyog-u* 'swim'-NON-PAST-FINITE. When inflected for the past tense, voiced and nasal consonant-final roots take the allomorph –*da* becoming *oyoi-da* 'swim'-PAST-FINITE by an allophonic rule of Japanese. The negative form requires the epenthetic vowel –*a*- thus becoming *oyog-a-nai* 'swim'-NEG-NON-PAST-FINITE, the imperative has its realization in –*e*-, becoming *oyog-e* 'swim'-IMP.

There are two complicating cases for consonant-final roots. First, those verbs whose final consonant is –*r*- are indistinguishable from some vowel-final roots in their non-past finite form (*kihonkei*). Thus the surface form *kiru* has two proper segmentations, *ki-ru* 'dress'-NON-PAST-FINITE, as a vowel-final root and *kir-u* 'cut'-NON-PAST-FINITE, as a consonant-final root.

An additional complication are those consonant-final roots that appear in their non-past forms and nominalizations without an orthographical consonant, e.g., the consonant-final root √*mayow*-, which appears as *mayo-u* 'be puzzled, lost' as a non-past finite verb, and as *mayo-i* 'confusion' in its nominalized form.

There are motivated historical reasons for considering these as consonant-final roots with an underlying consonant –*w* (perhaps, a different consonant in Old Japanese). (See McCawley (1968) for relevant discussion) The negation is realized with its underlying consonant and an epenthetic vowel plus the negative morpheme -*a-nai*-, e.g., *mayow-a-nai* 'not be confused'-NON-PAST-NEG-FINITE and the past tense morpheme requires the geminate -*t-ta*, i.e., *mayot-ta* 'was confused'-PAST-FINITE. Note that gemination only occurs with other consonant-final roots, those ending in –*ts*- and –*r*-, e.g., *mats-u* 'wait'-NON-PAST-FINITE, which becomes *mat-ta* 'wait'-PAST-FINITE and *kir-u* 'cut'-NON-PAST-FINITE, which becomes *kit-ta* 'cut'-PAST-FINITE. Additionally, consonant-final roots such as √*mayow*- also display the vowel -*i* in their nominalizations, e.g., *mayo-i* 'confusion', a characteristic of all consonant-final roots, analyzed by Poser (1984), as PHONOLOGICAL EPENTHESIS:

Table 2 Consonant-final Roots

Root	Non-past finite	Non-past finite Negation	Imperative	Nominalization
√*hakob*-	*hakob-u* 'carry'	*hakob-a-nai*	*hakob-e*	*hakob-i* 'progress'
√*oyog*-	*oyog-u* 'swim'	*oyog-a-nai*	*oyog-e*	*oyog-i* 'swimming'
√*mayow*-	*mayo-u* 'be confused'	*mayow-a-nai*	*mayo-e*	*mayo-i* 'a puzzle'

3. The Morphology of Valence Changes

As a necessary preliminary to understanding the implications of the nominalization data, I briefly discuss the verbal morphology of Japanese transitivity alternations. Alternations are represented by a large number of unpredictable morphological classes. Jacobsen (1992) gives the number of morphological classes as 15 'semi-productive classes', each with more than one root participating, and an additional 25 verb alternations, comprising his Class 16, in which only one root participates. Since Jacobsen's work is frequently cited in discussions of Japanese transitivity alternations, e.g., Harley (1995) and Miyagawa (1998), I use the 15 semi-productive morphological classes of Jacobsen (1992) as a convenient point of reference (Appendix 1).

In contrast with English, where transitivity alternations are zero-derived, transitivity alternations in Japanese are indicated by morphology. Transitivity markers are functional, and therefore roots that contain such morphemes are not technically roots, but stems in Matthews (1994)' sense[6], i.e., morphologically-complex; or RADICALS in Sapir (1921: 25)'s sense, encompassing both roots and stems.

There is widely and correctly thought to be a diachronic relation between transitivity markers and the synchronically productive passive and causative morphemes (Shibatani, 1990 and Jacobsen, 1992, among many). For this reason the causative morpheme *–(s)ase-* or its allomorph *–(s)as-*, and the passive morpheme *–(r)are-* may exist whole within syntactically mono-clausal verbs. Classes 8, 9, 10 and 13, for the causative, and Classes 6 and 15, for the passive, are examples that display this property (Jacobsen, 1992) (Appendix 1).

---

[6] A stem, for Matthews, "underlies at least one paradigm, or partial paradigm, but …is morphologically complex" (1994: 64). The bi-morphemic pieces I address in this chapter, in this sense, belong to Matthews' stems.

I begin with the simplest alternation, where one of the pairs is zero-derived. Jacobsen's Class 8 (1992: 264) and Class 12 (ibid: 267) are examples of classes where the intransitive is basic, i.e., zero-derived, and the transitive is formed with a morpheme diachronically related to the productive causative morpheme –(s)ase-:

Table 3: Class 8 Zero-derived Intransitives

Class 8 - Root	Intransitive -Ø-	Transitive -as-
√kawak-	kawak-u 'dry$_{in}$'	kawak-as-u 'dry'
√wak-	wak-u 'boil$_{in}$'	wak-as-u 'boil'
√chir-	chir-u 'scatter'	chir-as-u 'scatter'

Table 4: Class 12 Zero-derived (In)transitives

Class 12 – Root	Transitive -Ø-	Di-transitive -se-
√ki-	ki-ru 'wear'	ki-se-ru 'dress'
√mi-	mi-ru 'see'	mi-se-ru 'show'
√abi-	abi-ru 'pour over oneself'	abi-se-ru 'pour over another'

Classes 1 (ibid: 258) and 4 (ibid: 262) are cases in which the transitive is basic and therefore zero-derived, the intransitive markers are considered diachronically-related to the productive passive affix –(r)are- (Shibatani, 1990):

Table 5: Class 1 Zero-derived Transitives

Class 1 – Root	Intransitive -e-	Transitive -Ø-
√tok-	tok-e-ru 'dissolve'	tok-u 'dissolve'
√war-	war-e-ru 'break'	war-u 'break'
√yak-	yak-e-ru 'burn'	yak-u 'burn'

Table 6: Class 4 Zero-derived Transitives

Class 4 – Root	Intransitive -ar-	Transitive - Ø-
√*hasam-*	*hasam-ar-u* 'be caught between'	*hasam-u* 'put between'
√*tsukam-*	*tsukam-ar-u* 'be caught'	*tsukam-u* 'catch'
√*tsunag-*	*tsunag-ar-u* 'be connected'	*tsunag-u* 'connect'

Let me note in passing, that Classes 1 and 4 show that morphological marking is by no means a necessary property for causative force in Japanese, as is the case in English (Pesetsky, 1995), a point I return to below.

In addition to morphological classes where either the transitive or intransitive is zero-marked, in a majority of the classes both transitive and intransitive forms are derived, for example Classes 3 and 9 below:

Table 7: Class 3 Dual-derived Alternations

Class 3 – Root	Intransitive -ar-	Transitive -e-
√*ag-*	*ag-ar-u* 'rise'	*ag-e-ru* 'raise'
√*hajim-*	*hajim-ar-u* 'begin'	*hajim-e-ru* 'begin'
√*mitsuk-*	*mistuk-ar-u* 'be found'	*mitsuk-e-ru* 'find'

Table 8: Class 9 Dual-derived Alternations

Class 9 – Root	Intransitive -e-	Transitive -as-
√*d-*	*d-e-ru* 'come out'	*d-as-u* 'take out'
√*mak-*	*mak-e-ru* 'be defeated'	*mak-as-u* 'defeat'
√*nig-*	*nig-e-ru* 'escape'	*nig-as-u* 'let escape'

Roots above, e.g., √*ag*- 'rise' and √*nig*- 'escape' form no lexical categories without the affixation of the closed-class morphology. Such alternations, where neither transitive nor intransitive are basic, but both are derived, is of particular importance to my analysis; there are roots for which there are no lexicalizations without the introduction of functional material, and therefore the role of the morphology is not necessarily transitivity marking alone.

In the 15 semi-productive morphological classes recognized by Jacobsen (1992), 10 are of the type where both transitive and intransitive partner are derived. I believe this fact is crucial to a better understanding of the role played by these affixes.

4. Apparent Deverbal Nominalizations

A fairly substantial number of Japanese nominalizations are orthographically equivalent to the *renyōkei* (called 'infinitive' in the Western literature), actually, a verbal stem. Martin (1975: 883) refers to them as INFINITIVE-DERIVED NOUNS and they are typically considered deverbal (Kageyama, 1999 and Nishio, 1977, among many). In a footnote, Martin (ibid) notes:

> In a few instances the derivation may have gone the other way historically; …from the viewpoint of synchronic description, it would appear not to matter, in fact, to be undecidable.

I argue, based on the semantics of such nominalizations, that, indeed, there can be no derivational relation between the two in either direction.

The single engine hypothesis (Marantz, 2000, 2001, and 2002 and Arad, 2003) argues that the distinction between root derivations and word-based derivations is directly

responsible for distinctions between non-compositional idiosyncratic semantics (special meanings) and predictable compositional interpretations:

> The ability to assign multiple interpretations is strictly reserved for roots. Once the root has merged with a category head and formed a word (n, v, etc.), its interpretation is fixed and carried along throughout the derivation. *This locality constraint is universal and holds across all languages* (Arad, 2003: 740) (emphasis, MV).

As shown above Japanese verbs participating in transitivity alternations use morphological marking to indicate valency. Nominalizations based on verbs participating in transitivity alternations retain this morphological marking and are therefore not strictly speaking root-derivations. With this in mind, let us consider the semantics of several nominalizations; some formed with causative-like affixes, others with passive-like affixes. The root √*aw-* of the paired verbs *a-u* 'meet'/*aw-ase-ru* 'join' (Class 8 in Appendix 1), together with the causative morpheme *–ase*, yields the etymologically-related nominalization *awase* 'a lined kimono'. A straightforward analysis that assumes transitivity-marking morphology occurs in the category-defining head *v* (Harley, 1995 and 1996, Miyagawa, 1998 and Pylkkänen, 2002) would claim that the noun *awase* would be an example of a noun formed from a pre-existing verb. The causative morpheme *–ase-* seems to provide direct evidence for its verbal origin:

(1)　　　　　　　　　　*n awase* 'a lined kimono'

　　　　　　　v awase 'join'　　*n*
　　　　　　　　　　　　　　　　　Ø
　　　√*aw-* 'meet'　　　*v*
　　　　　　　　　　　-ase-
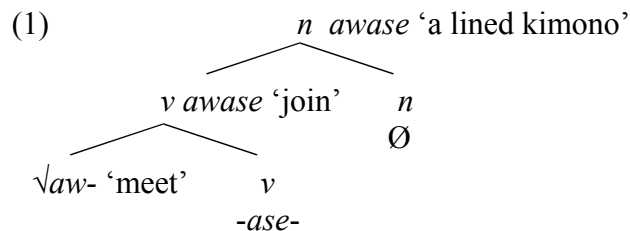
The semantic relation, however, between the verb *awase-(ru)* 'join' and the

nominalization *awase* 'a lined kimono' is in conflict with the predictions of DM's single engine hypothesis:

> A single root may be assigned a number of meanings in the environment of different heads, but the freedom of interpretation is locally constrained by the first category head with which the root merges. Once the root has merged with a head, its interpretation has been decided and is carried upward in the derivation. Further derivation, while sometimes changing grammatical category or adding certain properties (gender, diminutives), may not alter the basic meaning assigned by the head with which it merged first (Arad, 2003: 754).

Derivations of the type shown above, contary to fact, should never be the source of non-compositional special meanings. This, however, is not an isolated case in Japanese, but is characteristic of nominalizations with embedded morphology. Consider Table 9, below:

Table 9: Non-Compositional Morphologically-complex Nominalizations

Root	Transitive Verb	Nominalization	Morphological Class
√*chir-*	*chir-as-u*-TRANS 'scatter'	*chirashi* 'a leaflet'	Class 8
√*d-*	*d-as-u* 'expel'	*dashi* 'soup stock'	Class 9
√*nag-*	*nag-as-u* 'wash away'	*nagashi* 'a sink'	Class 6
	Intransitive Verb		
√*tar-*	*tar-e-ru* 'sag, droop'	*tare* 'sauce, gravy'	Class 9
√*kir-*	*kir-e-ru* 'be severed'	*kire* 'a piece of cloth'	Class 2
√*han-*	*han-are-ru* 'separate from'	*hanare* 'a cottage'	Class 6

Given the semantic relations between the verbs and nominalizations, there can be no plausible derivational relationship between the pairs. Such nominalizations are not

44

deverbal.

The semantics of bi-morphemic nominalizations in Japanese creates a paradox for DM's single engine hypothesis under the standard assumption that transitivity-marking morphology is category-defining. This raises some stark choices. One might argue that there are no predictable distinctions between derivations from roots and derivations from pre-existing words. Perhaps, the linguistic concept *phase* has no status in language and should be abandoned, or Japanese is a language that allows two phases to be the domain of non-compositional special meaning, e.g., the phase-defining heads *v* and *n* in example (1).

By providing an untraditional analysis of the morphology of alternating verbs in Japanese, I argue for a decompositional approach to Japanese roots following a line of thought advanced by Marantz, (2001 and 2002) and Harbour, (2000).

5. The Abstract Morpheme CAUSE

Above, I noted there are zero-marked lexical causatives in Japanese. In other words, there is no bi-unique relation between causative semantics and overt morphology. Nominalizations, in which putatively causative morphemes have no causative force but, are part of the nominalizations, make this fact even clearer.

How does one get from the semantics of 'meet' + CAUSATIVE = 'a kimono', or 'scatter'-$_{INTR}$ + CAUSATIVE = 'a handbill'? What is the semantic contribution of the causative morpheme –*ase*- and its allomorph –*as*- to the nominalizations?

Pesetsky (1995) argues for the existence of a zero-causative morpheme, CAUSE, based on the morphology and syntax of English. One argument is a remolding of earlier arguments

from GENERATIVE SEMANTICS (Lackoff, 1970 and McCawley, 1968) which posited the lexical decomposition of semantically causative predicates. One significant result is the demonstration that nominalizations from verbs with causative force often do not have the expected causative force; that is, the zero-morpheme CAUSE does not occur in nominalizations that merge with these roots. (See also Marantz, 1997) Consider the data below, a partial listing of examples from Pesetsky (1995: 79):

    (2) a. Tomatoes grow.

        b. Bill grows tomatoes

        c. the growth of tomatoes

        d. *Bill's growth of tomatoes

    (3) a. The curtain dropped.

        b. The mechanism dropped the curtain.

        c. the drop of the curtain

        d. *the mechanism's drop of the curtain

    (4) a. The money returned.

        b. The thief returned the money.

        c. the return of the money

        d. *the thief's return of the money

In contrast with the verb, roots that name a *change-of-state* (Levin and Rappaport Hovav, 1995) can have none of the expected causative force in the nominal environment. In the verbal environment, causative force is exclusively associated with the zero-morpheme CAUSE. Similarly, in the Japanese nominalizations above, despite having the overt

morphology commonly associated with causative force -(*s*)*ase*- and its allomorph –(*s*)*as*-, these nominalizations have no causative force!

In fact, nominalizations with apparent transitivity markers often name artifacts, e.g., *aw-ase* 'a lined kimono', *chir-ashi* 'a leaflet', *han-are* 'a separate cottage' and *kir-e* 'a piece of cloth'. Since they make no reference to argument structure, modifying nouns can only have a possessor reading, e.g., *kanojo-no awase* 'her lined kimono'.

While the nouns can be in some sense be considered results of the verbs they appear related to, their associations are arbitrary. *Awase* is not 'a joined thing' (cf. *awase-mono* 'a joined thing', below), but is associated only with 'a kimono (that results from joining it with a lining)'.

The result reading, however, is not connected specifically to the causative-related morphology. The nominalization *kire* 'a piece of cloth (that results from cutting)', with the passive-related morpheme -*e*-, is also a result of the etymologically related verb *kir-u* 'cut', though arbitrarily associated with only 'pieces of cloth'.

Since the semantics, causative or passive-like, is not a necessary property of their morphemes, causative force in both the verbal and nominal environments is independent of the morphology. As in English, I submit that causative force in the transitivity alternations of Japanese must be exclusively associated with the zero-morpheme CAUSE. This raises a crucial question that demands an answer. This is the focus of the next section.

6. The Function of Morphology in Alternating Verbs and Nominalizations

If apparent transitivity markers are not the morphological spell-out of the category-defining-head *v*, as claimed (Pylkkänen, 2002, Miyagawa, 1998, Harley, 1995 and 1996); if it is not the source of the abstract morphemes CAUSE and INCHOATIVE/STATE, then what is their role? Their roles in the nominal and verbal environments would seem to place them syntactically between the root and the category-defining heads *n* and *v*, i.e., they are non-cyclic non-category-defining and therefore eminently associable with non-compositional semantics given this syntactic analysis.

Den Dikken (1995) argues that apparent valence-changing morphemes with multiply ambiguous functions in Dutch, Indonesian and Sanuma are AFFIXAL PARTICLES:

> PARTICLES are heads of complement SMALL CLAUSES (SC) (den Dikken, 1995: 43)
>
> …The subject-predicate relation comes in many guises. Semantically, their hallmark is that they involve the ascription of a property to a subject … SCs are the sole incarnation of subject-predicate relations (den Dikken, 1995: 24-5).
>
> Consider the affixal particle *ver-* in Dutch:
>
> (4)   a. Jan stuurde uitnodigen voor het feest aan zijn vrienden.
>
>   'Jan sent invitations for the party to his friends.'
>
>   b. Jan ***ver***-stuurde zijn vrienden uitnodigen voor het feest.
>
>   'Jan sent his friends invitations for the party.'
>
> (5)   a. Jan maakte zijn positie op de arbeidsmarkt beter.
>
>   'Jan made his position in the job market better.'
>
>   b. Jan ***ver***-beterde zijn positie op de arbeidsmarkt.
>
>   'Jan bettered his position in the job market.'

(6)   a. Zijn positie op de arbeidsmarkt **ver**-beterde.

        'His position on the job market bettered.'

(7)   a. *ver*-$_1$ = applicative affix

        b. *ver*-$_2$ = causative affix

        c. *ver*-$_3$ = unaccusative affix (den Dikken, 1995: 229-230)

Within Dutch, the affix *ver*- has no unique semantic function, for example, a bi-unique association with the causative force of verbs, but appears in multiple verbal environments. It therefore, demands an analysis, in den Dikken's view, that avoids accidental homophony. Den Dikken's conclusion is that such affixes, loosely associated with transitivity in Dutch, Indonesian and Sanuma, are insightfully analyzed as AFFIXAL PARTICLES (1995: 235-5).

One of den Dikken (1995)'s arguments is based on paraphrase. He notes that example (4)b, above, *Jan **ver**-stuurde zijn vrienden uitnodigen voor het feest* 'Jan sent invitations for the party to his friends', with the affixal particle *ver*-, can be paraphrased as *Jan stuurde zijn vrienden uitnodigen voor het feest **toe/op***, with either of the unbound particles *toe* or *op* (den Dikken, 1995: 234).

Unlike Dutch and English, Japanese has no unbound particles. Based on their syntactic functions in secondary predications, however, a plausible candidate for a non-affixal particle in Japanese is the morpheme *–ku* and its allomorph, the postposition *-ni*.

A number of roots in Jacobsen's Class 3 (Appendix 1), in addition to forming verbs and nouns, form adjectives which belong to the class which occurs with bound morphology, called *keiyōshi*, in Japanese, e.g., √*hiro*-, √*taka*-, and √*tsuyo*-. Their non-past adjective forms are *hiro-i* 'wide', *taka-i* 'high' and *tsuyo-i* 'strong'. As verbs they take the forms

hiro-mar-u /*hiro-me-ru* 'widen-INTRAN /widen-TRANS, *taka-mar-u* /*taka-me-ru* 'heighten-INTRANS /heighten-TRANS', and *tsuyo-mar-u* /*tsuyo-me-ru* 'strengthen-INTRANS /strengthen-TRANS. As noted by Kageyama (1999: 73), these intransitive/transitive verb pairs have paraphrases in which the bound adjectival morpheme *–ku* is supported by the light verbs *naru* 'become' and *suru* 'do, make', e.g., *tsuyo-ku naru* 'X becomes strong(er)' and *tsuyo-ku suru* 'make X strong(er)', paraphrases of *tsuyo-mar-u* and *tsuyo-me-ru*, respectively. The morpheme *–ku*, and its allomorph *–ni* are closed-class morphemes, as are particles. Together with their role in secondary predication, they conform to particles, as heads of SCs. In fact, *-ni* as a postposition adherers closely to den Dikken (1995)'s definition.

Minimally, the non-root morphology is responsible for at least resultative predication. One might argue that CAUSE and INCHOATIVE/STATE are also included in their meanings; however, there is motivation for analyzing CAUSE and INCHOATIVE/STATE as phonologically-null light verbs in Japanese, as argued above.

The morphemes (*m)ar-* and (*m)e-* (*m* is root allomorphy) would therefore be affixal particles that can be paraphrased with the more productive *–ku* and *–ni*. Phonologically-overt light verbs occur necessarily to support the tense features in the paraphrase (I discuss in detail the syntactic structure of affixal particles in Japanese in Chapter 3).

One final point of interest is that, this sub-class of roots, adjectival-forming Japanese Class 3 roots, is frequently glossed with the bound morpheme *–en* in English. Since *-en* occurs in both causative and inchoative/stative environments, it can be associated with neither bi-uniquely, and is therefore plausibly an affixal particle according to den Dikken's analysis.

An additional fact that is relevant to the affixal particle hypothesis is that:

> The overwhelming majority of *ver-* prefixed verbs whose roots are adjectival or nominal don't exist as verbs with *ver-* chopped off … *ver-nietigen* [*is*, MV] 'destroy', but **nietigen* doesn't exist as a verb (Marcel den Dikken, personal communication).

If the morphological markers associated with transitivity in Japanese are affixal particles, of the type postulated by den Dikken, we need minimally to find affixal morphemes with multiple functions in the transitivity-marking system and cases in which the roots have no word-forming capacity without the affixes, both notable properties of Dutch affixal particles.

I focus on the morpheme *–e-*, which is found as an apparent transitivity-marker with multiple functions in seven of Jacobsen (1992)'s fifteen semi-productive morphological classes. Like den Dikken (1995: 230)'s affixal particle *ver-* in Dutch, in Classes 1, 9, and 13, it seems to mark intransitivity:

Table 10: Class 1: *-e-* / *-Ø-*

Intransitive	Transitive
*hag-**e**-ru* 'peel off'	*hag-u* 'peel off'

Table 11: Class 9: *-e-* / -as-

Intransitive	Transitive
*ak-**e**-ru* 'dawn'	*ak-as-u* 'spend the night'

Table 12: Class 13: *-e-* / *-akas-*

Intransitive	Transitive
*ama-**e**-ru* 'act dependent on'	*ama-(y)akas-u* 'spoil'

In Classes 2, 3, 14 and 15 it behaves as a marker of transitivity:

Table 13: Class 2: *-Ø-* / *-e-*

Intransitive	Transitive
ak-u 'open'	*ak-**e**-ru* 'open'

Table 14: Class 3: *-ar-* / *-e-*

Intransitive	Transitive
ag-ar-u 'rise'	*ag-**e**-ru* 'raise'

Table 15: Class 14: *-or-* / *-e-*

Intransitive	Transitive
kom-or-u 'be fully present'	*kom-**e**-ru* 'fill with'

Table 16: Class 15: *-are-* / *-e-*

Intransitive	Transitive
sut-are-ru 'fall into disuse'	*sut-**e**-ru* 'throw away'

In a sub-class of Class 3 (*jūjūdōshi* 'verbs of giving and receiving'), the presence of the morpheme introduces an applicative argument:

Table 17: Sub-class of Class 3 – Transitive / Di-transitive Alternations

Transitive	Ditransitive
sazuk-ar-(*u*) 'receive'	*sazuk-**e**-*(*ru*) 'grant'
azuk-ar-(*u*) 'keep'	*azuk-**e**-*(*ru*) 'entrust'
osow-ar-(*u*) 'learn'	*oshi-**e**-*(*ru*) 'teach'

Indeed in Classes 3, 9, 13, 14, and 15, the roots alone have no lexicalizations as verbs or nouns without the attachment of the closed-class morphology to the roots. This is fully the case in ten of Jacobsen (1992)'s fifteen alternating-classes[7].

The single morpheme –*e*- has multiple functions within the Japanese verbal system, in fact, the very same functions as the morpheme *ver*- in Dutch. To the multiply ambiguous morpheme –*e*-, one may also add the morphemes –*Ø*- and –*se*-. In Classes 1, 4, and 12[8], Ø is associated with transitive verbs, in Classes 2 and 8 it is associated with intransitive verbs.

The morpheme –*se*- attaches to morphologically simple transitive verbs. In some cases, it adds an applicative argument, e.g., *mi-ru* 'look at, watch, see', which becomes *mi-se-ru* 'show' when affixed. In others cases, however, no argument is added, e.g., the verbs *ki-ru* 'dress oneself' and *abi-ru* 'shower oneself''. When affixed by –*se*-, they denote the same event, *to dress* and *to shower*, but their internal argument must refer to someone other

---

[7] The additional non-lexicalizing roots classes, 5, 6, 7, 10 and 11, are shown below:

Class 5: -*r*- / -*s*-

Intransitive	Transitive
amar-u 'remain'	*amas-u* 'let remain'

Class 6: -*are*- / -*as*-

Intransitive	Transitive
araw-are-ru 'appear'	*araw-as-u* 'show'

Class 7: -*ri*- / -*s*-

Intransitive	Transitive
ka-ri-ru 'borrow'	*ka-s-u* 'lend'

Class 10: -*i*- / -*as*-

Intransitive	Transitive
ak-i-ru 'grow tired of'	*ak-as-u* 'make tired of'

Class 11: -*i*- / -*os*-

Intransitive	Transitive
ot-i-ru 'fall'	*ot-os-u* 'drop'

[8] Contrary to Jacobsen's classification of Class 12 as intransitive-transitive pairs, it is comprised largely of transitive/ di-transitive, pairs, e.g., *miru* 'look at'/*miseru* 'show' and *noru* 'board, ride'/*noseru* 'load, give a ride to'. (See Appendix 1)

than oneself, i.e., *ki-se-ru* 'dress someone else' and *abi-se-ru* 'showers, pour over someone else'. In this context, *-se-* can be said to have the feature non-1st Person.

Also in the same morphological class is *ni-ru* 'resemble' and *ni-se-ru* 'imitate', which share the common root √*ni-*. Despite its likely diachronic relation to the synchronically productive causative morpheme –*(s)ase-*, *-se-* entails no change in adicity.

Since many Japanese roots have no lexicalizations without the attachment of affixal particles, I draw a loose analogy with BOUND LATINATE ROOTS of English, e.g., –*ceive* and –*mit*, (Aronoff, 1976: 11-14), which also have no lexicalizations without the attachment of affixal particles, e.g., *re-*, *con-*, and *per-*. As is the case with bound latinate roots, 10 of the 15 semi-productive morphological classes in Japanese cannot form lexical items without affixal particles. It is, therefore, a crucial function of the putative 'transitivity markers' to support the formation of verbs and nominalizations with roots.

This analysis is in line with the recent "radical decomposition" of roots in DM by Harbour (2000) and Marantz (2002), who argue that roots such as √*destroy* are, in fact, bi-morphemic cross-linguistically, decomposable into a root √*-stroy* and a particle *de-*.

Harbour (2000: 3) notes that there is an association, perhaps loose, of affixal particles in English with transitivity. The affixal particle *de-* "must [*attach to*, MV] transitive or unaccusative change-of-state verbs"; that is, verbs that necessarily take internal arguments. He cites the verbs *decay, descend* and *detach*, as examples. He notes, however, the verbs *destroy, defame* and *decoy* "do not have this property" (ibid)", i.e., they do not have intransitive forms, and suggests one way around the problem is that there may be homonymous morphemes *de-* in English.

Another possibility is that the affixal particle *de-* insures that the root has an internal argument. Support for this is the fact that the bound root √*stroy* and its allomorph √*struct* seems to be strongly associated with agentivity, e.g., *destroy, instruct* and *construct*, which as nominalizations also permit agents, e.g., *America's destruction of Iraq*, *the teacher's instructions*, and *the worker's construction of apartments*. The external argument is therefore a property of the common root √*stroy* and not *v*, in this case. Given this, one might claim that the root √*stroy* demands a core external argument; the affixal particle *de-* is responsible for its internal argument (Marantz, 2002: 5). It would not be unexpected to find affixal particles in Japanese which have implications for the argument structure of the roots to which they attach.

Chomsky and Halle (1968: 371) give affixal particles the special phonological boundary =, as opposed to the universal boundaries + and #. *Destroy* is thus analyzed as *de=stroy*. In other words, despite the morphological complexity of root=affixal particle, it does not create a phonological cycle, i.e., it is non-phase-defining. If it is non-phase-defining, it follows that there may be semantic anomalies associated with morphemes of the root=affixal particle type. If the Japanese morphemes containing roots and affixal particles have a = boundary then it follows that they are not semantically interpreted until they later merge with a phase-defining morpheme, *n*, *v*, or *a*. Nothing crucial relies on whether Japanese root and affixal particles have the special boundary =, but merely that they be non-cyclic, i.e., non-phase-defining.

Cycles in phonology depend on labeled bracketing (Aronoff, 1976: 25), i.e., the categorial labels verb, noun and adjective. Labeling for complex morphological pieces entails that the meaning of the word can be compositionally derived from the meaning of

its constituent parts (Aronoff, 1976 and Brame, 1974). In other words, the meaning of the noun *awase* 'kimono', if bracketed, should be derivable from its parts √*aw*- 'meet' + *ase*-CAUSE. This is obviously not the case and the conclusion that the closed-class morphology is non-cyclic, i.e., non-phase-defining, follows.

All Japanese nominalization of the class under discussion here, by this criterion, are non-cyclic, non-bracketed and non-phase-defining: √*chir*- 'scatter' + -*as*-CAUSE ≠ 'leaflet'; √*nag*- 'flow' + -*as*-CAUSE ≠ 'a sink'; √*d*- 'exit' + -*as*-CAUSE ≠ 'soup stock'; etc.

Given a non-cyclic affixal particle analysis, we now have an explanation for the frequent non-compositional semantic relation between Japanese verbs and their etymologically-related nominalizations that contain affixal particles. What then is an affixal particle? I define it as:

> The bound head of the Small Clauses: *inner subject > (root → state)* and *inner subject > (root → relation)*[9] (Hale and Keyser, 1993).

Following Harbour (2000), I refer to bi-morphemic pieces formed with a root and affixal particle as RADICALS (Sapir, 1921) and assign the following structure to Japanese radicals:

(8)

v / n

PART

√   -*e*- / -*ar*- / -*as*-, Ø, etc.
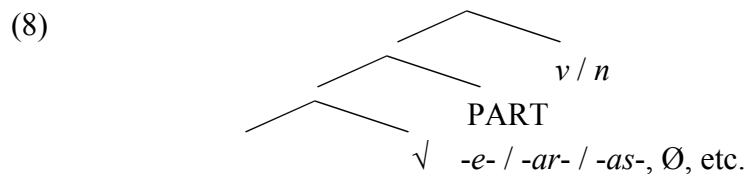
Crucially, affixal particles being non-cyclic are below the phase-defining heads *v* and *n* in order to account for the non-compositional semantic interpretations they may have. In

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[9] The predications above are based on Hale and Keyser (1993: 71-3)'s $n > (e → s)$ and $n > (e → r)$, where *n* is an "inner subject", a theme, i.e., an affected argument, *e* is an event, *s* is a state and *r* is a relation. Given this analysis, it is not surprising that affixal particles in Japanese are associated with change-of-state roots or the addition of non-core arguments, i.e., relational arguments, to non-change-of-state roots.

fact, this is expected since non-compositionality is strongly associated with non-cyclicity (Aronoff, 1976: 26)[10].

Motivation for positing such a structure, in addition to the morphology, is the dramatic differences between pure root nominalizations and complex radical nominalizations. Additionally, the distinctions between the root and radical nominalizations provide an account for the little noted fact that there is a near complementary distribution between root/radical nominalizations and those formed with the suffix *–mono*.

7. Root Nominalizations vs. Radical Nominalizations

Kageyama (1999: 109), stating a traditional viewpoint, e.g., Nishio (1977), claims that "a phonological restriction is seen" for nominalizations formed from the *renyōkei* 'stem', which subsumes the root and radical nominalizations distinguished below:

[10] Concerning affixal particles, den Dikken (1995: 237) asks "(1) If affixes like *ver-* are not themselves causativizers, what is it that adds the semantics of causation in causatives featuring these affixes? ... (2) What is the structural position of [*such*, MV] affixes?" In reply to (1) he argues for an "EMPTY CAUSATIVE MATRIX PREDICATE", the abstract Ø-morpheme CAUSE (Pesetsky, 1995 and Harley, 1995), as argued for above. In reply to (2) he proposes the following structure for bi-morphemic causative verbs formed from transitive verbs. SC is a small clause, which is a subject-predicate relation. It's not clear whether affixal particles form SCs in the nominal environment; however, see Chapter 3 for SCs formed with affixal particles in the verbal environment:
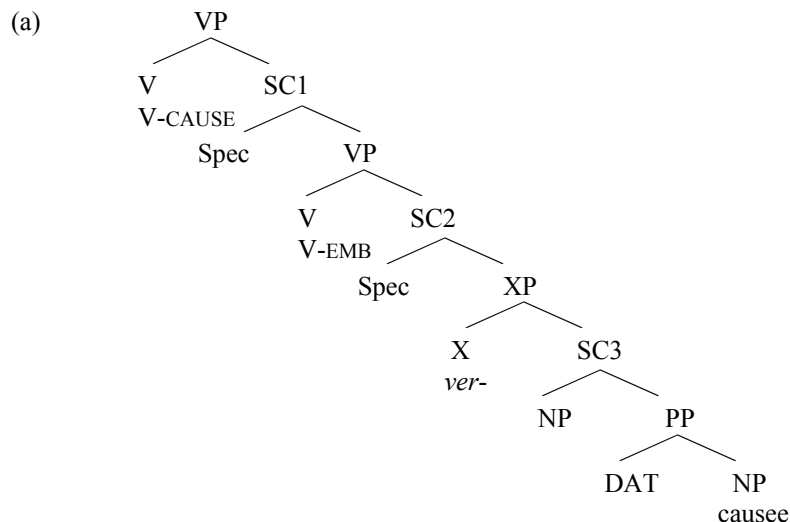
Crucially, the SC predication and its head, the affixal particle, is below the head of V.

First, one mora[11] words stand independently with difficulty for phonetic reasons. [*suru* 'do'] → [**shi*], [*kiru* 'wear'] → [**ki*] and the like, are unlicensed; compounds such as [*shi-waza* 'an act'] and [*ki-mono* 'traditional Japanese dress'] become stable…Even two morae [*nominalizations*, MV] are still unstable, [**nomi*] (cf. *nomi-mono*), [**tsuke*] (cf. *tsuke-mono*) cannot occur independently. Some, however, have become accepted, e.g., *kari* 'a debt', *kashi* 'a loan', *make* 'a defeat', *kachi* 'a victory' [*and*, MV] *ue* 'hunger' (Kageyama, 1999: 109) (translation, MV).

In other words, nominalizations of three or more morae are unremarkable; those of two or less are notably scarce.

The observation is quite correct in that two morae nominalizations that might otherwise be expected based on the analogy *oyog-u* 'swim'/ *oyogi* 'swimming' do not exist, e.g., *nom-u* 'to drink' / **nomi* 'drinking', *tabe-ru* 'eat' / **tabe* 'eating', and *yom-u* 'read' / **yomi* 'reading' (but see *nomi-mono* 'a drink', *tabe-mono* 'food', and *yomi-mono* 'reading matter'). The facts, however, cannot be completely derived from phonetic restrictions alone, since nominalizations of two morae are numerous when the stem is a morpho-syntactically complex radical.

Of the 171 nominalizations I have collected from the alternating verbs listed by Jacobsen (1992: 258-268) (Appendix 2), 58 consist of two morae or less. Moreover, of the 62 of the 58 roots used in the list of 171 nominalizations that potentially form two morae

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[11] Not surprisingly, given this analysis, the lone one mora nominalization seems to be *de* 'turnout, appearance' from the root √*d*, associated with the transitivity alternation *de-ru* 'exit, appear, emerge' /*das-u* 'expel, make exit, send'. Kageyama (1999: 109) argues that the putative nominalizations *ne* 'sleep' and *ni* 'boiling', from the verbs *ne-ru* 'sleep' and *ni-ru* 'boil', respectively, are limited to occurring in a single nominal context., e.g., *ne-ga tarinai* 'not get enough sleep' and *ni-ga tarinai* 'is not cooked enough'. They are unacceptable in any other noun position, e.g., **motto ne-ga hoshii* 'I want more sleep'. The nominalization *de*, by contrast, "can be employed with comparative freedom", e.g., *mizu-no de-ga warui* 'The water flow is bad' (examples, ibid, translations, MV).

nominalizations, only 4 do not occur. This leads to the conclusion that there is a significant distinction between nominalizations based on simple roots and those based on bi-morphemic radicals; that is, *there is a dichotomy*: ROOT NOMINALIZATIONS VS. RADICAL NOMINALIZATIONS. In other words, the two morae restriction is related to the morpho-syntactic structure of nominalizations.

A further basis for drawing such a dichotomy is a comparison of the semantics of simple root nominalizations with those of radical nominalizations. Nominalizations from morphologically simple roots are semantically transparent, typically events, activities, and less frequently agents (Kageyama, 1997 and Nishio, 1977), e.g., *hanashi* 'a talk' (cf. *hanas-u* 'to talk'), *kangae* 'a thought' (cf. *kangae-ru* 'to think') and *hashiri* 'running' (cf. *hashir-u* 'to run')[12].

On the other hand, nominalizations from radicals are frequently of the non-compositional type discussed above and shown in Table 9. Non-compositional nominalizations also include those whose affixal particle is –Ø- as the realization of CAUSE or INCHOATIVE/STATE, e.g., *mogi* 'a ticket taker' (cf. *mog-u* 'pick off'), *tsuki* 'a military attache' (cf. *tsuk-u* 'adhere to'), and *ori* 'a small wooden box (for food)' (cf. *or-u* 'break, fold-TRANS'). All are non-compositional and consist of the two morae type. This leads to the conclusion that –Ø-, when its root names a change-of-state, has equal status with

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[12] The nominalization *obi* 'a traditional girdle worn with a kimono' associated with the verb *obi-ru* 'wear (a girdle)' seems to be semantically idiosyncratic despite being morphologically simple. When understood within the context of Japanese verbs subsumed by the English verb *wear*, it is less so. Japanese distinguishes 'verbs of wearing' according to their placement and the type of garment. The verb *ki-ru* is used for things worn on the body trunk, e.g., shirts, coats, etc. By contrast, *hak-u* is used for items placed on the legs or feet, e.g., pants and shoes. The verb used for *kimono*, a deverbal nominalization based on *ki-ru* 'wear', is paradoxically *tsuke-ru*. The verb *obi-ru* is used specifically for the wearing of *obi*. The noun *kaburi* 'head', also semantically idiosyncratic despite its simple morphological structure, etymologically related to *kabur-u* 'wear on the head', may be a case where the nominalization diachronically preceded the verb, alluded to by Martin (1975), cited above. 'To head' by extension may have come to mean 'to place on the head', i.e., *kabur-u*.

those affixal particle that have phonetic content. Ø, like phonetically overt affixal particles, licenses both two morae nominalizations and non-compositional semantics.

The syntactic structure I propose for nominalizations from simple roots is shown below:

(9)
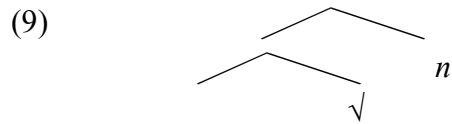
In contrast, the syntactic structure for nominalizations from radicals is that of (10), (repeated from (8), above):

(10)

√   -e- / -ar- / -as-, -Ø, etc.
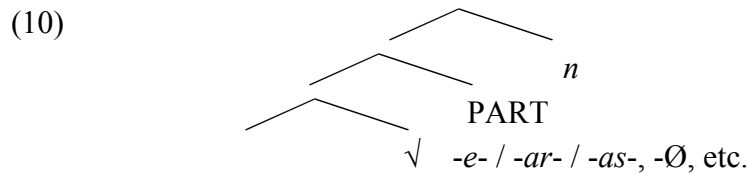
Let us consider some instructive cases.

The root √*mi-* is associated with the morphologically simple transitive verb *mi-ru* 'look at, watch, see'. By hypothesis, this has the simple root structure of example (9). Its potential nominalization of one mora, therefore, does not occur, i.e., **mi*.

With affixal particles, the root forms both an unaccusative and a lexical causative, the radicals *mie* (cf. *mie-ru* 'be seen') and *mise* (cf. *mise-ru* 'show) associated with it. Despite, both being only two morae, because they have the morphologically complex structure of radicals shown in example (10), they are both potential nominalizations, with the form *mie* 'a display' actually occurring.

An analogous case is that of the root √*kik-*. It forms the morphologically simple transitive verb *kik-u* 'listen to, tell'. It has both an unaccusative and a lexical causative associated with it, *kikoe-ru* 'be heard' and *kikase-ru* 'tell', respectively. Because of its simple root structure, the two morae form*kiki* is cannot be the source of a nominalization; the

radicals, *kikoe* and *kikase*, however, are. The actually occurring nominalization is *kikoe* 'reputation'.

One final example with the same point is the root √*shir-* which is associated with the morphologically simple transitive verb *shir-u* 'know, learn'. It also forms a lexical causative, *shirase-ru* 'inform'. Since its potential nominalization is based on a simple root of only of two morae, **shiri* (with intended verb-related meaning), it does not occur. The radical *shirase*, which has the preferred root-affixal particle structure, is the source of the nominalization *shirase* 'a notice'. The relevant structures are shown below:

(11)   **Simple Root Structure, Less than 3 Morae**

$$\begin{array}{c} \diagup\diagdown \\ \diagup\diagdown \quad \textbf{\textit{n}: }\text{**mi* / **kiki* / **shiri*} \\ \surd\textit{ mi- / }\surd\textit{kik- / }\surd\textit{shir-} \end{array}$$
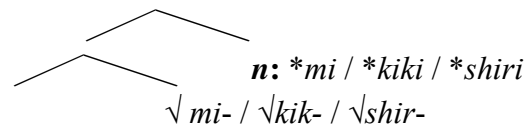
(12)   **Complex Radical Structure, No Mora Restriction**

$$\begin{array}{c} \diagup\diagdown \\ \diagup\diagdown \quad \textbf{\textit{n}: }\textit{mie / kikoe / shirase} \\ \text{PART }\textit{-e- / -oe- / -ase-} \\ \surd\textit{ mi- / }\surd\textit{kik- / }\surd\textit{shir-} \end{array}$$
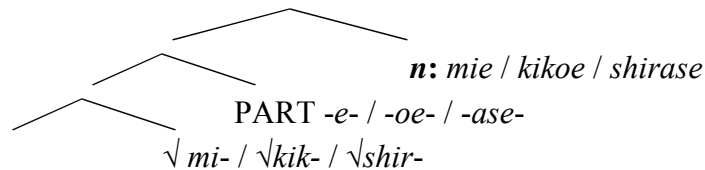
Given the proper syntactic structure, two morae nominalizations occur with frequency. That is not to say that simple root nominalizations of two morae never occur. They do, but are so infrequent as to merit the positing of a phonological restriction of the type exemplified by Kageyama, above. Only after discussing nominalizations formed with the suffix *–mono*, whose nominalizations are in a definable relation with the root and radical nominalizations discussed above, can I address the issue of when and why they occur.

8. Deverbal Nominalizations with *–mono*

This section, is concerned specifically with nominalizations created by suffixing *–mono* to the verb stem, or *renyōkei*, e.g., *ki-mono* 'traditional Japanese dress', *tabe-mono* 'food' and *nomi-mono* 'a drink', from the verbs *ki-ru* 'wear', *tabe-ru* 'eat' and *nom-u* 'drink', respectively. In contrast with the root/radical nominalizations, *mono* nominalizations are semantically compositional and make direct reference to the argument structure of the verb to which it affixes; it only attaches to verbs that have internal arguments. It follows that there are no *mono* nominalizations based on unergative verbs[13].

An additional stipulation on *–mono* nominalizations are that the internal argument of the verb from which it is derived must refer to concrete objects, rather than, abstract things. The word *thing* in English subsumes two distinct morphemes in Japanese; *mono* means 'a concrete object'; *koto* refers to abstract things: ideas concepts, a fact, etc.

The morpheme *mono* has an existence as a free morpheme with the meaning of 'concrete object' or 'person', often with a derogatory sense or sense of humility when used to refer to people. Each meaning has a distinct Chinese character that may combine with lexical forms other than the *renyōkei* 'stem'. In such cases, since the morpheme *mono* has the same meanings as its free forms, they should be considered compounds.

Examples where it has the meaning 'concrete object' include *Kankoku-mono* 'Korean goods' (lit. 'Korea-thing'), *Kurosawa-mono* 'a Kurosawa film', and *koku-nai-mono* 'domestic goods' (lit. 'country-inside-things'). In other instances, *mono* has the meaning 'person', e.g., *inaka-mono* 'a country bumpkin' (lit. 'country-person'), *hito-ri-mono* 'an

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[13] The nominalization *warai-mono* 'a laughing stock' from the unergative verb *wara-u* 'laugh' is a case where *mono* does not refer to a syntactic position in the argument structure. One peculiarity about *warai-mono* is that *mono* is written with the Chinese character that refers to a person. It may, therefore, belong to the 'person'-type of compounds briefly discussed above, e.g., *waka-mono* 'a youth', (lit. young-person).

unmarried person' (lit. a one-NUMERAL CLASSIFIER-HUMAN person') and *rambō-mono* 'a roughneck' (lit. 'violent-person').

The semantics of deverbal *mono* nominalizations, however, is always predictable from the meaning of its verb[14]. The meaning of *tabe-mono*, from stem of *tabe-ru* 'eat' can be paraphrased as 'something that is eaten', i.e., 'food'. Such nominalizations are a case of word-formation from pre-existing words; that is, a noun is formed from a pre-existing verb. The morpheme *mono* is the deverbal spell-out of the category-defining morpheme *n*. The category defining-head *v* is –Ø-[15]. The derivation is shown below:

(13)

n tabe-mono 'food'

v tabe 'eat'   *n*

                   -mono

√*tabe-*   *v*

                   Ø

There is a near perfect complementary distribution between the root/radical nominalizations discussed in the previous section and *mono* nominalizations. Cases where the complementary distribution breaks down are of interest.

First recall that two morae nominalizations from the syntactically simple roots do not, as a general rule, occur. It therefore explains the complementary distribution of the

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[14] *Kuwase-mono* 'a counterfeit' is an apparent non-compositional exception. The lexical causative *kuwase-ru* 'feed' has the idiomatic meaning 'deceive'. Even given this, the nominalization is not semantically interpreted in the usual way, i.e., 'something that is deceived' and it is a likely compound of the 'concrete object'-type.

[15] One of Pesetsky (1995)'s morphological arguments for the existence of zero morphemes is based on MYER'S GENERALIZATION (Myers, 1984) which states that "Zero-derived words do not permit the affixation of further derivational morphology" (Pesetsky, 1995: 75). The affixation of –*mono* to null verb-creating heads, including CAUSE, e.g., *awase-mono* 'a joined thing' and *mise-mono* 'a show, an exhibition' (from *mise-ru* 'show'), is an apparent counter-example. He notes that the affixes –*er* and –*able* are exceptions to the generalization (ibid: 76). Martin (1975: 726) has noted similarities between –*er* and –*mono*. Like –*er*, –*mono* receives its licensing directly from the argument structure of the verbs it affixes. Both are, in some sense, co-indexed with syntactic positions in the verbal structure, the internal argument for –*mono*, the external argument for –*er*.

following type: *nomi* / *nomi-mono* 'a drink', *tabe* / *tabe-mono* 'food' and *ki* / *ki-mono* 'a traditional dress'.

All are less than three morae from morpho-syntactically simple roots. However, as transitive verbs, they fit the semantic-syntactic criterion for *mono* nominalizations, i.e., they have internal arguments that are concrete. By contrast, unergatives never fit this criterion. In these cases, root nominalizations of less than three morae may occur as a last resort. An example is *naki* 'crying', from the unergative verb *nak-u* 'cry' (cf. **naki-mono* '*something that is cried').

Other examples of last resort nominalizations from two morae roots, are *kachi* 'victory' (cf. *kats-u* 'win, defeat') and *ue* '*starvation*' (cf. *ue-ru* 'be starved')[16]. In both cases, the semantics of the *mono* nominalizations would produce undesired lexemes, though they are not ruled out syntactically; #*kachi-mono* could only mean 'something that is won', e.g., a sports match, *ue-mono* could only mean 'something that starves'.

There are two situations in which both a *mono* nominalization and a root/radical nominalization may occur, disrupting complementary distribution.

In the first, the semantics of the root/radical nominalization is non-compositional. An example is the 'doublet' *awase* 'kimono' / *awase-mono* 'a joined thing'. The *mono* nominalization, unlike the root/radical nominalization, uses the semantics of the verb *awase-ru* 'join' to derive its meaning. An additional example is related to the verb *kabur-u* 'wear on the head'. The root nominalization *kaburi* has the gloss 'head'; the mono

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[16] Two additional apparent examples of the rare cases where less than 3 morae nominalizations occur as a last resort are *kari* 'hunting' (cf. *kar-u* 'to hunt'), which is actually a radical paired with *kake-ru* 'to run after' in Jacobsen (1992: 268)'s miscellaneous Class 16, and *nuri* 'coating, lacquering, painting' (cf. *nur-u* 'to paint'). Perhaps diachronically the verb *nur-u* 'to paint, coat, lacquer' is etymologically related to *nur-u* 'to wet'. If this is the case then the nominalization *nuri* 'to paint' would be morphologically complex, belonging to the alternation *nur-e-ru* 'to be wet' / *nur-u* 'to wet' and the nominalization *nuri* 'coating, lacquering, painting' would not be unexpected

nominalization, *kaburi-mono* means 'something worn on (put over) the head', e.g., a hat. Again, the root/radical nominalization is idiosyncratic, the *mono* nominalization is compositional[17]. These may to be fairly productive.

An additional type of doublet is a type where both the root nominalization and the *mono* nominalizations have the same meaning, e.g., *hare* / *hare-mono* 'a swelling', from the verb *hare-ru* 'swell'. Note that such nominalizations violate the restriction on two morae nominalizations from simple roots. Based on this, and the fact that they have similar if not exactly the same meaning, it is reasonable to believe that the non-suffixed form is a back-formation or a type of clipping, very common in Japanese, based on the prior *mono* nominalization. Additional examples are *hori* / *hori-mono* 'a carving', from the verb *hor-u* 'carve', and *nui* and *nui-mono* 'sewing, embroidery', from the verb *nu-u* 'sew'. There seem to be very few cases of extant nominalizations where this occurs. This now brings me to the point where I can address the distribution and interaction of the two types of nominalizations in Japanese.

Because of the varying constraints on nominalizations the reasons for the near complementary distribution of root/radical nominalizations is explained.

Simple roots do not nominalize with two morae or less. When these roots fill the semantic-syntactic specifications of the suffix –*mono*, they nominalize in this form. Only when they do not fit the syntactic requirements of *mono* may they occur as root nominalizations of two morae, and these are quite infrequent:

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[17] Some additional examples of this phenomenon are the contrasts between *nori* 'enthusiasm (for music, jokes', etc.)' and *nori-mono* 'a vehicle' (cf. *nor-u* 'to ride'), and *harai* 'payment, bill' and *harai-mono* 'things to dispose of' (cf. *hara-u* 'dispose of').

(14) **Root Nominalizations**

Less than three morae: *Nominalize as –mono where possible >> Two morae root nominalizations as a last resort.*

(15) **Radical Nominalizations**

Create radical nominalizations freely without phonological restrictions >> -mono nominalizations when a compositional reading is required.

Extant examples of doublets that disrupt complementary distribution are either cases of non-compositional → compositional root/radical nominalizations or back-formations. Both cases are rare.

9. Summary

I have argued that there is a distributional relation between root/radical nominalizations and *mono* nominalizations. Their distribution is understood by proposing differences in the syntactic structures of roots and radicals. If apparent transitivity markers are not category-defining morphology, but affixal particles, one would expect special properties to be present in the verbal, as well as the nominal environment. I show that this is indeed the case, explaining unique semantic properties of Japanese lexical causatives in the next chapter.

Chapter 3

Japanese Lexical Causatives: The role of affixal particles in the verbal environment

1. Introduction

Cross-linguistically, the ability to form mono-clausal causative verbs, LEXICAL CAUSATIVES, from intransitive verbs is commonly believed to obey strict semantic criteria (Pinker, 1989, Haspelmath, 1993, Levin and Rappaport Hovav, 1995, among many). A well-known formulation is that of Levin and Rappaport Hovav (1995: 119) who argue for:

> A fundamental division within the class of unaccusative verbs that is motivated with respect to the causative alternation[18]... verbs of existence and verbs of appearance [*and presumably verbs of inherently directed motion*, MV], although bona fide unaccusatives, do not participate in the causative alternation. This property is not characteristic of only English, but is typical of a variety of languages.

In other words, of the four unaccusative verb types recognized by Levin and Rapport Hovav, it is only the *change-of-state* class which may be associated with a mono-clausal verb that has causative force, although Volpe (2001) notes this is not so for Japanese. Levin and Rappaport Hovav additionally recognize that there are mono-clausal English verbs with causative force that do not have unaccusative sources. Such verbs are typically

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[18] The CAUSATIVE ALTERNATION is an alternation between unaccusative and lexical causative verbs sharing a common root. For Levin and Rappaport Hovav (1995), the *change-of-state* class is the only unaccusative class that participates in the causative alternation. They take this as evidence that *change-of-state* verbs are underlyingly transitive lexical causatives which derive intransitive unaccusatives. Unaccusative verbs which are underlyingly intransitive cannot form lexical causatives according to Levin and Rappaport Hovav, but see Volpe (2001).

unergative manner of motion verbs, e.g., *walk*, which may have causative force, e.g., *I walked my dog*. For verbs of this class, where the internal argument retains a degree of agentivity, Levin and Rappaport Hovav use the term CAUSATIVE PAIRS to distinguish them from the CAUSATIVE ALTERNATION, which they reserve for the unaccusative-alternating type.

Specific to Japanese lexical causatives, Harley (1996: 5) writes:

> There is an interesting generalization that can be made about intransitive verb stems which form lexical V+*sase* causatives, apparently unnoticed in the previous literature: it appears to always be unaccusative. No combination of an unergative verb+*sase* is ever given as an example of a lexical causative in Japanese.

This chapter argues that a semantic criterion that limits Japanese lexical causative formation to underlying unaccusative verbs does not exist. Further, I argue that all agentive verbs, unergative and transitive verbs, form mono-clausal lexical causatives given the proper pragmatic reading. The morpheme –(*s)ase-*, rather than being the morphological realization of the feature CAUSE in head of *v* (*pace* Pylkkänen, 2002, Miyagawa, 1998 and Harley, 1995), is a default affixal particle. In other words, there are two distinct morphemes –(*s)ase*; one is an affixal particle, below the category-defining heads *v* and *n*; the other is a verbal projection responsible for the bi-clausal causative, a case of a word formed from a pre-existing word. Affixal particles are heads of SMALL CLAUSES (SC) (den Dikken, 1995). A SC is a relation between a subject and a predicate. In Japanese, a predicate can be an affixal particle of the type discussed in Chapter 2.

2. The Significance of Idioms

Shibatani (1990: 380) notes that:

> What is remarkable about the Japanese causative forms is that, unlike many languages, intransitive verbs also form causatives even when there are corresponding transitive verbs with a causative meaning … [*they*, MV] share a great many semantic properties. These competing forms provide a rare opportunity for the examination of the differences between lexical word formation and syntactic word formation.

Japanese has 15 semi-productive idiosyncratic morphological classes which participate in transitivity alternations (Jacobsen, 1992) (Appendix 1). The verb highest on the transitivity hierarchy in such pairs is an uncontroversial lexical causative. The verb lowest on the hierarchy may form syntactic causatives with the productive morpheme –(*s)ase-*, but despite "sharing a great many semantic properties" lexical and syntactic word formation differ dramatically in that only lexical causatives participate in idioms; syntactically-formed causatives, by definition, never do (Miyagawa, 1989 and Harley, 1995 and 1996). This is, therefore, one significant diagnostic for lexical causatives.

Miyagawa (1989) argues that participation in idioms signifies lexical, rather than syntactic, causative status. He reasons that because the semantics of idioms are non-compositional, they need to be listed in a Lexicon. A major purpose of this dissertation is to demonstrate that there is no generative Lexicon, and therefore, a different line of reasoning for the lexicality of idioms must be provided. The line of reasoning is not new (Marantz, 1984 and 1997); Syntactic constraints on non-compositional idioms are well-known.

I assume that THEMATIC ROLES are an epiphenomenon of structural positions in syntax (Hale and Keyser, 1993 and 2002):

> While we might assign a particular thematic label, say agent, …its grammatical status is determined entirely by the relation it bears in the relational structure projected by the lexical head V. Specifically, [*it,* MV] bears the specifier relation whose head takes a complement that is also a projection of the category V (Hale and Keyser, 1993: 68).

 Below is an adaptation of Hale and Keyser for the purposes at hand :

(1) **vP**
```
         vP
        /  \
   AGENT    /\
       THEME    √
```
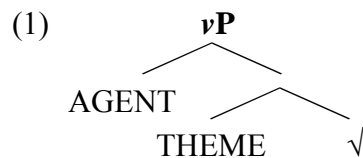
Marantz (1997: 8-9) argues that:

> The syntactic head that projects agents defines a locality domain for special meaning (*i.e.*, *idioms*, MV). Nothing above this head may serve as the context for the special meaning of any root below this head, and visa versa. Identifying the head that projects an agent as the boundary for special meaning makes several predictions that have been well supported by empirical studies [*including*, MV] no idioms with fixed agents.

All material below the agent may, however, belong to the idiom, and frequently does. Assuredly, there are cases where idioms have fixed subjects but such idiomatic subjects will never be agents, e.g., *the shit hit the fan*. Interestingly, Japanese morphologically distinguishes an agentive *hit* and a non-agentive *hit*, *butsuk-e-ru* and *butsuk-ar-u,* respectively.

Since the locality domain of idioms is defined by the first agent-introducing head, idioms

are confined to mono-clausal verb structures below the first agent. Since mono-clausal structures have only one specifier of a verb and therefore only one agent, it follows those Japanese verbs affixed by –(s)ase- which participate in idioms are lexical causatives (numerous examples are contained in Miyagawa (1989)). The converse, however, does not follow; while lexical causatives contain only one agent, agentive verbs can and do form lexical causatives in Japanese. This property follows from the same property which allows for non-compositional nominalizations; the claim that transitivity-marking morphology is not phase-defining morphology, but belongs to the substantial number of Japanese affixal particles, closed-class morphology that serves the role of syntactic heads of SMALL CLAUSES below *v*. With this fact in mind, I introduce idioms in which –(s)ase attaches to unergative verbs.

First, it is necessary to demonstrate that the intransitive verbs for which I have found idioms, *asob*-(*u*) 'play', *hashir*-(*u*) 'run', *hatarak*-(*u*) 'work' and *nak*-(*u*) 'cry' are, in fact, unergative. This is shown using two diagnostics for unergativity familiar from the Japanese linguistics literature.

The first diagnostic is due to Miyagawa (1989). Miyagawa (1989: 86) has noted that a NUMERAL QUANTIFIER can be licensed by the trace of the subject of unaccusative verbs from its base-generated position VP-internally:

(2) Doa$_i$-ga kono kagi-de t_i futatsu ai-ta

door-NOM this key-INSTR 2 open-PAST

'Two doors opened with this key.'

Since the subjects of unergative verbs originate as external arguments, no such trace is present to license the numeral quantifier and therefore the numeral quantifiers are illicit:

(3)a. *Kodomo-ga kōen de futari ason-da.

   children-NOM park-LOC 2 play-PAST

   'Two children played at the park.'

 b. *Kaishain-ga kaisha-de futari hatarai-ta.

   employees-NOM company-LOC work-PAST

   'Two employees worked at the company.'

 c. *Kodomo-ga kōen-de futari hasit-ta.

   children-NOM park-LOC 2 run-PAST

   "Two children ran in the park.'

 d. *Kodomo-ga uchi-de futari nai-ta.

   children-NOM home-LOC 2 cry-PAST

   'Two children cried at their home.'

The unacceptability of examples (3)a-d indicates that, unlike unaccusatives, they have no verb internal traces and must therefore be unergative.

An additional diagnostic for distinguishing unergative from unaccusative verbs in Japanese is the ambiguity of unaccusatives between the QUANTITATIVE READING and the REPETITIVE READING when affixed by the excessive morpheme –*sugiru* 'go beyond' (Takezawa, 1987). Unaccusatives are ambiguous between the two readings:

 (4) Kono mise-ni-wa hito-ga hairi-sugi-ta.

   this store-GOAL-TOP people-NOM enter-EXCESS-PAST

   'Too many people entered this store.'

   'People repeatedly entered this store.'

By contrast, unergative verbs allow only the repetitive reading:

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(5) Kodomo-ga asobi-sugi-ta.

    children-NOM play-EXCESS-PAST

    'The children played too much.'

    *'Too many children played.'

(6) Kaishain-ga hataraki-sugi-ta.

    Company employee-NOM work-EXCESS-PAST

    'The employees worked too much.'

    *'Too many employees worked.'

(7) Kodomo-ga hashiri-sugi-ta.

     Children-NOM run-excess-past

    'The children ran too much.'

     *'Too many children ran.'

(8) Kodomo-ga naki-sugi-ta.

    children-NOM cry-EXCESS-PAST

    'The children cried too much.'

    *'Too many children cried.'

This diagnostic also shows the intransitive forms (5) to (8) to be unergative, and all are indeed, associated with causative idioms. The unergative verb *asob-u* 'play, amuse oneself' is associated with the lexical causative *asob-ase-ru* 'amuse' which participates in the following idiom:

(9) O-kane-o asob-ashi-te oku.

    Money-ACC play-CAUSE-NON-FINITE let-NON-PAST

     'let your money lie idle'

The unergative verb *hashir-u* 'run' is paired with the lexical causative *hashir-ase-ru* 'dispatch', which is associated with an idiom:

(10) Fude-o hashir-ase-ru.

Pen-ACC run-CAUSE-NON-PAST

'scribble'

The unergative verb *hatarak-u* 'work' has the lexical causative *hatarak-ase-ru* 'make work, use':

(11) Naomi-ga atama-o yoku hatarak-as-u.

Naomi-NOM head-ACC well work-CAUSE-NON-PAST

'Naomi uses her brain well' (Kuroda, 1993: 32)

An idiom for the unergative verb *nak-u* 'cry' in its causative form *nak-ase-ru* 'makes cry, cause trouble' is cited by Pylkkänen (2002: 111):

(12) Ano kodomo-ga itsumo oya-o nak-asi-te iru.

That child-NOM always parents-ACC cry-CAUSE-NON-FINITE ASPECT

'That child is always troubling his parents.'

Agentive transitive verbs affixed by –(*s)ase* are also associated with idioms, e.g., *nom-u* 'drink', *tabe-ru* 'eat' and *ku-u* 'eat (colloquial usage)':

(13) Nie-yuu-o nom-ase-ru.

boiled-water-ACC drink-CAUSE-NON-PAST

'teach a lesson'

(14) Kazoku-o tabe-sase-ru.

family-ACC eat-CAUSE-NON-PAST

'support one's family'

(15) Ippai kuw-ase-ru.

one cup eat-CAUSE-NON-PAST

'deceive'

If some unergative and agentive transitive verbs can become lexical causatives, what prevents all unergative and transitive verbs from forming lexical causatives? The answer is simple and completely expected. Below I demonstrate that all default causative verbs in Japanese, regardless of their underlying semantic origins, are demonstrably mono-clausal; that is, they are lexical causatives given the proper pragmatic interpretation. How then are agents of the non-lexical causative verbs demoted to non-agent status, as they must be, and what is the syntactic position of these demoted agents? These issues are the focus of the remainder of this chapter.

3.1 The Ambiguous Syntax of *-sase-*

Matsumoto (1996), expanding on Shibatani (1976)'s extensive research on Japanese causative verbs, contains an insightful discussion of the syntax and semantics of Japanese MORPHOLOGICAL CAUSATIVES, the term Matsumoto applies to all causatives formed with the morpheme –(*s*)*as*e-. I make crucial use of his observations to show that all morphological causatives allow a pragmatic reading in which their syntax and semantics is consistent with that of mono-clausal lexical causatives, which leads to my conclusion that they are lexical causatives.

The morpheme –*(s)ase*- has two possible case-marking arrays when affixed to an intransitive verb; one where the causee is marked with the dative particle –*ni*, the other where the causee is marked with accusative particle –*o*. In the literature (Kuroda, 1965,

Kuno, 1973 and Harley, 1996, among many), the different case-marking arrays are often equated with the distinction between 'let' and 'make' causatives in English, respectively:

(16) a. Tarō-wa Jirō-ni hashir-ase-ta.

   Tarō-TOP Jirō-DAT run-CAUSE-PAST

   'Tarō let Jirō run.'

   b. Tarō-wa Jirō-o hashir-ase-ta.

   Tarō-TOP Jirō-ACC run-CAUSE-PAST

   'Tarō made Jirō run.'

The dichotomy between permissive and inducing causation is also a concept often invoked to describe the different meanings:

> Inducing causation is initiated by a causer, who causes some event to happen by persuading, ordering, psychologically pressuring or manipulating a causee. Permissive causation is initiated by a causee, whose action or change is approvingly or tacitly permitted by a causer. Shibatani (1976 and 1990), however, observes that both *o*-causatives and *ni*-causatives can represent inducing, as well as, permissive causation with slight differences in meaning. *O*-causatives represent coercive inducing causation as well as implicit permissive causation, while *ni*-causatives represent persuasive (non-coercive) inducing causation and explicit permissive causation (Matsumoto, 1996: 128).

In other words, each case-marking type for intransitive verbs is two-ways ambiguous. Morphological causatives formed from transitive verbs, because of the DOUBLE-O CONSTRAINT[19] that enforces causees to be marked with –*ni*, will be four ways ambiguous:

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[19]The Double-*O* Constraint: "A derivation is marked as ill-formed if it terminates in a surface structure which contains two occurrences of NPs marked with *o* both of which are immediately dominated by the

(17) Haha-wa kodomo-ni gohan-o tabe-sase-ta.

mother-TOP children-DAT rice-ACC eat-CAUSE-PAST

'The mother made/let her children eat rice.'

Example (17) has four possible pragmatic readings. The *inducing coercive reading* is where, by her authority as a parent, 'the mother' orders 'her children' to eat or manipulates the food into their mouths. The *inducing persuasive reading* is where the mother implicitly allows the children to eat. The *permissive explicit reading* is where she explicitly allows the children to eat and the *permissive implicit reading*, where the mother does not oppose the children's desire to eat. In the coercive and implicit readings, it is quite proper to consider the overt *ni*-marked causee to have an underlying case-marker *-o* semantically. In other words, the coercive and implicit causatives, when formed from transitive verbs, are double object verbs.

Matsumoto (1996: 129) provides the following taxonomy for the semantics of morphological causatives:

Table 1: The Semantics of Morphological Causatives

Causative {	Inducing	Persuasive	*Ni*-causatives
		Coercive	*O*-causatives
	Permissive	Explicit	*Ni*-causatives
		Implicit	*O*-causatives

Matsumoto (1996: 128) notes that "inducing causation is persuasive when a causer appeals to the will of causee to bring about the caused event (i.e., the caused event is causee-controlled …permissive causation is explicit when the causer willingly approves

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same VP node" (Harada 1973:138).

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the permitted process"; that is, causees are embedded subjects given explicit permission to act.

 Matsumoto provides a means to decisively distinguish coercive readings from the other three; use of the adverb *muriyari*, 'forcibly', provides the coercive reading and the aspectual verb *oku* 'to place' is consistent with the other readings[20]. The ambiguity of *jibun*-binding in syntactic causatives is a classic diagnostic for the lexical-syntactic dichotomy (Kuroda, 1965, among many):

(18) Jirō$_i$-wa Hanako$_j$-o jibun$_{i/j}$-no ie-de hatarak-ase-te oi-ta.

Jirō-TOP Hanako-ACC self-GEN house-LOC work-CAUSE-NON-FIN-ASPECT-PAST

'Jirō had Hanako work at his/her house (in advance).'

By contrast, coercive causation is only compatible with *jibun*-binding to an animate subject, a characteristic of mono-clausal structures:

(19) Jirō$_i$-wa muriyari Hanako$_j$-o jibun$_{i/*j}$-no ie-de hatarak-ase-ta.

Jirō-TOP forcibly Hanako-ACC self-GEN house-LOC work-CAUSE-PAST

'Jirō forcibly made Hanako work at his house.'

Similarly, uncontroversial lexical causatives bind only with subjects:

(20) Jirō$_i$-wa Hanako$_j$-ni jibun$_{i/*j}$-no shashin-o mise-ta.

Jirō-TOP Hanako-DAT self-GEN photo-ACC show-PAST

'Jirō showed his pictures to Hanako.'

In contrast with bi-clausal causatives, the coercive causative, like lexical causatives, only allows the reflexive pronoun *jibun* to bind to its animate subjects.

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[20] The verb *oku* has the literal meaning 'to place', but has a use as an aspectual auxiliary 'to do in advance' when affixed to the non-finite verb form –*te*, e.g., *shite oku* 'do-NON-FINITE place-NON-PAST' with *oku* as an aspectual auxiliary verb means 'to do in advance'.

3.2 Subject Honorification

Subject Honorifics in Japanese are formed with the prefix *o-* attached to a non-finite form of the verb, the stem or *renyōkei*. The tense features are supported by the light verb *nar-u* 'become' which assigns the particle *ni* to the prefixed stem. The verb *kak-u* 'write' has the Subject Honorific form *o-kaki-ni naru* 'deem to write'. In the case of the Implicit Causative, as with the other bi-clausal causatives, the causative morpheme –(*s)ase-* attaches to the light verb *naru*:

    (21) Sensei-ni-wa manzoku-ga iku-made o-yasumi-ni nar-ase-te oi-ta

      teacher-DAT-TOP satisfaction-NOM go-until PRE-rest-DAT become-CAUSE-NON-FINITE-ASPECT-PAST (Matsumoto, 1996: 145)

       'The teacher deemed to rest in advance until he was satisfied.'

For the coercive causative, by contrast, the causative morpheme attaches only to the verb stem:

    (22) Sensei-wa gakusei-o (muriyari) o-hashir-ase-ni nat-ta.

      teacher-TOP student-ACC (forcibly) PRE-run-CAUSE-DAT become-PAST.'

      'The teacher (forcibly) deemed to make the students run.'

Again, the coercive causative patterns syntactically with lexical causatives. Like the coercive causative, the lexical causative attaches the 'causative morpheme' only to the stem, never to the light-verb *naru* 'become':

    (23) Sensei-wa gaukusei-ni shashin-o o-mise-ni nat-ta.

      teacher-TOP student-DAT photo-ACC PRE-show-DAT become-PAST

      'The teacher deemed to show the students some photos.'

3.3 Passivization

Many have observed (e.g., Marantz, 1984 and Baker, 1988) that Japanese morphological causatives of the bi-clausal type allow only the causee to be the target of passivization. Baker (1988: 162) and Alsina (1992) among many suggest that languages parametrically vary in regard to whether the theme or the causee can passivize in transitive bi-clausal causative constructions. Japanese belongs to Baker (ibid)'s CAUSATIVE RULE 1 type; the type in which only the causee can become the subject of a passive:

(24)a. Sensei-wa gakusei-ni hon-o yom-ase-te oi-ta

    teacher-TOP student-DAT book-ACC read-CAUSE-NON-FINITE ASPECT-PAST

  'The teacher made the students read the book in advance.'

   b. Gakusei-wa hon-o yom-ase-rare-ta.

    students-TOP book-ACC read-CAUSE-PASS-PAST

  'The students were made to read the book in advance.'

   c. *Hon-wa gakusei-ni yom-ase-rare-ta.

     book-TOP students-DAT read-CAUSE-PASS-PAST

  'The book was made to be read by the students.'

Double Object verbs, which are almost exclusively lexical causatives in Japanese, allow both themes and causees to passivize:

(25) a. John-ga Mary-ni kunshō-o atae-ta

    John-NOM Mary-DAT medal-ACC give-PAST

 '   'John gave a medal to Mary.'

b. Mary-ga John-ni kunshō-o atae-rare-ta

Mary-NOM John-DAT medal-ACC give-PASS-PAST

'Mary was given a medal by John.'

c. Kunshō-ga John-ni (yotte) Mary-ni atae-rare-ta.

award-NOM John-AGENT Mary-DAT give-PASS-PAST

'An award was given to Mary by John.' (Kuno, 1973: 348-9)

Passivization of themes also occurs with di-transitive lexical causatives:

(26) a. Sensei-wa gakusei-ni shashin-o mise-ta.

teacher-TOP student-DAT photo-ACC show-PAST

'The teacher showed the students photos.'

b. Gakusei-wa shashin-o mise-rare-ta.

students-TOP photos-ACC show-PASS-PAST

'The students were shown photos.'

c. Shashin-wa gakusei-ni mise-rare-ta

photos-TOP students-DAT show-PASS-PAST

'Photos were shown (to) the students.'

There are also circumstances which make passivization of theme arguments acceptable in morphological causatives:

(27) Sono gohan-wa mada dare-ni-mo tabe-sase-rare-te inai.

that food-TOP still nobody-DAT eat-CAUSE-PASS-NON-FINITE be-NEG-NON-PAST

'That food has not been fed to anyone yet.'

Matsumoto (1996: 149) notes that "the point of interest here is that sentences like these [*example (27),* MV] are acceptable only in the coercive reading".

3.4 The desiderative morpheme –*tai*

The desiderative morpheme –*tai* when affixed to lexical verbs allows for objects to be marked with either the accusative case-marker –*o* or the nominative case-marker –*ga*. Crucially, when –*tai* is attached to bi-clausal causatives, only –*o* marking of accusative-case is possible. Attachment of the desiderative –*tai* where the accusative and nominative case alternate is available, is only associated with attachment to lexical verbs. However, the coercive causative, in contrast to the other morphological causatives, allows the alternation:

(28) a. Boku-wa ano hon-o/ga yomi-ta-i.

I-TOP that book-ACC/NOM read DESIDER-NON-PAST.

'I want to read that book.'

b. Boku-wa kodomo-ni konna hon-o/ga yom-ase-ta-katta.

I-TOP children-DAT that kind book-ACC/NOM read-CAUSE-DESIDER-PAST

'I wanted to make (my) children read that kind of book.'

Naturally, lexical causatives allow the *o/ga* alternation:

(29) Sensei-wa gaukusei-ni shashin-o/ga-mise-ta-i.

teacher-TOP student-DAT photo-ACC/NOM -show-NON-PAST

'The teacher wants to show the students some photos.'

Morphological causatives without the coercive reading are acceptable only when the verb affixed with the desiderative morpheme –*tai* is marked with the accusative case -*o*:

(30) Boku-wa John-ni manzoku-ga iku made sono hon-o/*ga yom-ase-ta-katta.

I-TOP John-DAT satisfaction-DAT go until that book-ACC/*NOM read-CAUSE-DESIDER-PAST

'I wanted to allow John to read that book until he was satisfied.'

3.5 Adjunct Interpretation

Adjunct interpretation is considered a crucial diagnostic for the bi-clausality of causative verbs (Kuroda, 1965 and Shibatani, 1976, among many). In mono-clausal structures, e.g., lexical causatives, the adjunct unambiguously refers to the subject. Bi-clausal causatives allow for two readings; in one reading it modifies the matrix subject, in the other the embedded subject, a causee which retains some degree of agency in the bi-clausal causative, is modified. First consider the lexical causative:

(31) Tarō-wa yorokonde Jirō-ni shashin-o mise-ta.

teacher-TOP with pleasure Jirō-ACC run-CAUSE-PAST

'With pleasure Tarō showed (*gleeful) Jirō photos'

Next consider coercive vs. non-coercive morphological causatives. In example (32), two readings are possible because of its bi-clausal structure. The adjunct modifier, *te-o agete*, may refer to either *the teacher* or *the students*. In (32)b, because the modifier *muriyari* 'forcibly' coercises the mono-clausal structure, the only possible reading refers to *the teacher,* 'liftting his hand to make the students run':

(32) a. Sensei-wa te-o agete gakusei-o hashir-ase-te oi-ta.

teacher-TOP hand-ACC raise-NON-FINITE student-ACC run-CAUSE-NON-FIN-ASP-PAST

'The teacher lifting his hand made the students run.' (Shibatani, 1973)

'The teacher made the students run with their hands raised.'

b. Sensei-wa te-o agete (muriyari) gakusei-o hashir-ase-ta.

teacher-TOP hand-ACC raise-NON-FINITE student-ACC run-CAUSE-PAST

'The teacher raising his hand (forcibly) made the students run.'

*'The teacher (forcibly) made the students run with their hands raised.'

3.6 Nominalizations

Matsumoto provides a number of nominalizations that contain the causative morpheme –(*s)as*e-. The causative morpheme –(*s)as*e-:

> participates as a whole in word-formation. For example, it can undergo *renyōkei* ['*stem*', MV] nominalization [*Recall these are the type I claim are root-derived in Chapter 2*, MV]. Examples include *shir-ase* (know-CAUSE) 'a notice' [*cf. shir-u 'know, learn'*, MV], *yar-ase* (do-CAUSE) 'a staged action' [*cf. yar-u 'do'*, MV], *maniaw-ase* (be in time-CAUSE) 'a makeshift work', *o-sawag-ase* (POL-make noise-CAUSE) [*cf. sawag-u 'make a fuss,* MV] 'sensation, fuss' (Matsumoto, 1996: 132).

Of Matsumoto's examples *yar-ase* is of particular interest being clearly agentive in its basic verb form.

Martin (1975: 886) provides additional examples of nominalizations that contain the causative morpheme –(*s)ase*-, including *ureshigar-ase* 'flattery' (cf. *ureshigar-u* 'please'), *iyagar-ase* 'an unpleasantry' (cf. *iyagar-u* 'annoy') and *mise-shime* 'an object lesson' (cf. *mise-ru* 'show')[21]. Martin's example, *mise-shime*, is a case where the etymologically-related verb is a lexical causative. If indeed, such nominalizations are root-derived, as I argue in Chapter 2, and one accepts that premise that nominalizations can only be derived from lexical, as opposed to syntactic, causatives, we have a stark example of the lack of the semantic criteria thought to be relevant for lexical causative formation in Japanese.

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[21] The morpheme –*shime*- diachronically preceded –(*s)ase*- as the productive causative morpheme in OLD JAPANESE (*kogo*) (Martin, 1975: 886 and Drohan, 1991: 220).

3.7 Preliminary Conclusions

I have provided five diagnostics demonstrating that the coercive causative, like the lexical causative, is mono-clausal syntactically. This also is Matsumoto (1996)'s conclusion. The next section shows that semantically, coercive causatives conform to the semantic criteria for lexical causatives, best known from Shibatani (1973 and 1976)'s influential studies of the semantics of lexical causatives. These syntactic and semantic facts point towards the conclusion that coercive causatives are, in fact, lexical causatives that differ only morphologically in their predicatability.

4. The Semantics of Lexical Causatives

I review Matsumoto (1996)'s characterization of the semantics of the coercive causative with the goal of displaying that they are consistent, in fact, identical with, the semantics of lexical causatives:

> A causer brings about a caused event by force, authority, psychological pressure, or physical manipulation without appealing to the causee's will or cognitive decision (ibid: 128).

He provides the following examples:

> (33) a. Sensei-wa seito-ni kyōkasho-o yom-ase-ta
>
>   teacher-TOP student-DAT textbook-ACC read-CAUSE-PAST
>
> 'The teacher made the students read their textbooks.'
>
>   b. Hahaoya-wa akanbō-ni zubon-o hak-ase-ta.
>
>   mother-TOP baby-DAT pants-ACC wear-CAUSE-PAST
>
>   'The mother dressed the baby in pants.'

[*In example (33)a*, MV], the teacher exercises his/her authority as a teacher … [*in (33)b,* MV], the mother acts on the pants to bring about the event so that [*both*, MV] caused events can be accomplished without appealing to the will of the causee… [*similar*, MV] readings [*are*, MV] possible with the causative predicates *tabe-sase-ru* (eat-CAUSE) 'make eat, feed', *nom-ase-ru* (drink-CAUSE) 'make drink, feed', *shir-ase-ru* (know-CAUSE) 'inform' and *kik-ase-ru* (hear-CAUSE) 'let hear, tell'. Certain di-transitive lexical causatives like *kise-ru* 'dress someone', *mise-ru* 'show', and *oshie-ru* 'teach', have similar meanings. I will call this sub-type of coercive causatives 'the *hak-aseru*-type (Matsumoto, 1996: 144).

I have already argued, based on their participation in idioms, that *tabe-sase-ru* 'feed' and *nom-ase-ru* 'make drink' are lexical causatives. There are compelling arguments found in the literature (Martin, 1975 and Kuroda, 1993) for considering *shir-ase-ru* 'inform' and *kik-ase-ru* 'tell' lexical causatives [22]. Moreover, all these verbs, in Matsumoto's judgements, have semantic readings consistent with the lexical causatives *kise-ru*, *mise-ru* and *oshie-ru*.

Manipulative and directive causation are readings available for both coercive causatives and lexical causatives (Shibatani, 1976):

Manipulative causation is a kind of causation in which a causer physically manipulates a causee to bring about a caused event, while in directive causation a causer directs a causee to bring about the caused event … Shibatani (1976) argues that lexical causatives typically express manipulative causation and particular

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[22] Kuroda (1993) considers Martin (1975)'s "Double Causative" diagnostic to be the most dependable of the many diagnostics for lexical causatives. The logic is that if a verb can attach the causative morpheme –(*s)ase*- recursively, the first occurrence is an instance of the lexical causative default. Both, *shirase-ru* and *kikase-ru* are acceptable as double causatives. Also, note the nominalization *shirase* 'a notice' mentioned briefly in Chapter 2.

types of directive causation that are executed by conventional or highly authoritative means (Matsumoto, 1996: 166).

 Crucially, coercive causatives receive the manipulative causation reading in the absence of a morphologically-idiosyncratic lexical causative (Miyagawa, 1989). Given the mono-clausal structure of coercive causatives, their conformity with syntactic diagnostics for lexical causatives, their frequent participation in idioms, in addition to the fact that the morphological idiosyncratic lexical and coercive causatives express the same readings semantically, the only reasonable conclusion is that coercive causatives are lexical causatives differing in only the they are morphologically-marked with the default lexical causative affix –(s)ase-. While modifying his view in recent work (Matsumoto, 2003), misses this important unification*; coercive causatives are, in fact, lexical causatives.

Matsumoto proposes the DETERMINATIVE CAUSATION CONDITION, a putative difference between lexical causative and coercive causatives In Japanese:

> In order for causation to be lexically expressed (i.e., expressed in a single predicate at a-structure [23]), the causing event must be the sole factor that determines the course of the caused event (Matsumoto, 1996: 168).

He argues for the traditional lexical semantic constraints exemplified by Shibatani (1976), "only directed causation that is executed by authoritative or conventional (i.e., socially determined) means can be expressed by a lexical causative" (Matsumoto, 1996: 168). This seems to be directly contradicted by example (31)a above (his example (28) a. (ibid: 144) (31) a. and its accompanying observation repeated here:

---

[23] ARGUMENT-STRUCTURE (a-structure) is a module of LEXEME-FUNCTIONAL GRAMMAR (LFG) (Bresnan, 2001) which is representatively linked to SYNTACTIC STRUCTURE (s-structure).

(34) Sensei-wa seito-ni kyōkasho-o yom-ase-ta

teacher-TOP student-DAT textbook-ACC read-CAUSE-PAST

'The teacher made the students read their textbooks.'

The teacher exercises his/her authority as a teacher… to bring about the event so that [both, MV] caused events can be accomplished without appealing to the will of the causee…. Certain di-transitive lexical causatives like *kise-ru* 'dress someone', *mise-ru* 'show', and *oshie-ru* 'teach', have similar meanings (Matsumoto, 1996: 144).

Matsumoto supports observations of Pinker (1989) in regard to cross-linguistic lexical causative formation:

[*Pinker*, MV) observes that verbs like *laugh, rejoice, cry, shout, drink, talk* and *sleep* cannot be lexically causativized (Matsumoto, 1996: 168).

Based on their participation in idioms, *nak-ase-ru* 'make cry' and *nom-ase-ru* 'make drink' are lexical, and *ne-ru* 'sleep' has the morphologically-idiosyncratic lexical causative *nek-ase-ru* 'put to sleep'. Whatever trend the cross-linguistic generalizations may indicate, there is something quite different at work in Japanese. In more recent work, Matsumoto, 2002, has recognized that indeed lexical causatives morphologically-marked by *–(s)ase-* do exist, his *hak-aseru-type.*

Both lexical causatives and coercive causatives are mono-syntactic, and both express manipulative and directive causation. Consider:

(35) a. Keisatsu-wa ayashii kuruma-o tome-ta.

police-TOP suspicious car-ACC stop-PAST

'The police stopped a suspicious car.'

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b. Aka-shingō-ni jibun-no kuruma-o tome-ta.

   red light-LOC stopped his-GEN car

   'He stopped his car at the red light.'

(36) a. Shachō-wa kaishain-no ninzū-o her-ase-ta.

   company president-TOP employees-ACC numbers-GEN reduce-CAUSE-PAST

   b, Boku-wa tabako-ryō-o her-ase-ta.

   I-TOP tabako amount-ACC reduce-CAUSE-PAST

   'I reduced the amount of cigarettes I smoke.'

Examples (35) a. and (36) a. have directive causative readings; (35) b. and (36) b. manipulative causative readings. The verb *tome-ru* 'stop-TRANS' is morphologically an uncontroversial lexical causative. Examples (36) are examples of the so-called coercive causative. The coercive causative *her-ase-ru* also participates in the idiom: *hara-o her-ase-ru* 'make one wait for a meal' (Miyagawa, 1989). Both lexical and coercive causatives contain verbs that do not participate in idioms or are associated with nominalizations, so neither is a necessary condition for lexical causative status. There is, however, no plausible reason to claim that mono-clausal verbs that do not participate in idioms should be considered anything other than lexical causatives on par with the morphologically idiosyncratic lexical causatives (Miyagawa (1989 and 1998) when the syntax and semantics are inditinguishable. The next section provides an analysis of the syntax of lexical causatives whose non-causative verb forms, contrary to cross-linguistic claims, can be formed from verbs with underlying agents.

5. Small Clauses and Affixal Particles in Japanese Lexical Causatives

Particles are heads of complement SMALL CLAUSES (SC) (den Dikken, 1995: 43). In Chapter 2, I have argued that putative transitivity-markers in Japanese are affixal particles, noting the similarities with den Dikken (1995)'s affixal particle *ver-* in Dutch. I have shown that the single morpheme *–e-*, has multiple roles within the Japanese transitivity system: causative, inchoative/stative and applicative; putative transitivity markers are a necessary morpheme for lexical-category formation with roots; and there are productive paraphrases that use non-affixal particles.

Since the primary role of particles is secondary predication, particles, whether free or bound are heads of SCs. I am now in a position to demonstrate the Japanese affixal particles possess this property, as well:

> The subject-predicate relation comes in many guises. Semantically, their hallmark is that they involve the ascription of a property to a subject … SCs are the sole incarnation of subject-predicate relations (Dikken, 1995: 24-5).

"The term particle refers to the class of non-Case assigning prepositional elements" (den Dikken, 1995: 33), which come in two varieties: ASPECTUAL PARTICLES or ARGUMENT STRUCTURE CHANGING PARTICLES (ibid: 32):

Unlike English and Dutch, Japanese has no 'prepositional elements'; that is, there is no PREPOSITION STRANDING, PHRASAL PREPOSITIONAL VERBS, and PSEUDO-PASSIVES. That affixal particles be prepositional elements seems less important than their closed-class status, presumably due to GRAMMATICALIZATION. Japanese affixal particles are believed to be grammaticalizations of causative and passive morphemes (Shibatani, 1990 and

Jacobsen, 1992)[24]. Additionally, all Japanese particles are of the affixal argument structure changing type. (See den Dikken (1995)'s dichotomy, above) The syntactic structure of SCs takes the affixal particle as head:

(37) [$_{SC=XP}$ subject [$_X$ particle]].

Hale and Keyser (1993: 72) associate the adjectival category A with the notional type "state" (*s*). In Japanese, affixal particles of the notional type *change-of-state* or *state* replace Hale and Keyser's A:

(38) [$_{SC}$ *subject* [*state*]]

The transitive possibility for the affixal particle is instantiated as example (39), ignoring TP:

(39) a.
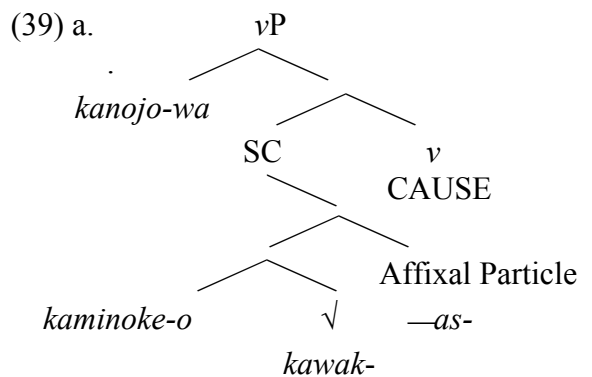
b. Kanojo-wa kaminoke-o kawak-ashi-ta

she-TOP hair-ACC dry-CAUSE-PAST

'She dried her hair.'

[24] See Chapter 4 for further discussion of this issue.

The intransitive form is instantiated as (40) in Japanese:

(40) a.　　　SC

　　　　　　　　　　　　　　　　Affixal Particle

kaminoke-ga　　　√　　—Ø—

　　　　　　　kawak-

　　b. Kaminoke-ga kawai-Ø-ta

　　Ø-GEN hair-NOM dry-CAUSE-PAST

　　　　'Her hair dried.'

Transitive *change-of-states* are semantically secondary resultative predications; [*x* CAUSE [BECOME [y <STATE>]]] (Rappaport Hovav and Levin, 1998: 97); loosely stated, *x* acts on *y* causing a change in state. The resultative predication is transparent in the Japanese paraphrases for lexical causatives that are associated with roots which also form adjectives, discussed in Chapter 2, e.g., Y-*o taka-ku suru* / Y-*o taka-me-ru* 'make y high(er)' / heighten y'.

An additional type of SC realized by affixal particle heads is the notional type RELATION (*r*):

　　(41) [SC subject [*relation*]]

This notional type, often overtly realized by preposition-like morphemes cross-linguistically, "is associated with 'interrelation' (symbolized by *r*). *Relation* includes, but is not to be strictly identified with relations commonly thought of as spatial or locational" (Hale and Keyser, 1993: 71). In Japanese, in addition to predicating inner theme subjects to affixal particle heads in SCs, affixal particles relate low applicatives to affixal particle heads in SCs:

(42) a.

vP

Sensei-wa

SC   v
        CAUSE

gakusei-ni

        Affixal Particle

shashin-o √   —se-
        mi-

b. Sensei-wa gakusei-ni shashin-o mise-ta.

teacher-TOP students-DAT photos-ACC show-PAST

'The teacher showed his students photos.'

"The structure uses Pylkkänen (2002)'s LOW APPLICATIVE syntax with R as the applicative head" (Marantz, 2003: 8). The applicative head R is an affixal particle, the specifier of SC is its subject.

Marantz (2003) considers the syntactic structure of non-theme arguments of roots.

Rappaport Hovav and Levin (1998) (RHL) demonstrate that intransitive verbs with the simplest Lexical-Semantic Representation, activities, i.e., [x ACT], are relatively open-ended and can be freely augmented by TEMPLATE AUGMENTATION. The Lexical-Semantic Representation [x ACT <WHISTLE>] can be augmented in, at least, the following ways:

(43) a. Kim whistled.

    b. Kim whistled a tune.

    c. Kim whistled a warning.

    d. Kim whistled me a warning.

Marantz, (2003) argues for the syntactic position PATIENT for such phenomena; they are syntactically distinct from the core root argument THEME. In Japanese, there is a diagnostic which distinguishes Marantz's patients from affected themes.

I have argued that a special property of Japanese is that lexical causatives are formed from unergative verbs. Since unergatives have non-core root arguments syntactically, how is this accomplished?

There is a fairly wide consensus that subjects are introduced by PREDICATION (Chomsky, (1981), Marantz (1984), Kratzer, (1993), Harley, (1995) and Pylkkänen, (2002), among many. An analogy can be made for subjects of SCs; lexical causatives formed from unergatives in Japanese take the unergative external argument as agentive inner-subjects of non-core root arguments. SCs involve predication; in fact, den Dikken argues that SC is the canonical realization of predication. Lexical causatives associated with unergative verbs, which by hypothesis necessarily contain SCs in Japanese, take the unergative subject as their inner-subject via predication:

(44) a.

```
                    vP
              /          \
   Otōsan-wa       /          \
              SC              v
          /      \         CAUSE
  kodomo-o     /     \
          /  \    Affixal Particle
         √        -ase-
        asob-
```
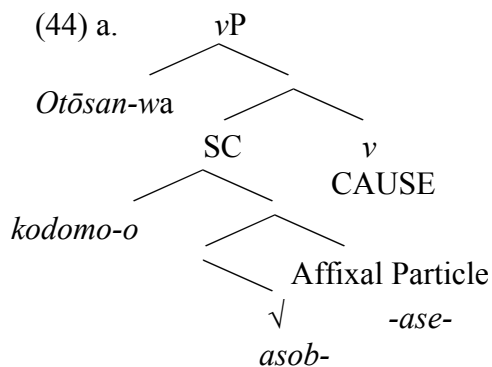
b. *Otōsan*-wa kodomo-o asob-ase-ta.

   father-TOP child-ACC play-CAUSE-PASt

   'The father entertained his child.'

In Japanese, there is a diagnostic which distinguishes themes from non-core arguments, e.g., from patients.

The INTRANSITIVIZING RESULTATIVE (Martin, 1975: 186) converts a transitive verb X-*o*-ACC VERB-*ru*-NON-PAST to the structure X-*ga*-NOM VERB-*te*-NON-FINITE *aru* 'be'-INANIMATE-EXISTENCE. It consists of transitive verbs with its accusative-marked argument converted to a nominative-marked argument. The transitive verb appears in the non-finite –*te* form. This conversion is supported by the auxiliary verb *aru* 'be-INANIMATE-EXISTENCE':

(45) a. O-cha-o kob-oshi-ta

    tea-ACC spill-TRANS-PAST

    '(Someone) spilled the tea.'

    b. O-cha-ga kob-oshi-te aru.

    tea-NOM spill-TRANS- 'be-INAN EXIST'

    'Tea has been spilled.'

The interest in this structure is, that while many vP-internal arguments are marked by the accusative case marker –*o*, the –*te aru* conversion is grammatical only when the argument is a theme:

(46) a. Kane-o modo-shi-ta

    money-ACC return-TRANS-PAST

    '(Someone) returned the money.'

    b. Kane-ga modo-shi-te aru.

    money-NOM return-TRANS 'be-INAN EXIST'

    'Money has been returned.'

Non-themes, despite accusative-case marking, are ungrammatical:

(47)a Haru-o mat-te iru.

spring-ACC wait-NON-FINITE be-ASPECT

'(Everyone) is waiting for spring.'

b. *Haru-ga mat-te aru

spring-NOM wait-NON-FINITE 'be-INANIMATE EXISTENTIAL'

'*Spring is waited for.'

Consider the causative verb resulting from the unergative in example (43), repeated as (48):

(48) kodomo-o asob-ase-ta.

child-ACC play-CAUSE-PAST

'(The father) entertained his child.'

The argument *kodomo*, despite accusative case, is syntactically the specifier of the SC. The *–te aru* structure applied to example (48), as (49) below, is therefore ungrammatical because 'kodomo' is not a theme:

(49)a kodomo-o asob-ase-ta

kodomo-ACC play-PAST

'(Someone) amused the children.'

b.*kodomo-ga asob-ase-te aru.

kodomo-NOM play-CAUS-NON-FINITE'be-INANIMATE EXISTENTIAL'

'*Children have been played.'

The question then is what are such arguments, internal to transitive verbs? PATIENT, in its traditional sense, is suggested by Marantz (2003).

I propose the following expression of its syntactic representation where *p* represents the lexical relation *patient*:

(50) [_{SC} *subject* [*patient*]]

Miyagawa (1989: 141-2) introduces data of interest to the affixal particle-patient analysis. There are a number of roots in Japanese in which there are two transitive forms; one is morphologically Ø, the other is overtly spelled out phonologically with a putative transitivity marker:

Table 2: Roots in Two Distinct Morphological Classes

Root	Intransitive	Transitive
√*tok-*	*tok-e-ru* 'melt'	*tok-u* 'melt'
√*tok-*	*tok-e-ru* 'melt'	*tok-as-u* 'melt'
√*nuk-*	*nuk-e-ru* 'fall out'	*nuk-u* 'pull out'
√*nuk-*	*nuk-e-ru* 'fall out'	*nuk-as-u*
√*hag-*	*hag-e-ru* 'be peeled'	*hag-u* 'peel'
√*hag-*	*hag-e-ru* 'be peeled'	*hag-as-u* 'peel'

Curiously, in some cases the transitive argument introduced is a non-theme based on the Intransitivizing Resultative diagnostic:

(51)a. Tamago-ga toi-te aru.

    egg-NOM melt-NON-FINITE be-INANIMATE EXIST

    'The egg has been dissolved.'

b. *Kōri-ga tok-ashit-e aru.

ice-NOM melt-NON-FINITE be-INANIMATE EXIST

'The ice has been melted.'

(52) a. *Kami-ga hai-de aru.

paper-NOM peel-NON-FINITE be-INANANIMATE EXIST

'The paper has been peeled.'

b. Kami-ga hag-ashi-te aru.

paper-NOM peel-CAUSE-NON-FINITE be-INANIMATE EXIST

'The paper has been peeled.' (Miyagawa, 1989: 144)

Example (52) a. would have the syntax of (53) a, i.e., it is a patient; example b would have the syntax of example (53) b, i.e., it is a theme:

(53) a.
```
            vP
           /  \
          Ø     \
              SC      v
             /  \    CAUSE
         kami-o   \
                 /  \
               √    Affixal Particle
              hag-        -Ø-
```

b.
```
             vP
            /  \
          Ø     \
              SC      v
               \    CAUSE
                \   /  \
               /  \  Affixal Particle
           kami-o  √    —as-
                  hag-
```

99
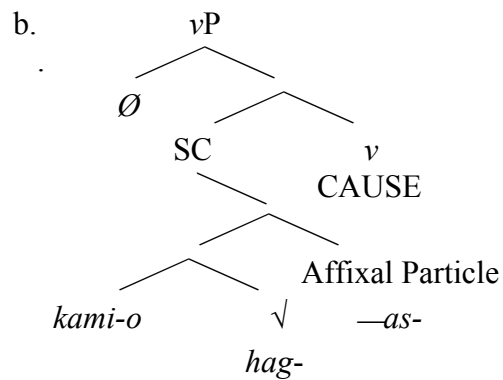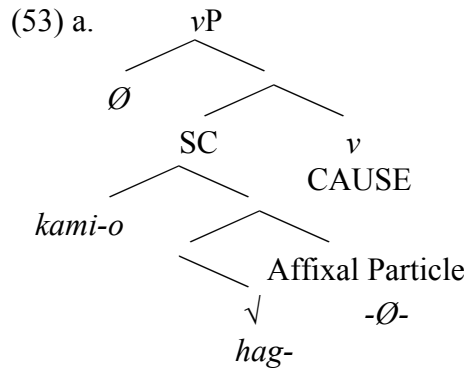
Note that the different morphological realizations of each root entails that the roots belong to two of Jacobsen's alternating verb classes; √tok-, √nuk-, and √hag- belong to both Class 1 and Class 9. The point to note is that the morphology does not uniquely reflect the syntax. In the case of the root √tok-, it is Ø which sanctions a transitive theme argument, -as-, a transitive patient argument. The root √hag- displays the reverse properties; -as- sanctions the theme, Ø sanctions the patient. It therefore seems that the claim that the morphemes are transitivity-markers is over-simplistic. There is something deeper going on which I believe to be better explained by the affixal particle analysis.

An anomaly with the SC analysis proposed here is that for change-of-state verbs, whether transitive or intransitive, the SC has no overt subject (Marcel den Dikken, personal communication). If we assume that there is movement of the theme in unaccusatives from its base-generated position to the eventual surface position of subject motivated by the EXTENDED PROJECTION PRINCIPLE (EPP) (Chomsky, 1981), and there are many works in the literature which make this case (Miyagawa, 1989; Hoji, Miyagawa and Tada, 1989; and Ito, 2003, among many), then one need only assume it passes through spec of SC.

In the case of the transitive construction I speculate, leaving the issue open for future research, but since SCs are predications, one might argue that the EPP applies to this predication as well, a *micro*-EPP, if you will. This is one way to solve the dilemma; an EPP-like feature requires the theme, currently believed to be subcategorized by the root in DM (Marantz, 1997), to raise to spec of SC:

(54) a.

```
                    vP
          ╱────────────╲
    kanojo-wa
                SC              v
                            CAUSE
                    ╱────────────╲
                              Affixal Particle
      kaminoke-o        √        —as-
                      kawak-
```

b.

```
                    vP
          ╱────────────╲
    kanojo-wa
                SC              v
                            CAUSE
            ╱────────╲
    kaminoke-o$_i$
                    ╱────────────╲
                              Affixal Particle
          i          √        —as-
                    kawak-
```
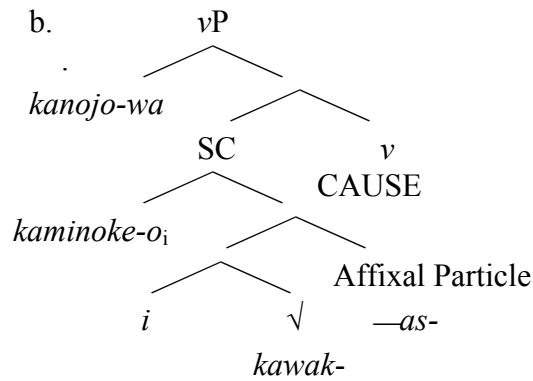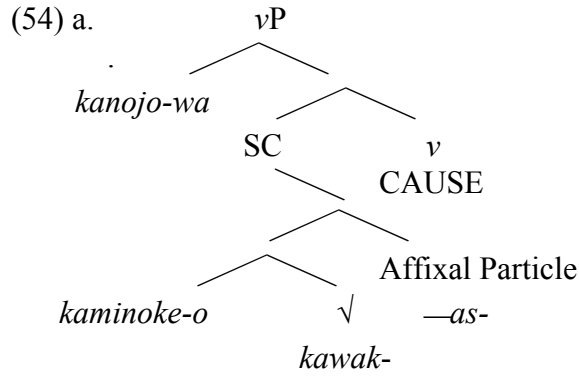
c. Kanojo-wa kaminoke-o kawak-ashi-ta

    she-TOP hair-ACC dry-CAUSE-PAST

    'She dried her hair.'

Perhaps, it is the reverse; the theme remains the phonological sister of root with indexing in the spec of SC to satisfy the micro-EPP feature. If there is a substantive issue, it is for future research to resolve.

6. Bi-clausal –*sase*-

The concept of DEFAULT has a long history in morphological theory, dating back to the pre-Modern Era Indian linguist *Pannini*. Both Aronoff (1994) and Pinker (1999) contain exemplary discussions of the concept. I have argued in the spirit of Miyagawa (1998) that there is a lexical causative default –(*s)ase*- For Miyagawa it is a phonological realization

of a verbal head in both the lexical and syntactic causative verb environments. In order to explain two noteworthy facts of Japanese, the non-compositionality of nominalizations containing putative causative morphology and the unique ability to build lexical causatives from agentive verbs, I have argued that apparent transitivity altering morphology are affixal particle heads of SCs.

The idiosyncratic affixal particles of Jacobsen (1992)'s 15 semi-productive classes are allomorphs chosen by the root according to the FIRST LAW OF THE ROOT (ben-Moshe and Aronoff, 1976: 102). As Aronoff demonstrates a root that displays allomorphy will display the same allomorphy under all circumstances. One example he gives is the Latinate root √*ceive*-. As a noun, it always appears as the allomorph –*cept*, e.g., *conceive/conception*, *receive/reception*, etc.

An additional case of allomorph/default interaction is discussed in Aronoff (1994: 28). He notes that the root √*stand* has the allomorph *stood*. In accord with ben-Moshe's First Law of the Root, the allomorph occurs without exception for the root √*stand*-: *stand/stood*, *understand/understood,* and *withstand/withstood*. In the absence of a past tense allomorph, English has the default –*ed*.

The same holds for Japanese roots. the roots, √*ag*-, √*shim*-, and √*at*- without exception have the allomorph –*e*-, e.g., *ag-e-(ru)*, *shim-e-(ru)* and *at-e-(ru)*. In the absence of root allomorphy, –*(s)ase*- is employed as the default spell-out for coercive causatives. Note the conflict with den Dikken's ambitious goal of avoiding accidental homophony, but in a theory which uses late-insertion, such as DM, we are really talking about one phonological piece that may occur in two syntactic positions, one position without

exception, as a projection of *v*, the other in the absence of root allomorphy, as an affixal particle.

In addition to its usage as the default affixal particle –*(s)ase*- that forms lexical causatives, –*(s)ase*- is responsible for the bi-clausal causative. As noted in Chapter 1, Aronoff (1976) argues that there are two English morphemes phonologically identical, but with distinct syntactic and semantic characteristics. For a morphologist, such phenomenon falls under the SEPARATION HYPOTHESIS (Beard, 1995) which claims "there is no direct connection between the side of morphology that deals with sound and the sides that deal with syntax and semantics" (Aronoff, 1994: 8). Examples supporting the hypothesis are numerous.

DM is a morphological theory based on the concept of LATE INSERTION (Halle and Marantz, 1993) and therefore crucially depends on the existence of such a separation between phonology and semantics/syntax. Only after the construction of a syntactic structure whose terminal nodes contain abstract features are phonological pieces inserted. As Miyagawa (1998) has argued, late insertion provides a reasoned method for capturing the syntactic and semantic differences of the two postulated morphemes –*(s)ase*-.

Bi-clausal –*(s)ase* is the head of a verbal projection that provides the syntactic position for the matrix subject. It embeds a clause and is inserted in a terminal head containing the abstract feature CAUSE. In contrast with lexical causatives, bi-clausal –*(s)ase* is the phonological spell-out of the feature CAUSE. Following Pyllkänen (2002), I call the verb-embedding projection CAUSE PHRASE or $_{CAUSE}$P:

(55)

$v_{\textbf{CAUSE}}\textbf{P}$

Causer   vP v_{CAUSE} *—ase-*

Causee   √ *hatarak-*   *v*
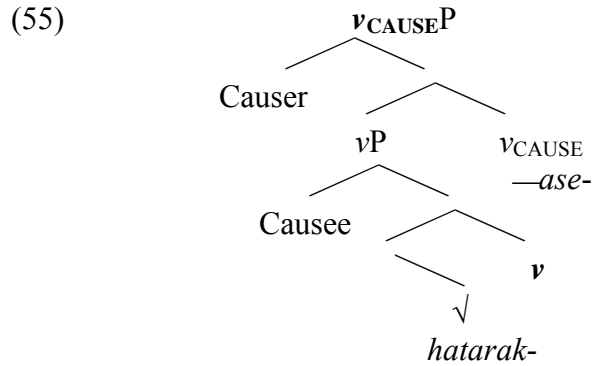
The mono-clausal lexical causative with the identical phonological form differs significantly syntactically:

(56)

*v*P

Subject   SC   *v* CAUSE

Patient   √ *hatarak-*   Affixal Particle *-ase-*
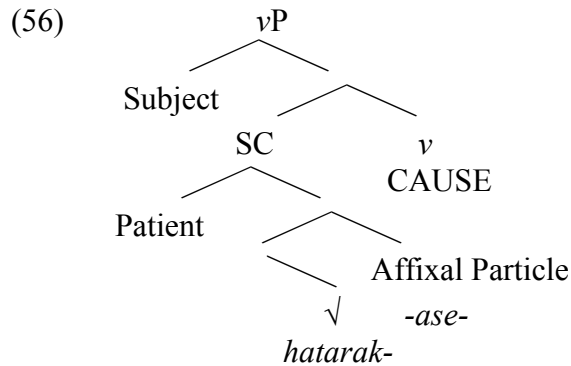
7. Conclusions

Japanese places no semantic restrictions of the type commonly observed on its lexical causatives. By recognizing the syntactic and semantic unity of morphologically-idiosyncratic lexical causatives with those which use the morphological default –*(s)ase-* in its coercive causative reading, one recognizes the lack of semantic constraints and it follows that Japanese behaves differently from other languages in which semantic constraints hold. Additionally, by claiming the putative category-defining morphology is not the phase-defining head *v*, but rather an affixal particle below the phase-defining heads, an explanation for the idiosyncratic behavior of both verbs and nouns is made possible.

Chapter 4

Musubi

The Japanese expression *musubi* is etymologically related to the verb *musub-u* 'tie' and when used in Japanese writing subsumes the English expressions *conclusion* or *closing remarks*. In this final chapter I attempt to tie a loose knot to this dissertation that all readers are welcome to untie.

In this dissertation I have proposed an untraditional analysis of the morphology implicated in Japanese transitivity alternations. This analysis links two seemingly disparate properties of Japanese, the non-compositionality of bi-morphemic nominalizations and the semantic freedom of lexical-causative formation in Japanese. Additionally it provides an explanation for the distribution of root-derived and verbal-derived nominalizations in Japanese, all while remaining within the tenets of the single engine hypothesis. A hypothesis is always just that, a hypothesis. As with all hypotheses, there exist data that remains unaccounted for. The history of science shows this to be true for even the most useful of hypotheses. A quick example is Newton's Law of Gravity. While calculations based on Newton's law were all that were needed to land human beings on the moon and return them safely to Earth, there were facts left unexplained. To draw an analogy, the single engine hypothesis has gotten to the launch pad, where anything can happen. It remains for future research to determine the extent of its scope. Why should the reader accept the tale I have woven; that is, why should morphology that seems directly implicated in the transitivity of verbs be anything other than transitivity markers, e.g., affixal particles? It may be helpful to look briefly at other languages which have transitivity markers and point out distinctions that to this writer seem significant.

Korean and Turkish are languages which from the typological point of view show uncanny similarities to Japanese. In fact for many historical linguists, they are genetically-related, belonging to the Altaic language family, which include Mongolian and Tungus (Manchurian) among several other languages. Some Western linguists of this view include Whitman (1985), Martin (1990), Miller (1971) and Vovin (1993); Japanese linguists of this view are Murayama (1957) and (1988) and Ozawa (1968), among many. Like Japanese, Turkish and Korean are head-final morphologically agglutinating languages with the preferred surface constituent order S-O-V. Not unexpectedly, transitivity alternations are morphologically-marked in both Turkish and Korean. There are some significant differences, however.

The major difference is that in Turkish and Korean, unlike Japanese, one verb is always basic; that is, it is morphologically simple equivalent to the root and its alternating partner is morphologically-marked. Turkish and Korean transitivity alternations are all of the type found in Jacobsen (1992)'s Classes 1, 2, 4, 8 and 12. In Classes 1 and 4 the transitive is indicated by the null-morpheme Ø, its intransitive partner contains a phonologically-overt morpheme; in Classes 2, 8 and 12, the intransitive morpheme is Ø; the transitive contains a phonologically-overt morpheme.

This entails that, in contrast with Japanese where 66% of the roots forming alternating verbs, 10 of Jacobsen's 15 morphological classes, do not lexicalize in the absence of overt morphology, all alternating roots have a verb that exists even in the absence of a phonologically-overt morphological transitivity-marker.

Turkish pairings of unaccusative-lexical causative show very clear similarities to the Japanese morphological classes mentioned above. Some lexical causatives are derived

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from unaccusative-intransitives by a morphological operation; some unaccusative-intransitive partners are morphologically-derived:

Table 1: Turkish Causative Alternation

Unaccusative	Lexical Causative
Class 1: *büyü* 'grow'	*büyü-t*
uyan 'wake up'	*uyan-dır*
kayna 'boil'	*kayna-t*
Class 2 : *kapa-n* 'close'	*kapa*
aç-ıl 'open'	*aç*
kır-ıl 'break'	*kır*

Class 1 shows Ø-derived unaccusatives forming lexical causatives by affixing a causative-related morpheme; Class 2 shows Ø-derived lexical causatives forming unaccusative partners with a passive-like affix. The causative and passive affixes are not always identical with the productive morphemes of modern Turkish used for causative and passive constructions and these lexical derivations are unproductive. Unlike Japanese, there is no default for lexical causative formation.

The causative morphemes of Class 1 where the intransitive is Ø-related to the root can be idiosyncratic for some verbs (Kornfilt, 1997: 328 -9). The productive causative is *–dVr*, where *V* is 'vowel', but after a vowel-final stem, *-t* is used to form the transitive partner.

Class 2 consisting of transitives Ø-related to the root, the morphology also varies in accord with the phonology of the verb stem and conforms to Turkish vowel harmony. Stems ending in a vowel affix -n-; stems ending in a consonant other than an *l* affix a vowel with *l*, i.e., -*Vl*; stems ending in *l* affix -*Vn*.

Similar to the pairings of alternating verbs in Turkish, some Korean intransitive-unaccusatives derive their transitive-lexical causatives as in the Class 1 Turkish examples, above; some transitive-lexical causatives derive their intransitive-unaccusatives, examples of Class 2 in Table 1. The morpheme -*(h)i*- and its allomorphs -*li*-, -*si*-, and -*ki*- is ambiguous between transitive and intransitive. Class 1 affixes it to derive lexical causatives, Class 2 to derive unaccusatives:

Table 2: Korean Causative Alternation[25]

Unaccusative	Lexical Causative
Class 1: *malu-ta*[26] ('dry')	*mal-li-ta*
†*kkulh-ta* ('boil')	*kkul-hi-ta*
†*put-ta* ('increase')	*pul-li-ta*
Class 2: *tat-hi-ta* ('close')	*tat-ta*
yel-li-ta ('open')	*yel-ta*
†*tak-ki-ta* ('be polished')	*takk-ta* ('polish')

---

[25] The Korean data was taken from two sources, each which use a different system of romanization. All examples are in Yale Romanization with the exception of those designated with †, which use the system of Song (1988).

[26] The morpheme –*ta* is a tense marker indicating non-past, the Korean equivalent of Japanese –(*r*)*u*-.

Two additional differences between Japanese and Turkish / Korean are the number of morphological classes. Jacobsen (1992) gives the number as 16 for Japanese. His Class 16 consists of 25 examples of roots which contain only one exemplar of its morphological class. This in effect brings the total number of alternating morphological classes to 40 for Japanese. By contrast Turkish and Korean are limited to two distinct morphological classes each, at most.

Moreover, unlike Japanese, the transitivity markers of Turkish and Korean appear limitedly if at all in nominalizations. This claim is based on the data I have reviewed, limited to manual dictionary searches, and wide-open to empirical disconfirmation. If so these transitivity-marking systems are very economical, less than a handful of morphological classes, each class containing a basic form. Additionally, if my limited search of Turkish and Korean nominalizations turns out to be accurate (Kornfilt, 1997), transitivity marking in Turkish and Korean is much more specific to the verbal environment, exactly what should be expected if CAUSE is a head of a verbal projection. Recent work within the minimalist program (Chomsky, 1995) on the direction of grammaticalizations (Roberts and Roussou, 2003) may be relevant to Japanese historical linguistics. There is a general consensus (Shibatani, 1990 and Jacobsen, 1992, among many) that the Japanese verbal morphology discussed in this dissertation is diachronically related to the synchronically productive causative and passive morphemes, -(s)ase- and –(r)are-, respectively. Shibatani (1990: 236) sums up the consensus succinctly:

> The connections between passivization and intransitivization and between transitivization and causativization are widely observed in other languages, and

the formal resemblances here indicate that in an earlier stage of Japanese, many

intransitives were derived by suffixing passive suffixes and many transitive verbs

by suffixing causative suffixes.

The verbal-nominalizations pairs in which the synchronically productive morphemes

occur whole make the the claim explicitly clear. Consider the pairings *aw-ase-ru* 'join'

('meet'-CAUSE-NON-PAST) / *aw-ase* 'kimono' ('meet'-CAUSE) and *han-are-ru* 'move

away from'-INTRANS-PASS-NON-PAST) / *han-are* 'a cottage' ('move away from'-PASS),

which respectively contain the productive causative and passive morphemes, respectively.

Briefly stated, Robert and Roussou (2003) propose a hierarchy CP > TP > VP and argue

from numerous case studies that grammaticalizations are always movement from lower to

higher up the hierarchy. If this hypothesis is on the right track, it entails that putative

transitivity markers diachronically preceded the synchronically-productive causative and

passive morphemes (Marcel den Dikken, personal communication). This is in direct

conflict with Shibatani (1990:236)'s claim above, that "the formal resemblances here

indicate that in an earlier stage of Japanese, many intransitives were derived by suffixing

passive suffixes and many transitive verbs by suffixing causative suffixes". (See Miller,

(1971) for the oppositite view, however) Shibatani's assertion is that the diachronic

relation moves downward from productivity to non-productivity, a higher position within

a bi-clausal VP below TP, to a lower position within a mono-clausal VP.

Facts that support Robert and Roussou (2003) are that the modern usage of the morpheme

–(r)are- as a passive morpheme, i.e., a morpheme that suppresses accusative case and

raises an internal argument to subject position, is a fairly recent innovation in Japanese. It

is thought to have been developed for translating Western texts around the 18th Century

and is sometimes referred to as the TRANSLATIONAL PASSIVE (Martin, 1975: 294). The morpheme *–(r)are-* has had and retains several uses that diachronically precede its translational-passive use, including uses as a potential, an indicator of respect and an expression of psychological adversity. But crucially none of its pre-translational uses involve the suppression of accusative case and the raising of theme to subject; that is, its motivation for being used to express unaccusativity seems not to have been part of the language until the root allomorphy of transitivity alternations developed.

The synchronically productive *–(s)ase-* has also followed a long and rocky path on the route towards synchronic productivity. As briefly mentioned in footnote 21, *-shime-* was the productive causative in Old Japanese (approximately the years 600-800 ME) (Martin, 1975 and Drohan, 1991). I will make no further comment, but leave it to Japanese historical linguists as an issue for clarification.

In conclusion, there is much more that I wanted to and needed to say, but the time has come to end, with the hope that the issues raised within the dissertation will lead to further debate and inquiry.

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Appendix 1

Annotated version of Jacobsen (1992: 258-268)'s APPENDIX: JAPANESE INTRANSITIVE VS. TRANSITIVE VERB PAIRS CLASSIFIED ACCORDING TO DERIVATIONAL AFFIXES[27]

Class 1: *–e-* / *-Ø-*

INTRANSITIVE	TRANSITIVE
hag-e-ru 'peel off	*hag-u* 'peel off'
hirak-e-ru 'open'	*hirak-u* 'open'
hodok-e-ru 'come untied'	*hodok-u* 'untie'
fur-e-ru 'shake'	*fur-u* 'shake'
kak-e-ru 'lack'	*kak-u* 'lack'
kir-e-ru 'become cut off, severed'	*kir-u* 'cut, sever'
kudak-e-ru 'becomed smashed'	*kudak-u* 'smash'
kujik-e-ru 'become crushed'	*kujik-u* 'crush'
makur-e-ru 'become tucked up'	*makur-u* 'tuck up'
mog-e-ru 'come off'	*mog-u* 'pluck off'
mom-e-ru 'become wrinkled'	*mom-u* 'wrinkle'
muk-e-ru 'peel'	*muk-u* 'peel'
nejir-e-ru 'become twisted'	*nejir-u* 'twist'
nug-e-ru 'come off'	*nug-u* 'take off'
nuk-e-ru 'come out'	*nuk-u* 'pull out'
or-e-ru 'break'	*or-u* 'break'
sabak-e-ru 'sell'	*sabak-u* 'sell'

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[27] There are several differences with Jacobsen's Appendix (1992: 258-268). I have divided the verbs morphologically into root, transitivity-marker and tense marker. Where there are only 2 morphemes, Ø morphemes are to be assumed. The first morpheme can in general be taken as the root, but there are some considerable complications. A reasonable assumption is that of the standard analysis; that is, there are only vowel-final roots, and consonant-final roots. Vowel-final roots are limited to those ending with the vowels *i* and *e* (See Chapter 2 for some discussion). The underlying root, in cases where it is not obvious, is a topic too complicated to be discussed in detail in this dissertation, but is a topic for an independent analysis. Complications are principally related to the history of the language, its writing system and its phonological interaction with those affixal particles that involve vowel harmony. There is a general consensus among historical linguists of Japanese, e.g., Miller (1971), that vowels were more numerous in Old Japanese. It is this stage of diachronic development from which the system of vowel harmony must be derived. I also use a different transcription system from Jacobsen, the so-called *Hepburn System*. The result is that while retaining the original order of Jacobsen's verbs, the different transcription system results in my appendix deviating from Jacobsen's alphabetical ordering. He uses the morpho-phonological system (*kunrenshiki*) of transcription while the Hepburn System gives English speakers a closer approximation of the actual pronunciation. The differences are as follows: *si- = shi-, ti- = chi, zi- = ji-, tu- = tsu, zya- = ja-* and *hu- = fu-*, the first indicates the system used by Jacobsen, the second employed throughout this dissertation. Finally, I have eliminated Jacobsen's redundant subscripts intransitive and transitive since they are indicated by column. I largely retain Jacobsen's original glosses, though in several cases have added glosses or provided more context.

sak-e-ru 'tear'
shir-e-ru 'become known'
sog-e-ru 'become worn down'
sur-e-ru 'rub'
chigir-e-ru 'become torn off'
tok-e-ru 'melt'
tor-e-ru 'be taken, harvested'
tsur-e-ru 'be caught (of fish)'
ur-e-ru 'sell'
war-e-ru 'break'
yabur-e-ru 'tear'
yak-e-ru 'burn'
yojir-e-ru 'become twisted'
mi-e-ru 'become visible'
ni-e-ru 'boil'

sak-u 'tear'
shir-u 'know, learn'
sog-u 'slice off'
sur-u 'rub'
chigir-u 'tear off'
tok-u 'melt'
tor-u 'take, harvest'
tsur-u 'catch (fish)'
ur-u 'sell'
war-u 'break'
yabur-u 'tear'
yak-u 'burn'
yojir-u 'twist'
mir-u 'see'
nir-u 'boil'

Class 2: *–Ø-* / *-e-*

INTRANSITIVE
ak-u 'open'
dok-u 'get out of the way'
(ha)ir-u 'enter'
hikkom-u 'draw back'
hisom-u 'lurk'
fukum-u 'include (in self)'
fus-u 'lie down'
itam-u 'hurt'
kagam-u 'bend'
karam-u 'become connected'
kom-u 'become crowded'
kurushim-u 'suffer'
machiga-u 'misake'
muka-u 'face'
muk-u 'face'
nagusam-u 'become consoled'
narab-u 'line up'
nurum-u 'become lukewarm'
shirizok-u 'retreat'
shizum-u 'sink'
shitaga-u 'go along with'
sodats-u 'grow up'
soro-u 'become complete'
so-u 'go along with'
subom-u 'become narrow'
sukum-u 'crouch'
susum-u 'advance'

TRANSITIVE
ak-e-ru 'open'
dok-e-ru 'remove'
ir-er-ru 'put in'
hikkom-e-ru 'pull back'
hisom-e-ru 'conceal'
fukum-e-ru 'include (in another way)'
fus-e-ru 'lay down'
itam-e-ru 'injure'
kagam-e-ru 'bend'
karam-e-ru 'connect'
kom-e-ru 'fill with'
kurushim-e-ru 'torment'
machiga-e-ru 'make a mistake'
muka-e-ru 'welcome, greet'
muk-e-ru 'cause to face'
nagusam-e-ru 'console'
narab-e-ru 'line up'
nurum-e-ru 'make lukewarm'
shirizok-e-ru 'drive back'
shizum-e-ru 'sink'
shitaga-e-ru 'take along with'
sodat-e-ru 'bring up, raise'
soro-e-ru 'make complete'
so-e-ru 'add'
subom-e-ru 'make narrow'
sukum-e-ru 'duck (one's head)'
susum-e-ru 'advance'

taga-u 'differ'	*taga-e-ru* 'break (one's word)'
tats-u 'stand'	*tat-e-ru* 'stand'
tawam-u 'bend'	*tawam-e-ru* 'bend'
chiga-u 'differ'	*chiga-e-ru* 'change'
chijim-u 'shrink'	*chijm-e-ru* 'reduce'
todok-u 'be delivered'	*todok-e-ru* 'deliver'
tsum-u 'become packed'	*tsum-e-ru* 'pack'
tsuta-u 'come along'	*tsuta-e-ru* 'transmit'
tsuzuk-u 'continue'	*tsuzuk-e-ru* 'continue'
ukab-u 'float'	ukab-e-ru 'float'
yam-u 'stop'	*yam-e-ru* 'quit'
yasum-u 'rest'	*yasum-e-ru* 'rest'
yawarag-u 'become softened'	*yawarag-e-ru* 'soften'
yurum-u 'become loose'	*yurum-e-ru* 'loosen'
yugam-u 'become crooked'	*yugam-e-ru* 'bend'
yur-e-ru[28] 'shake'	*yur-u* 'shake'

Class 3[29]: *-ar-* / *-e-*

INTRANSITIVE	TRANSITIVE
ag-ar-u 'rise'	*ag-e-ru* 'raise'
aratam-ar-u 'become improved'	*aratam-e-ru* 'improve'
at-ar-u 'touch'	*at-e-ru* 'cause to touch'
atatam-ar-u 'become warm'	*atatam-e-ru* 'warm up'
atsum-ar-u 'gather'	*atsum-e-ru* 'collect'
azuk-ar-u 'keep'	*azuk-e-ru* 'entrust'
butsuk-ar-u 'bump into'	*butsuk-e-ru* 'strike'
ham-ar-u 'fit into'	*ham-e-ru* 'fit into'
hayam-ar-u 'become hasty'	*hayam-e-ru* 'hasten'
hajim-ar-u 'begin'	*hajim-e-ru* 'begin'
hedat-ar-u 'become separated'	*hedat-e-ru* 'separate'
hikum-ar-u 'become lower'	*hikum-e-ru* 'lower'
hirog-ar-u 'spread out'	*hirog-e-ru* 'spread out'
hirom-ar-u 'spread'	*hirom-e-ru* 'spread'
fukam-ar-u 'deepen'	*fukam-e-ru* 'deepen'

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[28] This is one of several oversights by Jacobsen. The pair *yur-e-ru* 'shake_IN' /*yur-u* 'shake_TR', belongs to the same morphological class as *fur-e-ru* / *fur-u* (ibid), i.e., Class 1.

[29] This class contains several peculiarities. As mentioned in chapter 2, it contains transitive /di-transitive alternations, *jūjūdōshi* 'verbs of giving and receiving', e.g., *osow-ar-u* 'learn' / *oshi-e-ru* 'teach', and additionally, a number of Class 3 roots also form the adjective class with bound morphology, *keiyōshi*, e.g. √*taka-*, as alternating verbs *takam-ar-u* 'raise' / *takam-e-ru* 'rise, and as adjective *taka-i* 'high'. Moreover, where both radicals nominalize for a given root, this is the morphological class where it occurs most frequently, e.g., *hedatari* 'a distance' / *hedate* 'a partition, a barrier' from the root √*hedat-*. (See Appendix 2)

kabus-ar-u 'become covered'   *kabus-e-ru* 'cover'
kak-ar-u 'hang, come in contact with'   *kak-e-ru* 'hang, put in contact with'
karam-ar-u 'become connected'   *karam-e-ru* 'connect'
kasan-ar-u 'pile up'   *kasan-e-ru* 'pile up'
katam-ar-u 'harden'   *katam-e-ru* 'harden'
kaw-ar-u 'change'   *ka-e-ru* 'change'
kim-ar-u 'become decided'   *kim-e-ru* 'decide'
kiwam-ar-u 'become extreme'   *kiwam-e-ru* 'carry to an extreme'
kiyom-ar-u 'become pure'   *kiyom-e-ru* 'purify'
kurum-ar-u 'become wrapped up in'   *kurum-e-ru* 'lump together with'
mag-ar-u 'bend'   *mag-e-ru* 'bend'
kuwaw-ar-u 'join'   *kuwa-e-ru* 'add'
marum-ar-u 'become round'   *marum-e-ru* 'make round'
matom-ar-u 'take shape'   *matom-e-ru* 'put in order'
maz-ar-u 'become mixed with'   *maz-e-ru* 'mix with'
majiw-ar-u 'mingle with'   *maji-e-ru* 'mix with'
mitsuk-ar-u 'be found'   *mitsuk-e-ru* 'find'
mōk-ar-u 'be earned'   *mōk-e-ru* 'earn'
nukum-ar-u 'become warm'   *nukum-e-ru* 'warm up'
osom-ar-u 'subside'   *osom-e-ru* 'pacify'
osow-ar-u 'learn'   *oshi-e-ru* 'teach'
ow-ar-u 'end'   *o-e-ru* 'end'
sadam-ar-u 'be decided'   *sadam-e-ru* 'decide'
sag-ar-u 'hang down'   *sag-e-ru* 'lower'
sazuk-ar-u 'receive'   *sazuk-e-ru* 'grant'
sebum-ar-u 'become narrow'   *sebum-e-ru* 'make narrow'
shim-ar-u 'close, tighten'   *shim-e-ru* 'close, tighten'
shizum-ar-u 'become quiet'   *shizum-e-ru* 'make quiet'
som-ar-u 'be dyed'   *som-e-ru* 'dye'
sonaw-ar-u 'be provided'   *sona-e-ru* 'provide with'
subom-ar-u 'become narrow'   *subom-e-ru* 'make narrow'
sut-ar-u 'fall into disuse'   *sut-e-ru* 'throw away'
suw-ar-u 'sit'   *su-e-ru* 'set'
takam-ar-u 'rise'   *takam-e-ru* 'raise'
tam-ar-u 'collect'   *tam-e-ru* 'collect'
tasuk-ar-u 'be helped'   *tasuk-e-ru* 'help'
tazusaw-ar-u 'participate in'   *tazus-e-ru* 'carry on one's person'
chijim-ar-u 'shrink'   *chijim-e-ru* 'shrink'
todom-ar-u 'stop'   *todom-e-ru* 'stop'
tom-ar-u 'stop'   *tom-e-ru* 'stop'
tōzak-ar-u 'move away'   *tōzak-e-ru* 'keep at a distance'
tsuk-ar-u 'soak in'   *tsuk-e-ru* 'soak in'
tsum-ar-u 'become packed'   *tsum-e-ru* 'pack'
tsuran-ar-u 'line up'   *tsuran-e-ru* 'line up'
tsutaw-ar-u 'be handed down'   *tsuta-e-ru* 'transmit'
tsutom-ar-u 'fit the role'   *tsutom-e-ru* 'play the role of'

tsuyom-ar-u 'become strong'   *tsuyom-e-ru* 'strengthen'
uk-ar-u 'pass (an exam)'   *uk-e-ru* 'take (an exam)'
um-ar-u 'be burried'   *um-e-ru* 'bury'
usum-ar-u 'become thin'   *usum-e-ru* 'make thin'
uw-ar-u 'be planted'   *u-e-ru* 'plant'
yasum-ar-u 'become rested'   *yasum-e-ru* 'rest'
yokotaw-ar-u 'lie down'   *yokota-e-ru* 'lay down'
yowam-ar-u 'weaken'   *yowam-e-ru* 'weaken'
yud-ar-u 'be boiled'   *yud-e-ru* 'boil'

Class 4: *-ar-* / *-Ø-*

INTRANSITIVE   **TRANSITIVE**
hasam-ar-u 'become caught between'   *hasam-u* 'put between'
fusag-ar-u 'become obstructed'   *fusag-u* 'obstruct'
kurum-ar-u 'become wrapped up in'   *kurum-u* 'wrap up in'
matag-ar-u 'sit astride'   *matag-u* 'straddle'
tamaw-ar-u 'be granted'   *tama-u* 'grant'
tog-ar-u 'become sharp'   *tog-u* 'sharpen'
tukam-ar-u 'be caught'   *tukam-u* 'catch'
tsunag-ar-u 'be connected'   *tsunag-u* 'connect'

Class 5: *-r-* / *-s-*

INTRANSITIVE   **TRANSITIVE**
ama-r-u 'remain'   *ama-s-u* 'let remain'
hita-r-u 'soak in'   *hita-s-u* 'soak in'
ibu-r-u 'smoke'   *ibu-s-u* 'fumigate'
kae-r-u 'return'   kae-s-u 'return'
kae-r-u 'hatch'   *kae-s-u* 'hatch'
kie-r-u 'go out (i.e., a fire, electricity, etc.)'   ke-s-u 'extinguish'
kita-r-u 'come'   *kita-s-u* 'bring about'
koroga-r-u 'roll'   *koroga-s-u* 'roll'
kuda-r-u 'go down'   *kuda-s-u* 'lower'
mawa-r-u 'turn'   *mawa-s-u* 'turn'
modo-r-u 'return'   *modo-s-u* 'return'
nao-r-u 'become better'   *nao-s-u* 'fix'
na-r-u 'become'   *na-s-u* 'make'
nigo-r-u 'become muddy'   *nigo-s-u* 'muddy'
nobo-r-u 'climb'   *nobo-s-u* 'bring, serve up'
noko-r-u 'remain'   *noko-s-u* 'leave'
oko-r-u 'happen'   *oko-s-u* 'cause'
sato-r-u 'realize'   *sato-s-u* 'make realize'
shime-r-u 'become wet'   *shime-s-u* 'wet'
ta-r-u 'suffice'   *ta-s-u* 'add, supplement'
chika-r-u 'become scattered'   *chika-s-u* 'scatter'

tomo-r-u 'become lit'	*tomo-s-u* 'light'
tō-r-u 'pass'	*tō-s-u* 'let pass through'
utsu-r-u 'appear, become reflected'	*utsu-s-u* 'capture (an image), reflect'
utsu-r-u 'move'	*utsu-s-u* 'move'
wata-r-u 'cross'	*wata-s-u* 'hand over'
yado-r-u 'lodge at'	*yado-s-u* 'give lodging to'

Class 6[30]: *-are-* / *-as-*

INTRANSITIVE	TRANSITIVE
araw-are-ru 'appear'	*araw-as-u* 'show'
han-are-ru 'move way from'	han-as-u 'separate from'
haz-ure-ru 'come off'	*haz-us-u* 'take off'
kak-ure-ru 'hide'	*kak-us-u* 'conceal'
keg-are-ru 'become unclean'	*keg-as-u* 'make unclean'
kob-ore-ru 'spill'	*kob-os-u* 'spill'
kog-are-ru 'burn with passion for'	*kog-as-u* 'scorch'
kon-are-ru 'become digested'	*kon-as-u* 'digest'
kow-are-ru 'break'	*kow-as-u* 'break'
kuz-ure-ru 'collapse'	*kuz-us-u* 'demolish'
mab-ure-ru 'become smeared'	*mab-us-u* 'smear'
mid-are-ru 'become disorderd'	*mid-as-u* 'put into disorder'
m-ure-ru 'become steamed'	*m-us-u* 'steam'
nag-are-ru 'flow'	*nag-as-u* 'wash away'
nog-are-ru 'escape'	*nog-as-u* 'let escape'
ta-ore-ru 'fall'	*ta-os-u* 'bring down'
tsub-ure-ru 'become crushed'	*tsub-us-u* 'crush'
yog-ore-ru 'become dirty'	*yog-os-u* 'soil'

Class 7: *-ri-* / *-s-*

INTRANSITIVE	TRANSITIVE
ka-ri-ru 'borrow'	*ka-s-u* 'lend'
ta-ri-ru 'suffice'	*ta-s-u* 'add, supplement'

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[30] This is a case where I reanalyze Jacobsen's original morphological partitioning. The morpheme *–are-* is the modern productive passtive, the morpheme *–as-* is an allomorph of the productive causative morpheme *–ase-*, sometimes used as a free-variant according to dialect (See Kuroda (1993) for a discussion of the relationship between *–as-* and *–ase-*). Jacobsen's rational for his analysis, *–re-/ -s-*, is that within this class the allomorphs *-ure- / -us-* and *–ore- / -os-* appear. Kuroda (1993: 47) suggests that this is one example of many within Japanese that suggest an earlier period of vowel harmony.

Class 8: *-Ø-* / *-as-*

INTRANSITIVE	TRANSITIVE
ak-u 'open'	*ak-as-u* 'reveal'
a-u 'go together, meet'	*aw-as-u*[31] 'bring together, join'
hagem-u 'be diligent'	*hagem-as-u* 'encourage'
hekom-u 'become dented'	*#hekom-as-u* 'dent'
her-u 'decrease'	*#her-as-u* 'decrease'
hikar-u 'shine'	*#hikar-as-u* 'cause to shine'
hikkom-u 'draw back'	*hikkom-as-u* 'pull back'
fuk-u 'blow'	*#fuk-as-u* 'puff, smoke'
hukuram-u 'swell'	*hukuram-as-u* 'cause to swell'
fur-u 'rain'	*fur-as-u* 'cause to rain'
kagayak-u 'shine'	*#kagayak-as-u* 'cause to shine'
kawak-u 'dry'	*kawak-as-u* 'dry'
kik-u 'take effect'	*kik-as-u* 'use'
kōr-u 'freeze'	*kōr-as-u* 'freeze'
kor-u 'become absorbed in'	*kor-as-u* 'concentrate on'
kusar-u 'spoil'	*#kusar-as-u* 'spoil'
mayou 'become perplexed'	*#mayow-as-u* 'perplex'
megur-u 'come around'	*megur-as-u* 'turn around'
mor-u 'leak'	*mor-as-u* 'leak'
nak-u 'cry'	*#nak-as-u* 'cause to cry'
nar-u 'ring'	*nar-as-u* 'ring'
nayam-u 'be troubled'	*#nayam-as-u* 'trouble'
odorok-u 'be surprised'	*#odorok-as-u* 'surprise'
sawag-u 'become excited'	*#sawag-as-u* 'cause excitement'
sor-u 'bend'	*sor-as-u* 'bend'
suber-u 'slip'	*#suber-as-u* 'let slip'
suk-u 'become transparent'	*suk-as-u* 'make transparent'
sum-u 'become clear'	*sum-as-u* 'make clear'
sum-u 'end'	*#sum-as-u* 'end'
ter-u 'shine'	*ter-as-u* 'make shine'
chir-u 'scatter'	*chir-as-u* 'scatter'
tob-u 'fly'	*tob-as-u* 'let fly'
togar-u 'become sharp'	*togar-as-u* 'sharpen'
tom-u 'become rich'	*tom-as-u* 'make rich'

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[31] As mentioned above, the causative morphemes *–ase-* and *–as-* are frequently in free-variation. A case where free-variation is always possible is when a lexical causative has the underlying form *–ase-*. The reverse is never possible, however. An example is *kawak-as-u* 'dry', which as *kawak-ase-ru* becomes a bi-clausal causative, i.e., the equivalent of the English *make X dry*. (See Kuroda (1993) for discussion) Jacobsen's *aw-as-u* above has the underlying form *aw-ase-ru*. This is clear from its nominalization *awase* 'a kimono'. The same can be said for Jacobsen's *sawag-as-u*, included in this class, which has the nominalization *(o)-sawagase*. In effect, Jacobsen has included 2 distinct morphological classes within his Class 8. There is a distinct class *–Ø-* / *-ase-* for lexical causatives. (See Miyagawa, 1989, Kuroda, 1993 and Harley, 1995 and 1996 for relevant discussion.) I mark such cases that I am certain of with #.

ugok-u 'move'   *ugok-as-u* 'move'
wak-u 'boil'   *wak-as-u* 'boil'
wazura-u 'be troubled'   *wazuraw-as-u* 'trouble'
yorokob-u 'be happy'   #*yorokab-as-u* 'please'

Class 9³²: *-e- / -as-*

INTRANSITIVE

ak-e-ru 'dawn'	*ak-asu* 'spend the night'
ar-e-ru 'become ravaged'	*ar-as-u* 'ravage'
bak-e-ru 'turn into'	*bak-as-u* 'bewitch'
bar-e-ru 'come to light'	*bar-as-u* 'expose'
bok-e-ru 'become unclear'	*bok-as-u* 'make unclear'
d-e-ru 'come out, exit, emerge, appear'	*d-as-u* 'take out, send out'
ha-e-ru 'grow'	*hi-(y)as-u* 'grow'
hag-e-ru 'peel off'	*hag-as-u* 'peel off'
har-e-ru 'clear up'	*har-as-u* 'clear up'
hat-e-ru 'come to an end'	*hat-as-u* 'carry out'
hi-e-ru 'become cool'	*hiy-as-u* 'cool'
fu-e-ru 'increase'	*fuy-as-u* 'increase'
fuk-e-ru 'grow late, old'	*fuk-as-u* 'stay up late at night'
fuyak-e-ru 'become soaked'	*fuyak-as-u* 'soak'
i-e-ru 'heal'	*i-(y)as-u* 'heal'
kak-e-ru 'become lacking'	*kak-as-u* 'miss (a meeting)'
kar-e-ru 'wither'	*kar-as-u* 'let wither'
kir-e-ru 'run out'	*kir-as-u* 'run out of'
ko-e-ru 'become fat, fertile'	*koy-as-u* 'fatten, fertilize'
kog-e-ru 'become scorched'	*kog-as-u* 'scorch'
korog-e-ru 'roll'	*korog-as-u* 'roll'
kojir-e-ru 'become worse'	*kojir-as-u* 'make worse'
kur-e-ru '(day, year) comes to an end'	*kur-as-u* 'pass time'
magir-e-ru 'become confused with; be distracted'	*magir-as-u* 'conceal in, distract'
mak-e-ru 'be defeated'	*mak-as-u* 'defeat'
mo-e-ru 'leak'	*mo-(y)as-u* 'leak'
mur-e-ru 'become steamed'	*mur-as-u* 'steam'
nar-e-ru 'become accustomed to'	*nar-as-u* 'accustom, tame'
nig-e-ru 'escape'	*nig-as-u* 'let escape'
nuk-e-ru 'be left out'	*nuk-as-u* 'leave out'
nur-e-ru 'become wet'	*nur-as-u* 'make wet'
okur-e-ru 'be late for'	*okur-as-u* 'delay'

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³² Jacobsen lists his Class 9 as *–er- / -as-* (1992: 265), but the *-r-* actually belongs to the non-past tense morpheme *–ru*, rather than to his transitivity markers since these are all vowel final stems, with negation in *–nai* and nominalizations appearing without the epenthetic *–i*, e.g., *kure* 'sundown' and *hate* 'the end' from *kur-e-ru* 'come to an end' and *hat-e-ru* 'come to an end', respectively. See Chapter 2 for some discussion and Appendix 2 for nominalizations from this class.

sam-e-ru 'awake'   *sam-as-u* 'wake up'
sam-e-ru 'become cool'   *sam-as-u* 'cool'
ta-e-ru 'die out'   *ta-(y)as-u* 'exterminate'
tar-e-ru 'drop'   *tar-as-u* 'let drop'
chijir-e-ru 'become curly'   *chijir-as-u* 'curl'
tok-e-ru 'melt'   *tok-as-u* 'melt'
torok-e-ru 'melt; become bewitched'   *torok-as-u* 'melt; bewitch'
tsui-e-ru 'be wasted'   *tui-(y)as-u* 'consume'
jir-e-ru 'become impatient'   *jir-as-u* 'irratate'
zur-e-ru 'become out of line'   *zur-as-u* 'shift out of time'
jar-e-ru 'be playful'   *jar-as-u* 'play with'

Class 10: *-i-* / *-as-*

INTRANSITIVE   **TRANSITIVE**
ak-i-ru 'grow tired of'   *ak-as-u* 'make one tired of'
dek-i-ru 'come into existence'   *dek-as-u* 'bring about'
ik-i-ru 'live, be alive'   *ik-as-u* 'bring to life'
kor-i-ru 'learn (from experience)'   *kor-as-u* 'give (one) a lesson'
mich-i-ru 'become full'   *mit-as-u* 'fill'
nob-i-ru 'become extended'   *nob-as-u* 'extend'
toj-i-ru 'close'   *toz-as-u* 'close'

Class 11[33]: *-i-* / *-os-*

INTRANSITIVE   **TRANSITIVE**
h-i-ru 'become dry'   *h-os-u* 'dry'
horob-i-ru 'go to ruin'   *horob-os-u* 'destroy'
ok-i-ru 'get up'   *ok-os-u* 'get up'
or-i-ru 'get off (a bus, a car)'   *or-os-u* 'let off'
och-i-ru 'fall'   *ot-os-u* 'drop'
sug-i-ru 'go past'   *sug-os-u* 'pass (time)'

Class 12[34]: *-Ø-* / *-se-*

TRANSITIVE   **DI-TRANSITIVE**
abir-u 'pour (over onself)'   *abi-se-ru* 'pour (over another)'
kabur-u 'become covered with, put on   *kabu-se-ru* 'cover with, put on (another's

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[33] Class 11 can be considered a subclass of Class 10, assuming the vowel harmony claim above, in footnote 32.

[34] Here I have changed Jacobsen (1992: 267)'s designation from intransitive / transitive to transitive / di-transitive. (See Jacobsen (1992) for arguments that cases of transitivity / di-transitivity alternations that appear scattered throughout his Appendix (ibid: 258- 268) are intransitive / transitive alternations.) Note that the verb *mi-ru* 'see, look at, watch', also occurs in Class 1, where it is designated as transitive (ibid: 259).

(one's own head)'
ki-ru 'put on (one's own) body'
ni-ru 'resemble'
nor-u 'get aboard'
yor-u 'approach'
mi-ru 'see, look at, watch'

head)
ki-se-ru 'put on (another's) body'
ni-se-ru 'imitate'
no-se-ru 'load, put on, give a ride'
yo-se-ru 'allow to approach'
mi-se-ru 'show'

Class 13: *-e- / -akas-*

INTRANSITIVE
ama-e-ru 'act dependant on'
hagur-e-ru 'stray from'
obi-e-ru 'become frightened at'
sobi-e-ru 'rise high, tower'
cf. *ne-ru* 'go to bed, lie down'

TRANSITIVE
ama-(y)akas-u 'spoil'
hagur-akas-u 'put off, evade'
obi-(y)akas-u 'frighten, threaten'
sobi-(y)akas-u 'hold (shoulders) high'
ne-kase-ru 'put to bed'

Class 14: *-or- / -e-*

INTRANSITIVE
kom-or-u 'be fully present'
nukum-or-u 'become warm'

TRANSITIVE
kom-e-ru 'fill with'
nukum-e-ru 'warm up'

Class 15: *-are- / -e-*

INTRANSITIVE
sut-are-ru 'fall into disuse'
toraw-are-ru 'be seized with, caught by'
wak-are-ru 'become divided'

TRANSITIVE
sut-e-ru 'throw away'
toroa-e-ru 'seize, catch'
wak-e-ru 'divide'

Class 16[35]: Miscellaneous affix pairs

INTRANSITIVE
hag-are-ru 'peel off'
hog-ure-ru 'become untied'
hosor-u 'become thin'
fukur-e-ru 'swell'
kak-e-ru 'run (an animal)'
kasur-e-ru 'become hoarse'
kik-oe-ru 'become audible'
ko-e-ru 'go over'
kud-ar-u 'go down'

TRANSITIVE
hag-u 'peel off'
hog-os-u 'untie'
hosom-e-ru 'make narrow'
fukur-amas-u 'make swell'
kar-u 'drive, spur, hunt'
kar-as-u 'make hoarse'
kik-u 'listen to, ask'
ko-s-u 'pass'
kud-asa-ru 'bestow'

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[35] As Jacobsen's designation indicates Class 16 is miscellaneous, but not nearly as so to a morphologist and given the assumption that –*o*- and –*u*- are allophones of –*a*- from an earlier period of vowel harmony in Japanese. Also note that *hag-are-* / *hag-* and *um-are-* / *um-*, both contained in Class 16, form a morphological class to which *okonaw-are-ru* 'happen' and *okona-u* 'do' also belongs'. In several cases, morphological boundaries should be taken as mere educated guesses.

kusub-ur-u 'smoke'　　　　　　　　　　*kusub-e-ru* 'fumigate'
maj-ir-u 'become mixed with'　　　　　*maz-e-ru* ''mix with'
naku-nar-u 'become lost, die'　　　　　*naku-s-u* 'lose'
nigiwa-u 'become prosperous'　　　　　*nigiwa-s-u* 'make prosperous'
nob-i-ru 'become extended'　　　　　　*nob-e-ru* 'extend'
obu-sar-u 'get on someone's back'　　　*obu-u* 'carry on one's back'
oyob-u 'reach'　　　　　　　　　　　*oyob-os-u* 'extend to'
sas-ar-u 'become stuck in'　　　　　　*sas-u* 'stick, thrust into'
tsukumar-u 'be caught'　　　　　　　　*tsukma-e-ru* 'catch'
tsuk-i-ru 'run out'　　　　　　　　　*tsuk-us-u* 'use up'
tum-or-u 'accumulate'　　　　　　　　*tsum-u* 'accumulate'
um-are-ru 'be born'　　　　　　　　　*um-u* 'give birth to'
uru-o-u 'become moistened'　　　　　　*uru-os-u* 'moisten'
us-e-ru 'disappear'　　　　　　　　　*ushinau* 'lose'
uzum-ore-ru 'become buried'　　　　　*uzum-e-ru* 'bury'
yur-e-ru 'sway'　　　　　　　　　　　*yur-ugas-u* 'cause to sway'

Appendix 2: Jacobsen (1992)'s List of Transitivity Alternations and their Nominalizations[36]

Intransitive / Transitive

1. **Class 1:** *-e-* / *-Ø-*

> *kir-e* 'a piece of cloth' (cf. *kir-e-ru* 'become severed') / *kiri* 'limits, bounds' (cf. *kir-u* 'cut')
> Ø / *mogi* 'a ticket taker' (cf. *mog-u* 'pick off')
> Ø / *nuki* 'an omission' (cf. *nuk-u* 'pull out')
> Ø / *ori* 'a small wooden box (for food)' (cf. *or-u* 'break')
> Ø / *suri* 'a pickpocket' (cf. *sur-u* 'rub')
> Ø / *tsuri* 'fishing' (cf. *tsur-u* 'catch fish')
> Ø / *uri* 'sales' (cf. *ur-u* 'sell')
> Ø / *wari* 'a rate' (cf. *war-u* 'break')
> *yabure* 'a break, rupture' (cf. *yabur-e-ru* 'be torn') / Ø
> Ø / *yaki* `burning' (cf. *yak-u* 'burn')
> *yure* 'shaking' (cf. *yur-e-ru* 'shake') / Ø

2. **Class 2:** *-Ø-* / *-e-*

> *aki* 'an opening' (cf. *ak-u* 'open')/ Ø
> *chigai* 'a difference' (cf. *chiga-u* 'differs')/ Ø
> *chijimi* 'cotton crepe, pre-shrunk' (cf. *chijim-u* 'shrink') / Ø
> *iri* 'entering, attendance' (cf. *(ha)-ir-u* 'enter') / Ø
> *fukumi* ' an implication' (cf. *fukum-u* 'include') / Ø
> *itami* 'pain' (cf. *itam-u* 'hurt') / Ø
> *komi* 'in bulk, in a lump' (cf. *kom-u* 'become crowded')/ Ø
> *kurushimi* 'pain, a sting' (cf. *kurushim-u* 'suffer') / Ø
> *mukai* 'the opposition' (cf. *muka-u* 'face') / Ø
> *muki* 'a direction' (cf. *muk-u* 'face') / Ø
> *nagusami* 'an amusement' (cf. *nagasum-u* 'become consoled') / *nagusame* 'a consolation' (cf. *nagasum-e-ru* 'console')
> *narabi* 'a row' (cf. *narab-u* 'line up') / Ø
> *sodachi* 'breeding, upbringing' (cf. *sodats-u* 'grow up') / *sodate* 'a foster parent' (cf. *sodat-e-ru* 'raise')
> *soroi* 'a set, a suit' (cf. *soro-u* 'become complete') / Ø
> Ø / *todoke* 'a report' (cf. *todok-e-ru* 'deliver')
> *tsuki* 'a military attache' (cf. *tsuk-u* 'adhere to') / *tsuke* 'a bill, a check' (cf. *tuk-e-ru* 'attach')

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[36] The nominalization data has been taken from *Kenkyusha's New School Japanese-English Dictionary* (Masuda, 1968). Coincidentally, this dictionary which fell into my hands in 1991 is cited by Jacobsen (1992) as the main source for his data.

tsuzuki 'the continuation' (cf. *tsuzuk-u* 'continue') / Ø

Ø / *yame* 'a stop, discontinuance' (cf. *yam-e-ru* 'stop')

yasumi 'a rest' (cf. *yasum-u* 'rest') / Ø

yugami 'a contortion, a distortion' (cf. *yugam-u* 'become crooked') / Ø

yurumi 'relaxation' (cf. *yurum-u* 'become loose') / Ø

3. **Class 3:** *-ar-* / *-e-*

agari 'a rise, an ascent' (cf. *ag-ar-u* 'rise') / Ø

atari 'a hit, a success' (cf. *at-ar-u* 'touch') / *ate* 'an aim, an object' (cf. *at-e-ru* 'cause to touch')

atsumari 'a gathering' (cf. *atsum-ar-u* 'gather') / Ø

azukari 'custody' (cf. *azuk-ar-u* 'keep') / Ø

(Ø) / *hajime* 'the beginning' (cf. *hajim-e-ru* 'begin')

hedatari 'a distance' (cf. *hedat-ar-u* 'become separated') / *hedate* 'a partition, a barrier' (cf. *hedat-e-ru* 'separate')

hirogari 'an extent' (cf. *hirog-ar-u* 'spread out') / Ø

kakari 'charge, duty' (cf. *kak-ar-u* 'hang') / *kake* 'credit, trust' (cf. *kak-e-ru* 'hang')

katamari 'a lump' (cf. *katam-ar-u* 'harden') / *katame* 'defense' (cf. *katam-e-ru* 'harden')

kawari 'a change' (cf. *kaw-ar-u* 'change') / *kae* 'a substitute' (cf. *ka-e-ru* 'change')

kimari 'a settlement' (cf. *kim-ar-u* 'be decided') / *kime* 'an arrangement, an agreement' (cf. *kim-e-ru* 'decide')

magari 'a bend' (cf. *mag-ar-u* 'bend') / <u>*mage* 'a topknot, chingon'</u> (cf. *mag-e-ru* 'bend')

matomari 'a settlement' (cf. *matom-ar-u* 'take shape') / Ø

majiwari 'intercourse, association' (cf. *majiw-ar-u* 'mingle with') / Ø

Ø / *mōke* 'profit' (cf. *mōk-e-ru* 'earn')

osamari 'a fix, a settlement' (cf. *osam-ar-u* 'subside') / *osame* 'the last, the closing' (cf. *osam-e-ru* 'pacify')

owari 'an end' (cf. *ow-ar-u* 'end') / Ø

Ø / *sadame* 'a law' (cf. *sadam-e-ru* 'decide')

(*o-*)*sagari* 'hand me down clothes' (cf. *sag-ar-u* 'become lower') / (*o-*)*sage* 'hair in braids' (cf. *sag-e-ru* 'lower')

Ø / *some* 'dyeing' (cf. *som-e-ru* 'dye')

Ø / *sonae* 'preparation' (cf. *sona-e-ru* 'provide with')

sutari 'waste' (cf. *sut-ar-u* 'fall into disuse') / Ø

takamari 'a rise, a swell' (cf. *takam-ar-u* 'rise') / *takame* 'high' (cf. *takam-e-ru* 'raise')

tamari (-ba) 'a waiting room' (cf. *tam-ar-u* 'collect') / Ø

Ø / *tasuke* 'help, aid' (cf. *tasuk-e-ru* 'help')

tomari 'a stay-over' (cf. *tom-ar-u* 'stop') / Ø

Ø / *tsume* 'a packing' (cf. *tsum-e-ru* 'pack')

Ø / *uke* 'popularity, favor' (cf. *uk-e-ru* 'take (an exam)')

4. **Class 4:** *-ar-* / *-Ø-*

Ø / *hasami* 'scissors' (cf. *hasam-u* 'put between')
Ø / *tsukami* 'a grip' (cf. *tsukam-u* 'catch')
tsunagari 'a connection' (cf. *tsunag-ar-u* 'be connected') / *tsunagi* 'a connection'
(cf. *tsunag-u* 'connect')

5. **Class 5:** *-r-* / *-s-*

amari 'the remainder' (cf. *ama-r-u* 'remain') / Ø
Ø / *ibushi* 'fumigation' (cf. *ibu-s-u* 'fumigate')
kaeri 'a return' (cf. *kae-r-u* 'return') / *kaeshi* 'a gift sent in return' (cf. *kae-s-u*
'return')
kudari 'a descent' (cf. *kuda-r-u* 'go down') / Ø
mawari 'surroundings' (cf. *mawa-r-u* 'turn') / *mawashi* 'a sumo wrestler's belt'
(cf. *mawa-s-u* 'turn')
modori 'a return' (cf. *modo-r-u* 'return') / Ø
Ø / *naoshi* 'a correction' (cf. *nao-s-u* 'repair')
nari 'a shape, a form' (cf. *na-r-u* 'become') / Ø
nigori muddiness' (cf. *nigo-r-u* 'become muddy') / Ø
nobori 'an ascent' (cf. *nobo-r-u* 'rise') / Ø
nokori 'remains' (cf. *noko-r-u* 'remain') / Ø
okori 'the origin' (cf. *oko-r-u* 'happen') / Ø
satori 'understanding' (cf. *sato-r-u* 'realize') / Ø
Ø / *tashi* 'supplement' (cf. *ta-s-u* 'add')
tōri 'a road' (cf. *tō-r-u* 'pass through') / *tōshi* 'a serial number' (cf. *tō-s-u* 'let pass
through')
utsuri 'a reflection' (cf. *utsu-r-u* 'move') / *utsushi* 'a copy' (cf. *utsu-s-u* 'move')
watari 'migratory movement' (cf. *wata-r-u* 'cross over') / *watashi* 'a ferry' (cf.
wata-s-u 'hand over')

6. **Class 6:** *-are-* / *-as-*

araware 'a manifestation, a sign' (cf. *araw-are-ru* 'appear') / Ø
hanare 'a cottage apart from the main building' (cf. *han-are-ru* 'move away
from') / Ø
kegare 'an impurity' (cf. *keg-are-ru* 'become unclean') / Ø
konare 'digestion' (cf. *kon-are-ru* 'become digested') / *konashi* 'one's carriage
(of the body)' (cf. *kon-as-u* 'digest')
koware 'a break' (cf. *kow-are-ru* 'break') / Ø
kuzure 'collapse' (cf. *kuz-ure-ru* 'collapse') / Ø

midare 'disorder' (cf. *mid-are-ru* 'become disordered')/ Ø
nagare 'a flow' (cf. *nag-are-ru* 'flow') / *nagashi* 'a sink' (cf. *nag-as-u* 'wash away')
Ø / *tsubushi* 'scrap' (cf. *tsub-us-u* 'crush')
yogore 'a spot, a stain' (cf. *yog-ore-ru* 'become dirty') / Ø

7. **Class 7:** *-ri-* / *-s-*

Ø / *tashi* 'a supplement' (cf. *tas-u* 'add')

8. **Class 8:** *-Ø-* / *-as-*

Ø / *chirashi* 'a leaflet' (cf. *chir-as-u* 'scatter')
hagemi 'encouragement' (cf. *hagem-u* 'be diligent in') / Ø
hekomi 'a dent' (cf. *hekom-u* 'become dented')/ Ø
hikari 'a light, a ray' (cf. *hikar-u* 'shine') / Ø
fukurami 'a swelling, a bulge' (cf. *furukam-u* 'swell') / Ø
kagayaki 'radiance, brightness' (cf. *kagayak-u* 'shine') / Ø
kawaki 'thirst' (cf. *kawak-u* 'dry') / Ø
kōri 'ice' (cf. *kōr-u* 'freeze') / Ø
kori 'stiffness' (cf. *kor-u* 'become absorbed in') / Ø
mayoi 'perplexity, bewilderment' (cf. *mayo-u* 'become perplexed') / Ø
meguri 'a turn, a tour' (cf. *megur-u* 'come around') / Ø
mori 'a leak' (cf. *mor-u* 'leak') / Ø
naki 'crying' (cf. *nak-u* 'cry') / Ø
nari 'a sound, a ring' (cf. *nar-u* 'ring') / Ø
nayami 'trouble, worry' (cf. *nayam-u* 'be troubled') / Ø
odoroki 'surprise' (cf. *odorok-u* 'be surprised') / Ø
sawagi 'a noise, an uproar' (cf. *sawag-u* 'become excited') / Ø
sori 'a warp' (cf. *sor-u* 'bend') / Ø
suberi 'sliding, slipping' (cf. *suber-u* 'slip') / Ø
teri 'sunshine' (cf. *ter-u* 'shine') / Ø
tomi 'riches' (cf. *tom-u* 'become rich') / Ø
ugoki 'a movement, motion' (cf. *ugok-u* 'move') / Ø
wazurai 'worry' (cf. *wazura-u* 'be troubled') / Ø
yorokobi 'joy' (cf. *yorokob-u* 'be happy') / Ø

9. **Class 9:** -e- / -as-

ake 'daybreak' (cf. *ake-ru* 'dawn') /
are 'a storm' (cf. *are-ru* 'become ravaged') / *arashi* 'a storm, a tempest' (cf. *aras-u* 'ravage')
o-bake 'a ghost' (cf. *bake-ru* 'turn into') / Ø

de 'turnout, appearance' (cf. *d-e-ru* 'come out') / *dashi* 'soup stock' (cf. *d-as-u* 'send out')
hage 'baldness' (cf. *hage-ru* 'peel off') / Ø
hare 'clear weather' (cf. *hare-ru* 'clear up') / Ø
hate 'the end, extremity' (cf. *hate-ru* 'come to an end') / Ø
hie 'the cold, chill' (cf. *hie-ru* 'become cool') / Ø
koe 'manure' (cf. *koe-ru* 'become fat, fertile') / *koyashi* 'manure' (cf. *koy-as-u* 'fatten, fertilize')
kure 'nightfall' (cf. *kure-ru* 'comes to an end (day, year, etc.)' / Ø
make 'a defeat' (cf. *make-ru* 'be defeated') / Ø
more 'a leak' (cf. *more-ru* 'leak') / Ø
nare 'experience' (cf. *nare-ru* 'become accustomed to') / ?*narashi* 'average' (cf. *nar-as-u* 'accustom, tame')
okure 'a lag, delay' (cf. *okure-ru* 'be late') / Ø
tare 'sauce, gravy' (cf. *tare-ru* 'drop') / Ø
zure 'a discrepancy' (cf. *zure-ru* 'become out of line') / Ø

10. **Class 10:** *-i-* / *-as-*

   aki 'weariness, satiety' (cf. *aki-ru* 'become tired of') / Ø
   deki 'workmanship, craftsmanship' (cf. *deki-ru* 'come into existence') / Ø
   iki 'freshness' (cf. *iki-ru* 'live') / Ø
   nobi 'growth' (cf. *nobi-ru* 'stretch') / Ø

11. **Class 11:** *-i-* / *-os-*

   Ø / *hoshi* 'dried' (cf. *hos-u* 'dry')
   ochi 'an omission, the point (of a joke)' (cf. *ochi-ru* 'fall') / Ø

12. **Class 12:** *- Ø-* / *-se-*

   kaburi 'head' (cf. *kabur-u* 'wear on the head') / Ø
   Ø / *yose* 'the end game' (cf. *yo-se-ru* 'allow to approach')

13. **Class 13:** *-e-* / *-akas-*

   Ø

14. **Class 14:** *-or-* / *-e-*

   Ø

15. **Class 15:** *-are-* / *-e-*

   toraware 'captivity' (cf. *toraw-are-ru* 'be seized with, caught by') / Ø
   wakare 'a branch, a separation' (cf. *wakare-ru* 'become divided') / Ø

16. **Class 16:** Miscellaneous

   kikoe 'reputation' (cf. *kik-oe-ru* 'be heard') / Ø
   kudari 'descent' (cf. *kuda-ru* 'go down') / Ø
   nigiwai 'prosperity' (cf. *nigiwa-u* 'become prosperous') / Ø
   umare 'birth, lineage' (cf. *um-are-ru* 'be born') / Ø
   uruoi 'moisture, damp' (cf. *uruo-u* 'become moistened') / Ø