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Minimalist Interfaces

Evidence from Indonesian and Javanese

Yosuke Sato

John Benjamins Publishing Company

Minimalist Interfaces

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by Yosuke Sato

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Dedicated with love to my wife, Dwi Hesti Yuliani
and in memory of my first teacher,
Professor Tsuyoshi Oishi (1950–2008)

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List of abbreviations

Acc	Accusative Case	Nom	Nominative Case
Appl	Applicative	Pass	Passive
Aspect	Aspect	Perf	Perfective Aspect
AV	Active Voice	Prog	Progressive Aspect
Cl	Classifier	Q	Question Particle
Cop	Copular	Red	Reduplication
CS	Case	Loc	Locative
Dat	Dative Case	Masc	Masculine
Emp	Emphasis	Neg	Negation
Fem	Feminine	Past	Past Tense
Foc	Focus Particle	Poss	Possessive Case
Gen	Genitive Case	Sg	Singular
Intr	Intransitive	Top	Topic Marker
Obl	Oblique Case	2	Second Person
Link	Linker	3	Third Person

CHAPTER 1

Minimalist interfaces

1. Minimalist interfaces

This book is a theoretical investigation of the interface between core syntactic computation and its neighboring grammatical modules within the framework of Minimalist Program (Chomsky 1995, 2000, 2001, 2004, 2007, 2008). The goal is to see the extent to which a thesis I call *Minimalist Interfaces* serves as an adequate hypothesis of the intermodular architecture of the human language faculty in the broad sense (Hauser et al. 2002).[1] The fundamental idea behind this thesis is that syntax-external linguistic components play a critical role in applying a handful of domain-specific operations to legitimatize otherwise illicit objects created by syntax for the purposes of the language-independent Articulatory -Perceptual/AP and Conceptual-Intentional/CI systems (Chomsky 1995). The core intuition behind this thesis is that syntax is not entirely crash-proof, as argued for in Frampton and Gutmann (1999, 2002), in that it makes certain derivational mistakes but syntax-external linguistic interfaces make use of whatever resources they can to attempt to make them converge for the purposes of the external phonetic and conceptual systems. An equally important claim the thesis makes is that only *certain* mistakes committed by syntax can be repaired/remedied at the interfaces for convergence. This leads to a view of the interface between syntax and semantics/phonology, according to which syntax-external components can make use of their autonomous operations distinct from syntax to legitimize otherwise illicit syntactic objects but only within a very narrow range of options made available by the combination of universal principles of syntax with language-particular parametric values.

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1. I am very grateful to Andrew Carnie (personal communication, October 2007) for suggesting the term *Minimalist Interfaces* as one of the potentially overarching hypotheses that characterize this book. Thanks also to Noam Chomsky (personal communication, January 2005) for encouraging me to take seriously the role of linguistic interfaces and their relations with the language-independent concept and sound modules.

There are two aspects of the present book that are worth mentioning here. First, my current investigation attempts to show that syntax is functionally blind; it does whatever its abstract computational processes (i.e. Internal/External Merge, Agree, Spell-Out, Transfer) allow it to do to construct complex objects in a recursive fashion based on a language-particular subset of the universal pool of morpho-syntactic features (e.g. T, *v*, V, C, etc.), without ever caring about the fate of the objects thus created, leaving the task of their convergence/interpretability entirely to the language-external sound- and meaning-related modules. Therefore, it is natural to expect that syntax creates objects that would be simply unusable from the perspective of the modules. This view of interface-oriented interpretability is a reasonable one in light of another consideration that what actually interfaces with the AP and CI systems is not syntax *per se* but the intermediate components that connect the syntax and the two systems. A variant of this view has also been developed by Boeckx (2007), who proposes to let linguistic interfaces determine the legitimacy of a syntactic object. Our current view, therefore, invites the possibility mentioned above, namely, that linguistic interfaces are equipped with domain-specific operations to legitimize syntactic objects to make them readable for the AP and CI systems.

Second, the proposed thesis of *Minimalist Interfaces* suggests that there is no room for the *Lexicon* as traditionally conceived of as a static storage point for words and their formation process; this time-honored assumption does not find its natural place under the most parsimonious version of the minimalist view of the linguistic interfaces, adopted in this monograph, under which what syntax interacts with is the sound and meaning component. Accordingly, the thesis leads us to expect that (at least part of) the traditional roles of the Lexicon in the Lexicalist sense should be played instead by the post-syntactic linguistic interfaces by such means as late insertion of phonological material, as recently argued for in the framework of Distributed Morphology (Halle & Marantz 1993, 1994; Harley & Noyer 1999; Embick & Noyer 2007).

The present volume discusses some of the empirical ramifications of the Minimalist Interfaces thesis defined above on the basis of the comprehensive theoretical analysis of a sizable portion of the syntax, semantics, phonology and morphology of two under-represented Malayo-Polynesian languages from the Austronesian family, Indonesian and Javanese. I examine a wide variety of areas in these languages where syntax interacts with phonology, morphology, and semantics. They include, but are not limited to, the interaction of the syntactic movement with the distribution of the active voice morphology, the crosslinguistically atypical pattern of P-stranding under sluicing, the denotation and morphosyntax of bare nominals, and nominal vs. verbal reduplication asymmetries. I analyze these apparently disparate phenomena in great depth to provide converging evidence for the idea

that syntax-external linguistic interfaces make use of whatever domain-specific resources they can to modify/remedy/repair certain mistakes created by syntax, if any, but only within the narrow space set up by the combination of the architectural design of the syntactic computation and the language-particular values of the independently motivated parameters. To mention one such case from what follows, the analysis proposed in Chapter 4 of P-stranding in Indonesian, French, and English draws on two parameters: one concerns the percolation of the [+wh] feature of the interrogative NP onto its dominating PP while the other concerns the D-to-P incorporation in the syntax. I propose there, developing the idea of repair by ellipsis (Merchant 2001), that the phonological component can repair the failure of the [+wh] feature percolation by deleting the offending PP structure, but not the failure of the D-to-P incorporation, suggesting a bifurcated view of the reparability of computational failures.

Although the subtitle of the book gives the impression that the database of our inquiry is limited to Indonesian and Javanese, this book also contains a wealth of examples and descriptions from a far wider range of genetically unrelated languages encompassing Indo-European, Austronesian, Altaic, and Sino-Tibetan, as long as their investigation bears on the question of the extent to which the Minimalist Interfaces thesis holds.

2. Overview of the book

Beyond the present introductory chapter, this book is composed of five chapters. Chapters 2–5 are organized in such a way that the phenomenon discussed in each chapter constitutes an investigation of the interface between syntax and one of its interacting grammatical modules (lexicon, morphology, phonology, and semantics). Chapter 2 concerns the interface of syntax with the Lexicon in the Lexicalist sense; Chapter 3 concerns the interface of syntax with (post-syntactic) morphology; Chapter 4 concerns the interface of syntax with phonology; Chapter 5 concerns the interface of syntax with semantics. Below is the summary of the content of each successive chapter, with particular emphasis on the relevance of each phenomenon discussed therein to the thesis of Minimalist Interfaces.

Chapter 2 explores the interface of the syntax with the Lexicon in the Lexicalist sense. The empirical domain on which I base my investigation is a curious asymmetry between nominal and verbal reduplication in Indonesian. A corpus study of four popular newspapers published in Indonesia reveals that verbal derivational affixes have a strong tendency to feed only stem reduplication whereas nominal derivational affixes allow either stem reduplication or stem-affix reduplication. I show that this new observation is also confirmed by the data I elicited

with one native Indonesian consultant. I show that the stem-internal reduplication pattern as well as the observed asymmetry pose empirical/architectural paradoxes for several well-known variants of the so-called Lexicalist theory as in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c, 1985), Mohanan (1986), and Di Sciullo and Williams (1987). Since the debate between Lexicalist and non-Lexicalist approaches to word formation has quite a long history sometimes coupled with heated rhetoric, I make it clear what specific aspects of these variants of the Lexicalist theory are not tenable with respect to the facts in Indonesian reduplication. Based on this result, I propose a morphosyntactic analysis of Indonesian reduplication within the uni-modular syntactic approach to word formation as in Distributed Morphology (Halle & Marantz 1993, 1994; Marantz 1997; Harley & Noyer 1999; Embick & Noyer 2007). I show that the observed facts receive a straightforward account under the post-syntactic bottom-up cyclic insertion of phonological features once we take seriously a hierarchical arrangement of morphosyntactic features and the underlying syntactic category of input stems for reduplication. The architecture of the syntax–morphology interface that emerges from this investigation is one where there is in fact no such interface in the strict sense, because the current analysis indicates that morphological structure is itself syntactic structure unless otherwise motivated (Harley & Noyer 1999; Embick & Noyer 2007). This conclusion, I argue, is optimal under the most restrictive view of the Minimalist Interface guideline, namely, that language must minimally interface with the A-P and C-I systems, but not with any other language-internal modules such as the Lexicon in the Lexicalist sense, unless empirical evidence suggests otherwise.

With our results in Chapter 2 as background, Chapter 3 conducts a theoretical exploration of the interface between syntax and the (now post-syntactic) morphology within *Phase Theory* (Chomsky 2000, 2001, 2004, 2007, 2008) with a detailed case study of the voice-movement interaction in Indonesian and Javanese. I start by reviewing the descriptive generalization, first made by Cole and Hermon (1998), that, in Malay/Indonesian, the movement of an NP across the active voice marker *meN-* results in the obligatory deletion of the active voice marker, and by showing that this generalization also holds for Kendal Javanese in terms of the deletion of the nasal active voice prefix. I propose that the obligatory deletion of the active voice morphology in Indonesian and Javanese is the reflex at the syntax-external phonological component of the Spec-Head D-feature checking relation that holds between the moved NP and its local *v* head at the *v*P phase. To the extent that this analysis is tenable, the current investigation provides important evidence for the role of the *v*P phase at the syntax–morphology interface. Though numerous types of evidence have been accumulated in recent generative research for successive cyclic movement through intermediate CPs, evidence supporting

comparable movement through intermediate *v*Ps has proven difficult to come by. In this regard, contributions from under-represented languages such as Indonesian and Javanese are highly significant. I conclude this chapter by making it clear how the results in this chapter support the idea that the way the phonological component conducts the deletion of active voice morphology tells us a lot about the way syntactic derivation proceeds in tandem with its neighboring interface. The investigation conducted here, then, leads to the conclusion, expected under the Minimalist Interfaces thesis, that the phonological interface is endowed with a handful of domain-specific operations, but can apply them only within the range of options set by universal principles of syntax.

Chapter 4 explores the interface between syntax and phonology through detailed investigation of the P-stranding pattern and sluicing in Indonesian. I present novel evidence that the P-stranding pattern in Indonesian presents a counterexample to Merchant's (2001) Preposition-Stranding Generalization as a language that disallows P-stranding under *wh*-questions but allows P-stranding under sluicing. I also present arguments against potential analyses based on clefts, resumption, and (PF) P-drop that would make the Indonesian pattern consistent with the generalization. I argue that this apparently special pattern is naturally accounted for under the recent idea of repair by ellipsis. Specifically, I propose that the failure of percolation of the *wh*-feature is repaired by deletion in the PF, and provide independent evidence for this analysis from P-stranding under pseudogapping. I also show that P-stranding in French and German *cannot* be repaired since the violation in question is a syntactic one related to syntactic incorporation. Our investigation suggests a bifurcated view of violations (Boeckx & Lasnik 2006): representational violations pertaining to the syntax–phonology interface can be repaired whereas derivational violations pertaining to the syntactic computation cannot. A much broader implication of my analysis, relevant to the minimalist interface guideline, is that syntax is not entirely crash-proof (Frampton & Gutmann 1999, 2002); syntax could make a variety of "mistakes", so to speak, whose severity for linguistic computation varies depending on the parametrically defined curve set by a particular language. I also address the question why only certain syntactic failures such as the failure of the [+wh] feature percolation can be repaired, but not other failures such as the failure of the D-to-P incorporation and argue that this bifurcation directly follows from the very architecture of the grammar assumed within the Minimalist Program.

Chapter 5 turns to the investigation of the interface between syntax and semantics with a case study in the denotation and morphosyntax of bare nominals in Indonesian and Javanese. Chierchia (1998a, b) proposes the *Nominal Mapping Parameter* as a semantic parameter concerning whether a particular language allows its bare nominals to denote the name of a kind, the name of a property, or

both in the mapping between syntax and semantics. One attractive feature of this hypothesis lies in the idea that the setting of this parameter exhaustively determines the morphosyntactic profile of nominals in a given language and that all languages should be characterized as falling within one of the three language types. My starting point in this chapter is to review Chung's (2000) arguments that Indonesian do not fit into any one of these three languages under Chierchia's semantic typology and to show that the same holds for Javanese. This is an important result since Chierchia's discussion concentrates on detailed comparison of relatively well-studied languages such as English, Italian, and Chinese. Following the standard assumption within the Principles-&-Parameters approach to linguistic variation (Borer 1984; Fukui 1986, 1995; Chomsky 1986a, 1995) that the setting of the values of a parameter is localized in the inventory of functional categories, I propose a relativized parametric theory of the denotation of bare nominals that draws on two independently motivated ideas: (a) how high a language can allow its nominal functional superstructure to grow (Grimshaw 1991, 2005; Massam 2001; Guilfoyle & Noonan 1992; Vainikka 1993/1994) and (b) what possible values the Num head can take in a given language (Carson 2000; Chung 2000). I show that this analysis provides a principled explanation for the crosslinguistically variant semantic and morphosyntactic profile of bare nominals in not only in Indonesian and Javanese but also in other languages such as English, Italian and Japanese. To the extent that the current analysis holds, we have no need to make recourse to rigid one-to-one mapping principles; its effects directly follow from the complexity of nominal functional structures and the set of possible values for the Num head parametrically set in each language. This result, therefore, provides substance to the idea encoded in the thesis of the Minimalist Interface, namely, that the syntax-external semantic component applies a restricted range of domain-specific operations to the output of syntax but only within the realm of general syntactic constraints.

Chapter 6 summarizes the high points of the contents of my investigation in the previous chapters and draws potentially significant conclusions from the investigations above on the interface between syntax and its neighboring linguistic interfaces.

CHAPTER 2

Reduplication asymmetries at the syntax–lexicon interface

1. Introduction

In this chapter, I explore issues revolving around the syntax–lexicon interface with a case study in reduplication in Indonesian. I couch the examination of the validity of the thesis of Minimalist Interface within the long-standing debate in a contemporary linguistic theory between lexicalist and non-lexicalist theories of the lexicon–syntax interface. I argue that the above thesis leads us to the non-lexicalist view as upheld in the recent morphosyntactic framework of Distributed Morphology (Halle & Marantz 1993, 1994) that words are not a triplet of sound, meaning, and their correspondence, as commonly assumed, but rather nothing but the morpho-phonological output of the complex objects created by syntactic derivation. According to this view, the syntactic derivation constructs whatever objects it can, based on a particular arrangement of morpho-syntactic features available in a given language; what the syntax-external phonological component can do is to assign a language-particular surface realization to this output object post-syntactically. In this chapter, I argue that this view is correct by showing that reduplication in Indonesian is sensitive to syntactic structure, not just morphemes, thereby providing empirical support for the framework of Distributed Morphology.

With the phonological feature assignment being purely interpretive and post-syntactic and governed by the way syntactic computation unfolds, the minimalist interface guideline leads us to another claim that there is no such thing as the Lexicon in the traditional sense in which a word is constructed by processes different from syntactic combinatorial processes and assigned a meaning and sound pre-syntactically. I show that this non-lexicalist approach to the lexicon–syntax interface provides a natural account of reduplication asymmetries in Indonesian. At the same time, I show that several variants of the lexicalist theory have difficulties in accounting for the attested pattern of reduplication in Indonesian precisely because they postulate the Lexicon as a pre-syntactic/autonomous generative component. This result, therefore, provides a morphological piece of evidence for the non-lexicalist view of the lexicon–syntax interface entailed by the thesis of Minimalist Interfaces.

A corpus survey of four popular newspapers published in Indonesia reveals a curious asymmetry between nominal and verbal reduplication that has not been reported in the literature on Indonesian morphology: nominal stems allow both stem and stem-affix reduplication whereas verbal stems allow only stem reduplication. I show how this asymmetry as well as the word-internal stem reduplication pattern pose non-trivial empirical and architectural difficulties for several versions of the lexicalist theory as presented in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c, 1985), Mohanan (1986), Di Sciullo and Williams (1987), and Williams (2007).[1] I show that these difficulties arise as the artifact of traditional theories of the syntax–lexicon interface as in the lexicalist theory that postulates the lexicon as an autonomous pre-syntactic generative component or system whose relation with respect to syntax is atomic and asymmetric. The thesis of Minimalist Interface, by contrast, leads us to the alternative view that words as well as sentences are objects created by the sole generative syntactic component. Given the role of the morpho-phonological component as subservient to the needs of syntax, the same thesis also entails that morpho-phonology is located after syntax and assigns interpretation to the objects created by syntax. These two views amount to the core claims that have been independently made in the morpho-syntactic theory of Distributed Morphology (Halle & Marantz 1993, 1994; Marantz 1997; Harley & Noyer 1999; Embick & Noyer 2007). I show that this conception of the lexicon–syntax interface provides a principled explanation

1. A similar problem has been independently noted in Yaqui reduplication by Haugen and Harley (2006), though with certain properties that distinguish it from the Indonesian reduplication pattern to be discussed in this chapter. Haugen and Harley observe that, in Yaqui, the inflectional process of reduplication targets the head of the verbal head of an N + V compound rather than the compound itself, as shown in (ia–c).

(i) Word-internal head-reduplication in Yaqui

a.	kuta-siute stick-tear	'wood-split'	→	kuta-siu-siute stick-RED-tear
b.	chit-wat-te saliva-throw-INTR	'spitting'	→	chit-wat-wat-te saliva-RED-throw-INTR
c.	hiavih-muuke breathe-die	'gasping'	→	hiavih-mu-muuke breathe-RED-die

(Haugen and Harley 2006: 6, 7)

They argue that this word-internal reduplication pattern presents evidence against lexicalist views of the lexicon–syntax interface as in Di Sciullo and Williams (1987) and Anderson (1982, 1992) and present a new analysis of this pattern within the framework of Distributed Morphology.

of the reduplication asymmetry and the word-internal reduplication pattern in Indonesian; these facts are straightforwardly derived as a natural consequence of a particular hierarchical arrangement of morphosyntactic features, including Asp and Num, which is independently motivated by the semantic/selectional properties of certain derivational affixes such as *ber-* and *-an*. This result, therefore, provides strong evidence against the traditional lexicalist architecture, and, at the same time, argues in favor of more recent non-lexicalist theories of the syntax–lexicon interface as in Distributed Morphology that attempt to locate all types of word formation within the sole realm of the syntactic derivation. Accordingly, I construe this result as further empirical evidence for the minimalist interface thesis that the syntax-external interface component is a fundamentally interpretive system whose role is to assign whatever interpretation it can to the outputs delivered by the universal syntactic computation.

The present chapter is organized in the following manner. In the next section, I provide an overview of the so-called lexicalist theory in the generative tradition and compare its grammatical architecture with more recent, non-lexicalist theories of the lexicon–syntax interaction as in Distributed Morphology. I highlight one primary difference between the two theories concerning the way the lexicon interacts with the syntax. Lexicalist theories predict that no "lexical" processes, defined along a variety of dimensions, can follow syntactic combinatorial processes such as Merge and Move (Chomsky 1995) due to their postulation of the lexicon as a pre-syntactic generative component. In contrast, non-lexicalist theories predict that there is no inherent ordering between the two types of operations because they do not posit such a component, relegating the roles of the lexicon to the sole generative syntactic component. This difference becomes important in later sections. In Section 3, I report the results of a corpus survey of four popular newspapers in Indonesian. The most important among them is my new finding initially made by the pilot study in Sato and McDonnell (in press) that there is an asymmetry between nominal and verbal reduplication in Indonesian, namely, that derivational nominal affixes are productive in reduplicating both the stem-affix combination and the stem alone whereas derivational verbal affixes allow stem reduplication, but never stem-affix reduplication. In the next two sections, I consider implications of this asymmetry for the proper theory of the syntax–lexicon interface. In Section 4, I show that this asymmetry as well as the word-internal reduplication pattern poses non-trivial architectural/empirical difficulties for several, well-known versions of the lexicalist theory as in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c, 1985), Mohanan (1986), Di Sciullo and Williams (1987), and Williams (2007). Based on this consideration, I show, in Section 5, that the two observations concerning reduplication in Indoensian can be given a straightforward account under non-lexicalist, morpho-syntactic theories of the

syntax–lexicon interface as in Distributed Morphology if we take into account a particular hierarchical arrangement of certain morphosyntactic features such as Asp and Num as well as the underlying syntactic category of input stems for reduplication. In Section 6, I provide a summary of the contents of this chapter and discuss their implications for the proper theory of the syntax–lexicon interface within the context of the minimalist interface guideline.

2. Lexicalist vs. non-lexicalist theories

In this section, I compare two competing theories of the syntax–lexicon interface, restricting attention to the debate within the framework of generative grammar: lexicalist theories and non-lexicalist theories.

2.1 Lexicalist theories

In this subsection, I introduce the main claims of the lexicalist theory. I show that the most important theoretical tenet of this hypothesis for the purposes of this chapter is that the lexicon is postulated as an autonomous generative component prior to the syntax that is responsible for certain morphologically derived complex objects that are identified along several dimensions.

The theory of the syntax–lexicon interface most often termed the *Lexicalist Hypothesis* (Chomsky 1970, 1993, 1995; Lieber 1980; Williams 1981, 2007; Anderson 1982, 1992; Farmer 1982; Lapointe 1980, 1981; Jensen & Stong-Jensen 1984; Di Sciullo & Williams 1987; Pesetsky 1979; Kiparsky 1982a, b, c, 1985; Mohanan 1986) claims that (a) there are two independent generative components for the formation of words and phrases and that (b) there is a strict division of labor between the two components. Under this traditional architecture of the lexicon–syntax interaction, the products of the operations in the lexical component serve as atomic indivisible units that syntactic processes operate on as terminal nodes. As a result, the lexicalist theory adopts one or the other version of the so-called *Lexical Integrity Hypothesis*, according to which principles of syntax are not operative in generating the structure of words, the products of the lexical component. This hybrid approach to word formation stems primarily from the time-honored observation that "words" are somehow different from "phrases" along several (somewhat unclear) dimensions, including semantic and phonological idiosyncrasies/compositionality, gaps/productivity, and derivation/inflection. As a natural consequence of the strict division of labor between the lexicon and syntax, under this lexicalist archicture of grammar, there is no reason to expect that the interface of

the syntax and the lexicon is direct; rather, the interface between the two components may well be opaque.

Under the standard interpretation of the history of the theories of the lexicon–syntax interface from the early 1970s to the present within the framework of generative grammar, the Lexicalist Hypothesis comes in two varieties, *strong* and *weak* versions. The strong version of the Lexicalist Hypothesis, represented by work as in Lieber (1980), Lapointe (1980, 1981), Williams (1981), Farmer (1982), Pesetsky (1979), Kiparsky (1982a, b, c, 1985), Mohanan (1986), Di Sciullo and Williams (1987) and Chomsky (1993, 1995), holds that all word formation processes occur in the pre-syntactic lexical component. The weak version of the Lexicalist Hypothesis, which has been most often associated with Chomsky (1970) ("Remark on Nominalizations") and Anderson (1982, 1992) in the literature, maintains that certain (regular, productive) word formation processes occur in the syntax whereas other (irregular, non-productive) processes occur in the pre-syntactic lexicon in a way that is conditioned by a variety of criteria, including productivity, derivation vs. inflection, and semantic and/or morphological idiosyncrasies. This is one interpretation of Chomsky's position, for example, that by Spencer (1991):

(1) Spencer's (1991: 69) interpretation of Chomsky's (1970) work

"Chomsky argued that transformations should capture regular correspondences between linguistic form, and that idiosyncratic information belong in the lexicon … derived nominalizations are morphologically, syntactically and semantically idiosyncratic…"

Against this interpretation of Chomsky's work as the birthplace of the (weak) lexicalist theory, Marantz (1997) claims that Chomsky actually argued against a lexicalist treatment of derived nominalizations by showing that such a treatment needs to stipulate a uniform pattern concerning the unacceptability of the transitive use of internally caused change of state predicates (Levin & Rappaport-Hovav 1995) such as *growth* (as in **John's growth of tomatoes*). In contrast, this pattern would be naturally explained by the lack of (a certain type of) *v* in a syntactic approach to word formation. In this chapter, I follow Spencer's interpretation of Chomsky's work for the purposes of discussion.

Scholars working within the Minimalist Program (that do not adopt the theory of Distributed Morphology; see Section 2.2) seem to assume the strong version of the hypothesis as defined above, essentially following the idea of Chomsky (1993, 1995) that syntax selects *fully inflected lexical items* from the Numeration and combines them by the recursive process of Merge. Within the morphological research, however, the lexicalist hypothesis is split into the weak

and strong versions as defined above. Non-Chomskyan declarative frameworks, including Lexical Functional Grammar (Kaplan & Bresnan 1982; Bresnan 1982), Head-Driven Phrase Structure Grammar (Pollard & Sag 1994) and Construction Grammar (Goldberg 1995, 2006), all adopt what can be termed "Hyper-Lexicalism", according to which *all* operations for word and phrasal formation occur in the lexical component.[2]

Given below are some definitions of the Lexicalist Hypothesis from the literature.

(2) The Generalized Lexical Hypothesis (Lapointe 1981: 125)

"No syntactic rule can refer to an element of morphological structure where element of morphological structure here refers to any morphological feature, any morphological category or any element dominated by such a category."

(3) The Thesis of the Atomicity of Words (Di Sciullo & Williams 1987: 48, 49)

Although syntactic rules can access the categorial status and argument structure of a lexical item, they will never depend on how that categorial status or argument structure was arrived at through morphological derivation or on the internal constituency of words. The rules of syntax can see that a word has such and such properties, but they cannot see how it came to have those properties.…Words are "atomic" at the level of phrasal syntax and phrasal semantics. The words have "features," or properties, but these features have no structure, and the relation of these features to the internal composition of word cannot be relevant in syntax.

(4) The Lexical Integrity Principle (Bresnan & Mchombo 1995: 181, 182)

…words are built out of different structural elements and by different principles of composition than syntactic phrases. Specifically, the morphological constituents of words are lexical and sublexical categories-stems and affixes-while the syntactic constituents of phrases have words as the minimal, unanalyzable units; and syntactic ordering principles do not apply to morphemic structures. As a result, morphemic order is fixed, even when syntactic word order is free; the directionality of 'headedness' of sublexical structures may differ from supralexical structures; and the internal structure of words is opaque to certain syntactic processes.

Although the precise claims about the lexicon–syntax interaction vary from author to author within the lexicalist researchers, the essence of the Lexicalist Hypothesis remains the same, namely, that (a) there are two independent components, the Lexicon and syntax, and that (b) the type of primitives and processes involved in each component are distinct, with the processes of one module being not operative to the structures or operations of the other.

2. As pointed out to me by Andrew Carnie (personal communication).

Most commonly, the Lexicalist Hypothesis is implemented in a generative model of grammar (Chomsky 1981, 1986a, 1993, 1995), as shown in Figure 1.

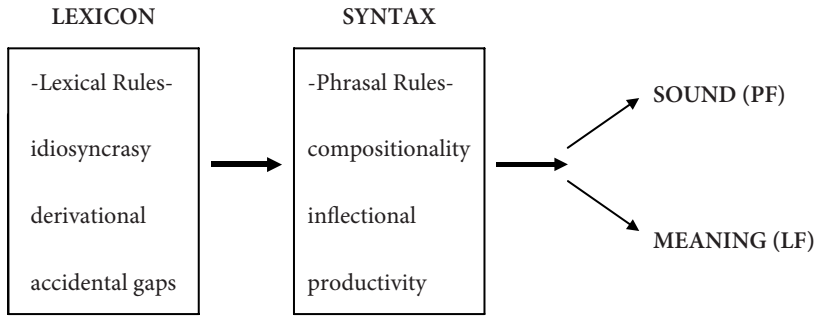


Figure 1. The Lexicalist Hypothesis Embedded within the Government-and-Binding Model

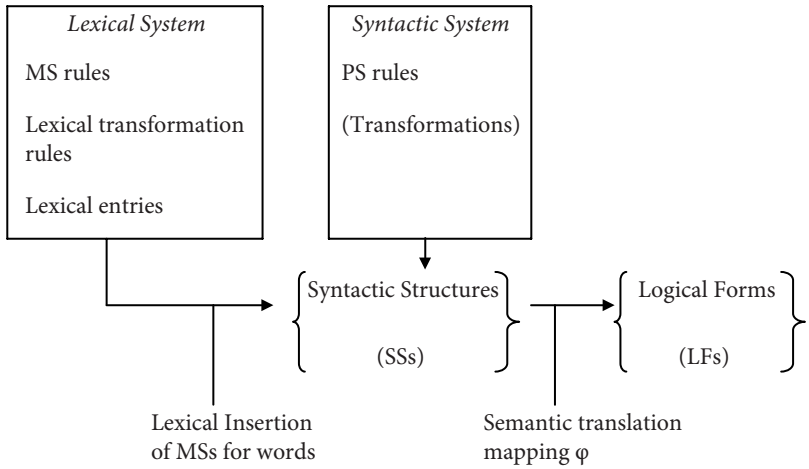
This architecture entails that the lexical word-building component is sequentially ordered prior to D-structure, the interface of the Lexicon and syntax. In other words, the hypothesis endorses a particular sequence of word formation, namely, that all word-building rules in the Lexicon should precede all phrase-building rules in the syntax. Rules in the Lexicon are associated with properties such as semantic/phonological idiosyncrasies, derivation and accidental gaps. Rules in the syntax have the complement of these properties such as semantic/phonological compositionality, inflection and productivity. This point is also clarified by Borer's (1998) remark:

(5) Borer's (1998) Statement of Chomsky's (1970) Weak Lexicalist Hypothesis

The way in which L[exical] I[ntegirty] H[ypothesis] is enforced in many of these models is by assuming that the W[ord] F[ormation] component, as a block of rules, is ordered with respect to the syntax. The WF component and the syntax thus interact only in one fixed point. Such ordering entails that the output of one system is the input to the other. This notion of the autonomy of the syntax and the WF component, and the restricted interaction between them, thus mimics the notion of autonomy developed for the interaction between the syntax and the phonology, where it is the output of the former which interacts with the latter.

(Borer 1998: 152, 153)

Lapointe (1981) is one example of work in the lexicalist literature that explicitly mentions the relative sequential ordering of lexical processes with respect to syntactic processes. After the quote given in (2) above, Lapointe (p. 125) continues as: 'This framework has the general organization outlined in Figure 1.' The relevant figure is reproduced in Figure 2.



(Lapointe 1981: 126)

Figure 2. Organization and Interactions of the Lexical and Syntactic Systems with the Lexical Insertion and Semantic Translation Mappings in the Grammatical Theory of Lapointe (1980)

In this architecture, the Lexical System is located prior to the Syntactic System. Based on this kind of remark together with the generative architecture of the generative grammar (e.g. the Government-and-Binding/Minimalist Program of Chomsky 1981, 1986a, 1995) within which the lexicalist hypothesis has been commonly couched, it seems reasonable to make a prediction that lexical processes cannot follow syntactic processes under any type of the lexicalist theory of the syntax–lexicon interface that is tied with the generative model of grammar in which a D-structure/Numeration serves as the interface between the lexicon and syntax.

This characterization is also supported in light of the following consideration. It has been commonly assumed within the lexicalist literature (see Di Sciullo & Williams 1987 and Bresnan & Mchombo 1995; Chomsky 1981, 1986a, 1993, 1995) that principles in the lexicon operate only on zero-level categories that serve as atomic unanalyzable units which the syntactic derivation uses to create phrasal-level complex objects; in other words, the output of the lexicon seems to be the input for the syntax. It cannot be the case that the output of syntax becomes the input for the lexical processes in the lexicalist sense because this would mean that the lexicon deals with non-zero-level categories, contrary to what lexicalists generally have agreed upon. Therefore, in any lexicalist model of grammar that allows the interaction of the lexicon and syntax (in whatever constrained manner it may be), syntax cannot do its job unless the lexicon first provides atomic units. This point is in fact agreed upon by the lexicalists; for example, Williams (2007: 351)

notes that "the channel of communication [between the word system and the phrasal system-YS] is asymmetrical, by virtue of the fact that phrases are made out of words, but not vice versa." Based on this consideration, I assume in the rest of this chapter that, under the lexicalist hypothesis, the lexical component logically precedes the syntactic component, hence, that processes in the lexicon can never follow processes in the syntax.

2.2 Non-lexicalist theories

The morphosyntactic framework of Distributed Morphology (Halle & Marantz 1993, 1994; Marantz 1997; Harley & Noyer 1999; Embick & Noyer 2007) claims that there is a single generative component – syntax – that assembles 'words' as well as sentences. This theory of word formation is in direct contrast to the Lexicalist Hypothesis introduced above, which posits two generative components – lexicon and syntax – for word formation. The grammatical architecture of this non-lexicalist framework is given in Figure 3.

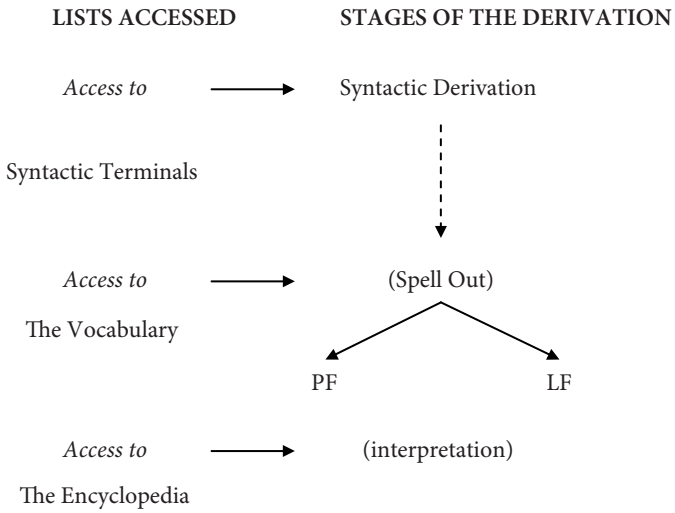


Figure 3. The Architecture of Distributed Morphology (from Embick & Noyer 2007: 301)

Figure 3 makes it clear that, within the theory of Distributed Morphology, information that in other theories is assumed to be solely included in the pre-syntactic lexical component is "distributed" across several components of the grammar: syntax, post-syntactic vocabulary insertion, and the Encyclopedia. The primitive elements in Distributed Morphology that syntax manipulates come in two types. One type is roots, which are atomic unanalyzable elements; the other

type is functional heads such as *n/v/a* as well as other ordinally postulated heads such as Asp, Tense, C, Num, etc (*l-morphemes* and *f-morphemes* in the sense of Harley & Noyer 1999, 2000 and *roots* and *abstract morphemes* in Embick & Noyer 2007). Roots are considered acategorial; their syntactic category is contextually specified by combining with category-defining functional heads such as *v, n,* and *a*. For example, the root √*destr* is realized as the noun *destruction* under the nominalizating environment ([$_{n\text{P}}$ *n* [√*destr*]]); it is realized as the verb *destroy* under the verbalizing environment ([$_{v\text{P}}$ *v* [√*destr*]]); it is realized as the adjective *destructive* in the adjectivalizing environment ([$_{a\text{P}}$ *a* [√*destr*]]) (Marantz 1997, 2008; cf. Chomsky 1970). It is claimed within the Distributed Morphology that phonological features are assigned to abstract morphemes (as well as roots under certain views) post-syntactically. The mechanism to assign this feature is Vocabulary Insertion in the technical sense; "the Vocabulary is the list of the phonological exponents of the different abstract morphemes of the language, paired with conditions on insertion. Each such paring of a phonological exponent with information about the grammatical (i.e. syntactic and morphological) context in which the exponent is inserted is called a vocabulary item." (Embick & Noyer 2007: 297). A list of potential candidates compete for the same abstract morpheme position in the morphosynatctic derivation; which candidate is selected as the exponent of that position is determined by the Subset Principle proposed by Halle (1997); see Embick and Noyer (2007: 298, 299) for concise illustrations of how this principle serves to constrain vocabulary insertion. The Encyclopedia, whose role is not directly relevant to the present chapter (though see Section 5), is defined as a component that "lists the special meanings of particular roots, relative to the syntactic context of the roots, within local domains" (Marantz 1997: 204). Thus, the encyclopedic entry for *kick* specifies that it means 'kill' in the environment of "___the bucket" (Harley & Noyer 1999: 4).

Three ingredients of this theory of the syntax–lexicon interface that will become important in the following sections are as follows. First, the framework of Distributed Morphology claims that all types of word formation, including those that would be treated in the pre-syntactic lexical component in the lexicalist theory, are conducted within the sole realm of the syntactic computation in much the same way as sentences and phrases are. For this reason, there is no sense in which lexical processes must precede syntactic processes because there is no pre-syntactic generative component in the lexicalist sense in the first place; rather, cases in which "lexical" processes in the lexicalist sense follow or are interleaved with syntactic processes are predicted to be possible. Second, this framework claims that phonological features for a morphosyntactic head are inserted post-syntactically with reference to syntactic environments that surround the head, as illustrated above in the *destroy/destruction/destructive* alternation. This second claim is a special

case of the more general claim, entailed by the thesis of the Minimalist Interface, that the syntax-external phonological component is interpretive, assigning a language-particular interpretation to the output of the syntax in the way that syntax demands. Accordingly, the thesis does not go well with the lexicalist theory, under which a word constructed in the lexicon is inserted into a terminal node in syntax as a triplet of sound, meaning and their correspondence. In this sense, Distributed Morphology provides a theoretical model that meshes nicely with the expectation of the minimalist interface defended in this volume. Finally, in contrast to the lexicalist theory of the lexicon–syntax interface, the theory of Distributed Morphology claims that the syntax–lexicon interface is direct. To borrow the phrase from Embick and Noyer (2007: 302) , "there is no syntax/morphology 'interface' because "words and phrases are assembled by the same generative system, and there is thus no sense in which words must 'interface' with the syntax; rather they are derived by the rules of syntax." This view of the syntax–lexicon interface, thus, allows us to derive the effects of the so-called Mirror Principle of Baker (1985), which stipulates a condition on how syntactic and morphological structures relate to one another, as the automatic consequence of the architecture of the theory.

3. Asymmetries between nominal and verbal reduplication in Indonesian

To find out existing patterns in nominal and verbal reduplication in Indonesian, Sato and McDonnell (in press) conducted a corpus survey of four popular newspapers published in Indonesia. The present corpus survey contains approximately 160, 000 words, taken from the archives of the following four newspapers: *Tempointeraktif* (www.tempointeraktif.com), *Suarapembaruan* (www.suarapembaruan.com), *Mediaindo* (www.mediaindo.co.id), and *Kompas* (www.kompas.com). The result of this survey is shown in Table 1. I have included here the results concerning derivational affixes; see Sato and McDonnell (in press) for results that cover inflectional affixes.

Table 1 reveals that there is a curious asymmetry between nominal and verbal reduplication in Indonesian. As is clear from this survey, derivational verbal affixes such as *ber-*, *meN-*, *di-* and *ter-* allow only stem reduplication. By contrast, derivational nominal affixes behave differently from verbal affixes in that they potentially allow both types of reduplication. Specifically, *peN- peN-an,* and *ke-an* have strong tendency to feed stem-affix reduplication, whereas *-an* and *per-an* allow stem-only and stem-affix reduplication. As is true for the corpus studies in general, it is difficult to know what forms cannot be produced in Indonesian, though the study

Table 1. The Corpus Survey of Four Popular Newspapers in Indonesia (approx.160, 000 words)

		Stem Reduplication		Stem-Affix Reduplication	
		Total Tokens	**Unique Forms**	**Total Tokens**	**Unique Forms**
No Affix		1014	312	N/A	N/A
Verbal Affixes	*ber-*	89	37	0	0
	meN-	30	23	0	0
	di-	23	20	0	0
	ter-	13	9	0	0
	-an	32	22	19	15
Nominal Affixes	*peN-*	0	0	8	5
	peN-an	0	0	2	2
	per-an	6	2	9	6
	ke-an	1	1	10	8

does provide an indication that the reduplication asymmetry is real.[3] To address this concern, I have conducted grammaticality judgment tasks with one informant to confirm whether the forms not found in the corpus study are actually unacceptable to the native language speaker of Indonesian.

The following examples show that the corpus study in Table 1 reflects the grammatical intuition of the actual speaker. Consider the reduplication pattern found in the verbal prefix *ber-*. Table 1 indicates that this prefix only allows stem-reduplication. This result is confirmed by the contrast in acceptability between (6a–c) and (7a–c).

(6) Stem Reduplication with the Derivational Verbal Prefix *ber-*

a. belit 'twist' → [ber [belit-belit]] 'meander'

b. cakap 'talk' → [ber [cakap-cakap]] 'chat'

c. jalan 'walk → [ber [jalan-jalan]] 'stroll'

(7) Stem-Affix Reduplication with the Derivational Verbal Prefix *ber-*

a. belit 'twist' → *[[ber-belit]-[ber-belit]] 'meander'

b. cakap 'talk' → *[[ber-cakap]-[ber-cakap]] 'talk'

c. jalan 'walk' → *[[ber-jalan]-[ber-jalan]] 'stroll'

(6a–c) show that the prefix *ber-* allows stem reduplication. (7a–c) show that stem-affix reduplication is unacceptable for this prefix. This contrast, therefore, shows

3. As pointed out by an anonymous *Morphology* reviewer.

that the results given in Table 1 are real. A similar argument can be made for the observation made in Table 1 that derivational nominal affixes allow both stem and stem-affix reduplication. To take the suffix *-an*, we have seen above that this suffix allows the two types of reduplication. That this is correct is evidenced by the grammaticality of both examples in (8a–c) and (9a–c) below.

(8) Stem Reduplication with the Derivational Nominal Suffix *-an*

a.	sayur	'vegetable'	→	[[sayur-sayur]-an]]	'many types of vegetables'
			→	*[[sayur-an]-[sayur-an]]	
b.	buah	'fruit'	→	[[buah-buah]-an]]	'many types of fruit'
			→	*[[buah-an]-[buah-an]]	
c.	biji	'seed'	→	[[biji-biji]-an]]	'many types of seeds'
			→	*[[biji-an]-[biji-an]]	

(9) Stem-Affix Reduplication with the Derivational Nominal Suffix *-an*

a.	pikir	'think'	→	[[pikir-an]-[pikir-an]]	'thoughts'
			→	*[[pikir-pikir]-an]]	
b.	tulis	'write'	→	[[tulis-an]-[tulis-an]]	'writings'
			→	*[[tulis-tulis]-an]]	
c.	masuk	'enter'	→	[[masuk-an]-[masuk-an]]	'inputs'
			→	*[[masuk-masuk]-an]]	

(8a–c) show that the nominal suffix *-an* allows stem reduplication while (9a–c) show that the same suffix can also feed stem-affix reduplication. It is important to observe that the choice between the two forms of reduplication is not entirely free with this suffix; rather, the choice is affected by the type of stem that it is identified with. Thus, when this suffix is combined with nominal stems as in (8a–c), it only allows stem-reduplication. On the contrary, when this suffix is combined with verbal stems as in (9a–c), it only allows stem-affix reduplication. Thus, it is not the case that a single nominal affix allows both types of reduplication; it allows both types when an appropriate class of elements combines with a particular nominal suffix. We can observe this effect in the behavior of affixes such as *peN-*, *peN-an*, and *ke-an*, whose dominant reduplication pattern is stem-affix reduplication, as shown in the results reported in Table 1. This point will become important in Section 5.

4. Reduplication asymmetries in Indonesian and lexicalist theories

The purpose of this section is to see whether the lexicalist theory might be able to accommodate the existing reduplication patterns in Indonesian. I show that the nominal vs. verbal reduplication asymmetry and the existence of a

word-internal reduplication pattern that targets the non-edge of a complex stem cannot be accounted for by several versions of the lexicalist theory as in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c, 1985), Mohanan (1986), Di Sciullo and Williams (1987), and Williams (2007).

4.1 Chomsky's (1970) weak lexicalist hypothesis

Chomsky (1970) proposes, based on his examination of several syntactic and semantic contrasts between derived nominalization (*destroy* → *destruction*) and genrundive transformations (*destroy* → *destroying)*, that non-productive, irregular processes take place in the pre-syntactic lexical component while productive, regular processes take place in the syntactic/transformational component. This separation of two types of complex word formation in terms of their regularity/productivity has been widely taken in the generative literature to define the classical version of the weak lexicalist theory (though, recall our earlier discussion of Marantz 1997). For example, Fabb (1984) considers productivity as the defining criteria with which to distinguish lexical and syntactic word formation.

If we adopt Chomsky's version of the lexicalist hypothesis, *ber-/-an* affixation as observed in examples like (6–9) counts more as a lexical/pre-syntactic process for the following reasons. First, the literature on the morphology of Indonesian as in MacDonald (1976), Sneddon (1996), and others points out that the verbal prefix *ber-* may attach to nominal, numeral, and verbal bases that yield unpredictable/irregular semantic outcomes. First, predicates consisting of this prefix and a nominal base refer to a customary possession of, or to characterization by the referent of the noun, as shown in (10a, b). This type of prefixed predicate can also be used to refer to the act of producing the reference of the noun or making use of it, as shown in (10c, d). If the nominal base refers to a profession or way of life of an animate being, the derived predicate refers to the property of making a living with that possession or by that way of life, as shown in (10e, f).

(10) *ber*-prefixation: Input = Noun/Output = Verb

a.	anak	'child'	→	[ber [anak]]	'have children'
b	kaki	'foot'	→	[ber [kaki]]	'have feet'
c.	kokok	'cackle'	→	[ber [kokok]]	'produce a cackle'
d.	sepeda	'bicycle'	→	[ber [sepeda]]	'use a bicycle'
e.	kuli	'coolie'	→	[ber [kuli]]	'work as a coolie'
f.	tukang	'artisan'	→	[ber [tukang]]	'work as an artisan'

(MacDonald 1976: 44, 45)

Second, the prefix can combine with a numeral, unreduplicated or reduplicated, to derive the complex noun meaning 'forming a group of' and 'in groups of', as shown in (11a–c).

(11) *ber*-prefixation: Input = Numeral/Output = Numeral

a. dua 'two' → [ber [dua]] 'two together'

b. ratus 'hundred' → [ber [ratus]] 'in hundreds'

c. karung 'sack' → [ber [karung]] 'in sackfuls' (MacDonald 1976: 47)

Finally, the prefix may attach to verbal bases to create intransitive verbs; it works as a verbalizer of bases that otherwise do not occur alone, as shown in (12a, b). If the root is reduplicated, an additional meaning of variety, repetition or lack of purpose is added, as in (12c, d).

(12) *ber*-prefixation: Input = Verb/Output= Verb

a. -henti- 'stop' → [ber [henti]] 'come to a stop'

b. pikir 'think' → [ber [pikir]] 'be cogitating'

c. belit 'twist' → [ber [belit-belit]] 'meander'

d. cakap 'talk' → [ber [cakap-cakap]] 'have a chat'

(MacDonald 1976: 47, 48)

The function of the derivational nominal suffix *-an* is no less complex. It serves as a nominalizer when it attaches to verbal bases. It serves as a kind of classifier, meaning "types of", as reflected in the English translations in (8a–c) when it attaches to nominal bases. These semantic considerations, therefore, suggest that the two affixes constitute an irregular process and that the affixation involved is a lexical/pre-syntactic process in Chomsky's sense. In Section 5, however, I show that the suffix *-an* is polysemous, but with its dual functions being determined by different attachment sites at which it merges with two types of complements (NumP vs. *v*P). By contrast, reduplication in Indonesian is a fully productive, hence syntactic process under Chomsky's productivity-based division of two types of word formation. Reduplication of any countable noun produces a grammatical form that is specifically plural. Thus, reduplication in Indonesian is a productive realization of the Num head in the nominal domain. On the other hand, it is not apparently as clear whether the corresponding argument can be made for the verbal domain to show that verbal reduplication is really a productive process. However, two considerations show that it is more like a syntactic process rather than a lexical process in the lexicalist sense. First, the literature on the verbal reduplication in Indonesian as in MacDonald (1976) and Sneddon (1996) notes that reduplication of a verb adds emphasis to an action denoted by the base stem and yields outcomes related to variety, multiplicity, and atelicity. Sneddon (1996) gives a variety of meanings as follows:

(13) The Semantic Effects of Verbal Reduplication

a. With some verbs reduplication gives a connotation of action done in a causal or leisurely way .

Examples: *duduk* 'sit' → *duduk-duduk* 'sit about'

berjalan 'walk' → *berjalan-jalan* 'walk about, go for a stroll'

b. With many verbs reduplication indicates continued action, either an action done over a period of time or an action performed repeatedly.
Example: Bu Yem mengelus-elus rambut anaknya.
Mrs Yem stroked-RED hair child-her
'Mrs.Yem stroked her child's hair.'

c. With some verbs reduplication gives a meaning somewhat different from that of the single form, usually conveying a sense of intensity.
Examples: *menjadi* 'become' → *menjadi-jadi* 'get worse'
meminta 'request' → *meminta-minta* 'beg'

d. Accompanied by *tidak* 'not' reduplication of the verb can indicate that the action has not occurred, usually implying that this is contrary to expectation.
Example: Sudah dua hari Pak Tanto tidak muncul-muncul.
yet two day Mr Tanto NEG turn up-RED
'Mr Tanto has not turned up for two days now.'

(Sneddon 1996: 20)

The semantic effects in (13a–d) are in keeping with the general notion of *plurality/emphasized quantity*, a crosslinguistically attested effect of reduplication, as evidenced by the extensive investigation of the function of reduplication conducted by Moravcsik (1978). Though Moravcsik herself concludes (p. 325) that "no explanatory or predictive generalization about the meanings of reduplicative constructions can be proposed," as Travis (1999, 2003) argues, her extensive crosslinguistic investigation of the functions of reduplication across languages suggests that reduplication has some abstract quantificational function which is diversely instantiated as plural, distributivity, multiple iterative event readings, reciprocals, emphasis, and so on. This argument, thus, suggests that reduplication in Indonesian can be regarded as a syntactic process that relates to quantification. Travis (1999, 2003) also argues, while drawing a clear separation between phonological and syntactic reduplication, that all types of reduplication are underlyingly caused by their surrounding syntactic configurations.

The second argument to support the syntactic nature of the reduplication comes from work on Madurese reduplication made by Davies (1999, 2000). Davies shows that reduplication in this language forces the multiple event reading of a verb based on his examination of reduplicative constructions in Madurese. There seems to be a general agreement in the lexicalist literature, at least tacitly, that the lexicon creates complex words based solely on lexical categories (N, V, A) but never on functional categories (T, C). This assumption is natural because time or event reference must make crucial reference to the rules of sentence formation. The following examples from Indonesian, modeled after the corresponding examples in Madurese provided by Davies (2000: 127–129), show that reduplication of a verb in Indonesian creates a variety of new interpretations unavailable to its

unreduplicated counterpart, such as multiple event readings, interleaved activity readings, and temporally displaced readings.

(14) Reduplication in Indonesian

a. Esti meng-elus(-elus) rambut anak-nya.
Esti AV-stroke-RED hair child-her
'Esti stroked her child's hair many times.'

b. Aini dan Lina me-motong(-motong) kayu selama dua jam
Aini and Lina AV-cut-RED wood for two hours
dan menanam bibit.
and plant seed
'Aini and Lina cut down trees for two hours and planted seeds.'

c. Aini dan Lina men-cubit (*-cubit) adik-nya yang lucu. Aini
Aini and Lina AV-pinch-RED child-their that cute Aini
men-cubit-nya hari Senin, Lina hari Selasa.
AV-pinch-her day Monday Lina day Tuesday
'Aini and Lina pinched their cute sister. Aini did so on Monday and Lina did so on Tuesday.'

(14a) illustrates the multiple event reading whereby the telic event of stroking a child's hair occurred several times. If reduplication does not occur, by contrast, the sentence is ambiguous between the single event reading and the multiple event reading. This event-related property caused by reduplication can also be seen in (14b). Although judgments are subtle, according to my language consultant, (14b) with reduplication allows the interpretation where the event of tree-cutting is interspersed with the event of seed-planting; for example, this sentence is true in the situation where Aini and Lina continued the activity of tree cutting for one hour, then did seed-planting for some time, and then resumed the tree-cutting activity for another hour. This interspersed activity reading is impossible without reduplication. Similarly, the acceptability of (14c) shows that the activity of the reduplicated verb can be spaced over time. For example, (14c) is acceptable with reduplication under the reading where Aini pinched her younger sister on Monday but Lina did so on Tuesday. The acceptability of this example with reduplication is what we predict precisely because the reduplication of a verb feeds multiple event readings. This reading, however, is unacceptable without verbal reduplication.

What is important about these examples is that the availability of these three readings, derived by verbal reduplication, makes crucial reference to the notion of time or event. Again, this reference should not be possible in the lexical component to the extent that the implicit but natural assumption holds, namely, that the lexicalist sense of lexicon does not contain functional elements such as T and C. The readings forced by reduplication in Indonesian, thus, provide

an independent argument for treating Indonesian reduplication as a syntactic/non-lexical process.

With the two facts noted above in mind, consider now whether the examples of stem-reduplication and the nominal vs. verbal reduplication asymmetry might be accounted for under Chomsky's theory. Examples of stem-reduplication as illustrated in (6a–c) and (8a–c) instantiate the word-internal reduplication, namely, that an affix (either *ber-* or *-an*) is attached to the complex stem created by reduplication. In other words, the affixation applies word-internally. This pattern of reduplication poses an inverse ordering problem for Chomsky's version. The formation of stem-reduplicated forms such as *belit-belit* and *sayur-sayur* requires the syntactic process of reduplication because reduplication is a productive process. The *ber-/-an* affixation applies to the stem-reduplicated form to yield the grammatical forms such as [[ber-[belit-belit]] and [[sayur-sayur]-an]]. This ordering should be impossible, however, under the lexicalist architecture of the lexicon–syntax interface because the generation of these forms requires that the syntactic process of reduplication be followed by the lexical/pre-syntactic process of affixation. Furthermore, it seems that Chomsky's variant of the weak lexicalist hypothesis does not have anything to say about why there is an asymmetry between nominal and verbal reduplication in Indonesian. Based on these considerations, I conclude that Chomsky's (1970) version of the weak lexicalist theory has non-trivial architectural and empirical problems in face of the existing reduplication patterns in Indonesian.

4.2 Anderson's (1982, 1992) weak lexicalist theory

Anderson (1982, 1992) develops a different version of the weak lexicalist theory from Chomsky's that does not depend on the somewhat vague notion of productivity. He argues that inflectional morphology is treated in the syntax whereas derivational morphology is treated in the lexicon. He defines the inflectional/syntactic nature of any element as follows:

(15) The Definition of Inflectional Morphology in Anderson (1982, 1992)
Inflectional morphology is what is relevant to syntax. (Anderson 1982: 587)

This definition, thus, allows any affixation that has relevance to syntax such as agreement, tense, event structure to be treated in the syntactic component.[4]

4. As Di Sciullo and Williams (1987) point out, however, this definition does not work in the way Anderson wants it. If the inflectional nature of a particular affix is determined by its relevance to syntax, then almost all affixes could be considered as syntactic, a state of affairs that Anderson does not want. For example, they note (p. 69) that "this definition would seem

This conception of the weak lexicalist theory is particularly problematic in face of the Indonesian reduplication facts. The affixation of *ber-* counts as a lexical process because it does not seem to have syntactic effects such as agreement, tense, and event structure. However, we have seen in Section 3 that reduplication in Indonesian has clearly syntactic outcomes in the form of multiple event readings and discontinuous time-interval reading. This means that reduplication is an inflectional process to be treated in the syntax. Then, the word-internal reduplication pattern illustrated in (6a–c) and (8a–c) should be ungrammatical because the generation of such a pattern requires the application of the syntactic rule to be followed by the application of the lexical rule. Anderson's version of the weak lexicalist theory also has little to say about why the reduplication is asymmetric between nominal and verbal suffixes in Indonesian.

4.3 Kiparsky's (1982a, b, c, 1985)/Mohanan's (1986) Lexical Phonology

The same reduplication asymmetry and the word-internal reduplication pattern also refute one well-known version of the strong lexicalist theory known as *Lexical Phonology* (Kiparsky 1982a, b, c, 1985; Mohanan 1986; see also Pesetsky 1979). This theory maintains that morphology and phonology interact in tandem, with each stratum/cycle governing operations with certain characteristics. Specifically, affixational/inflectional processes with irregular phonological and morphological consequences occur in Stratum 1 while regular inflectional processes with transparent consequences occur in a later Stratum (Stratum 3 in Kiparsky/Stratum 4 in Mohanan). Kiparsky's (1982a) model of the Lexical Phonology is given in Figure 4. See also Mohanan (1986) for a further development of Kiparsky's original model, which I am not going to discuss here.

This model assumes that the word formation rules and the lexical phonological rules are partitioned into an ordered series of levels/strata/cycles. "+boundary" inflectional affixes in Level 1 include the umlaut of *tooth-teeth*, the ablaut of *sing-sang* and other stem-changing morphology whereas "+boundary" derivational affixes include what have been called Level 1 affixes in the Level-Ordering Hypothesis of Siegel (1973) and Allen (1978) such as *-al, -ous,* and *-im,* as in *refusal, pious,* and *impotent*. "# boundary" derivation in Level 2 involves what have

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to consign all nominalizing affixes, such as *-ion*, to inflection because nouns and verbs have different syntactic properties, and the affix makes the difference." Similarly, *ber*-suffixation should be treated as syntactic, contrary to what Anderson's weak lexicalist theory would actually intend, because it creates a related verb from the verbal stem, and the notion of verb is relevant to syntax. The problem is more general. For the purposes of this paper, I maintain the pretense that Anderson's theory would treat *ber*-affixation as lexical in the intended sense.

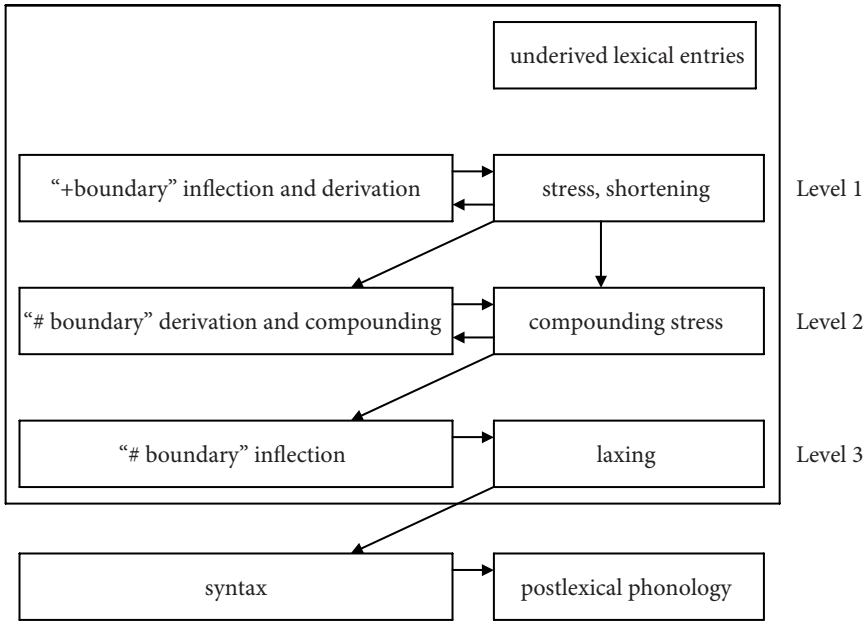


Figure 4. Kiparsky's (1982a) Model of Lexical Phonology in English (Kiparsky 1982a: 133)

been called Level 2 affixes in the Level-Ordering Hypothesis such as *un-*, *-ness*, and *-er*; also compounding, a process of combining two independent root elements such as *black board, nurse shoes*, and *red coat*. Finally, "# boundary" inflection in Level 3 deals with the affixation involving the rest of the regular inflectional affixes such as plural *-s*, and past tense *-ed* in English. To illustrate, consider the derivation of *codifiers*. The base stem *code* is submitted to the phonological rules of Level 1, where the word formation rule attaches the Level 1 affix *-ify* to the stem. This derived stem is then assigned stress as *códify* in the same Level. The resulting object is submitted now to the phonological component of Level 2, in which the word formation rule attaches the agentive suffix *-er* to derive the complex form *codifier*. Finally, when the resulting object enters Level 3, the regular plural formation process applies to this object to yield the final output *codifiers*. In this way, a set of phonological and morphological processes that apply to complex word formation is ordered in a series of strata/cycles. Kiparsky assumes that the derivation of all words should go through all these three Levels, even though relevant phonological and morphological processes might apply vacuously to a given form at any of these three levels. This ordered block of rule application correctly predicts why forms such as **un[ept]* is ill-formed in contrast to *in[ept]*. The prefix *un-* is a Level 2 affix. Thus, *un-* prefixation occurs in Level 2. To create the form **unept*,

however, the bound morpheme *-ept-* must traverse the word formation process in Level 1 that would assign the appropriate Level 1 affix *in-* to the stem to create the grammatical form *inept*.

One theoretical tenet of Lexical Phonology which is important for the purposes of this chapter lies in the *Bracketing Erasure Convention* (Pesetsky 1979). This convention deletes all brackets at the end of each stratum/level of word formation, thus has the effect of rendering access to the previously available internal structure of complex words opaque in later strata/cycles. This convention, thus, derives a lexicon-internal version of the Lexical Integrity Hypothesis defined in Section 2, namely, that word formation processes in Level 2 and 3 cannot look into the morphological makeup of complex morphological objects created by word formation processes in Level 1 and Level 2, respectively. Lexical Phonology, therefore, makes an explicit prediction that no processes in a particular level should be able to apply to a complex object that is derived by word formation processes characteristic of earlier levels. This prediction is clearly falsified by the reduplication pattern attested in Indonesian. We have seen in Section 2.1 that reduplication is a fully productive process. Under Kiparsky's model, this process should be located in Level 3 on a par with the regular inflectional affixes such as plural *-s*, and past tense *-ed*: recall that any countable noun and verb can be input for reduplication just as any countable noun and verbs can be affixed by *-s* and *-ed* in English, respectively (except irregular nouns and verbs, of course). We have also seen in the same section that affixes such as *ber-* and *-an* yield a set of semantic irregularities when attached to a stem. This unpredictable behavior leaves affixation of these pieces in Level 1 on a par with the irregular umlaut and ablaut rules as in *brother-brethren*. Now, to derive the word-internal reduplication pattern as illustrated in (6a–c) and (8a–c) under Kiparsky's model, the Level 1 affixation (*ber*-affixation and *-an* suffixation) must be preceded by the Level 2 inflectional process (reduplication), an ordering that should be impossible in Lexical Phonology due to its central hypothesis that each level/stratum is strictly ordered, hence cannot be traversed. To illustrate the issue at hand with *ber-belit-belit*, the base *belit* is submitted to Level 1, at which the *ber*-prefixation would apply to yield [*ber-belit*]. This complex object is submitted to Level 3, at which reduplication applies to the whole object to create the output [[*ber-belit*]-[*ber-belit*]]. Importantly, this output is ill-formed in Indonesian even though this is the only output that is predicted to be possible under the strict layering of levels in Lexical Phonology.

This type of word-internal reduplication pattern is also problematic for Lexical Phonology in three other respects. First, due to the Bracketing Erasure Convention, Kiparsky's model makes a prediction that reduplication should must target the right or left edge of the whole complex object because at the time this process applies in Level 3, the input transferred from Level 2 enters the Level 3 as an atomic unanalyzable element as the result of the erasure of all word-internal

constituent boundaries. Thus, the existence of forms such as [*ber*-[*belit-belit*]] shows that reduplication targets part of the complex stem rather than the left or right edge of it. Second, Kiparsky assumes that the output of each level is itself a full-fledged lexical item. However, the ill-formedness of forms such as **belit-belit* shows that this is not always the case. Finally, as in Chomsky's (1970) weak lexicalist theory, Kiparsky's theory also does not seem to provide us with any way of explaining why the asymmetry between nominal and verbal reduplication observed in Section 2 obtains in Indonesian.

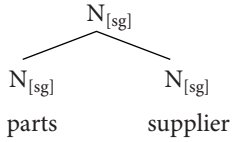
4.4 Di Sciullo and Williams' (1987)/Williams' (2007) strong lexicalist theory

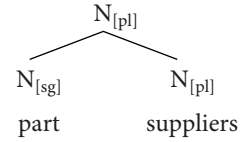
Di Sciullo and Williams (1987) develop the most comprehensive defense of the strong lexicalist theory, which is conceptually very different from other instantiations of the theory as in Kiparsky (1982a, b, c, 1985) and Mohanan (1986). They maintain that morphology and syntax are two different domains of inquiry with two different primes (e.g. stems, affixes, roots vs. NPs, VPs, CPs) and operations (compounding, θ-identification vs. movement, quantification). Thus, for Di Sciullo and Williams, the so-called lexicalist hypothesis/the lexical integrity hypothesis/the lexical atomicity "is not a principle of grammar but rather a consequence of the conception that grammar contains two subparts, with different atoms and different rules of formation" (p.2). The word "lexicon" takes an entirely different sense in their framework from the most common usage as the generative system that stores words and their formation rules: the lexicon is the storage house for *listemes*, "objects of no single specifiable type (words, VPs, morphemes, perhaps intonation patterns, and so on) that "fail to conform to interesting generalizations." (p. 3)

Assuming this strict division of labor between the word system and the phrase system, Di Sciullo and Williams maintain that the morphology and syntax can still communicate with one another through a restricted range of shared vocabulary, specifically, the "topmost properties of words, the features and argument structure of the topmost words." (p. 45), as stated in their proposed *Thesis of Atomicity of Words* defined as in (3). Williams (2007), the most recent update of Di Sciullo and Williams's lexicalist hypothesis, maintains essentially the same position.

Di Sciullo and Williams illustrate this limited cross-modular communication with compounding in English. Compounding involves the creation of what they call *morphological objects* that derive their agreement features from the percolation of the features of the right-hand head (Williams 1981). Crucially, it is this output agreement recorded on the top-most level of the compound (namely, the topmost N in (16a, b)) that is used for the purposes of syntactic subject–verb agreement, as the contrast between (17a, b) shows.

(16) English N + V compounds

a. 

b. 

(17) a. Parts-supplier is/*are mean to me.
b. Part-suppliers *is/are mean to me.

This agreement pattern correctly falls out from Di Sciullo and William's system because the feature specification for the non-head member of the compound is invisible from the perspective of syntax. Thus, this pattern is one way in which the syntax and morphology can communicate in a restricted range of shared vocabulary though the Thesis of Atomicity of Words still blocks the syntax from accessing the internal morphological composition of compounds. At this point of the present research, it is not clear whether any aspect of Indonesian reduplications facts could prove Di Sciullo and William's (1987) version of the lexicalist theory untenable. For Di Sciullo and William's lexicalist theory, it is extremely difficult, if not impossible, to find certain morphological patterns that could tease apart the predictions of their theory and some other theories; see Haugen and Harley (2006), though, who provide a detailed discussion of how certain compound-internal reduplication patterns in Yaqui pose a problem for their lexicalist theory. I suspect, however, that Di Sciullo and William's hypothesis is not incorrect; when carried to its extreme, it boils down to the syntactic approach to reduplication to be proposed in the next section in a different module of grammar.

4.5 The lexicon as the source of the ordering paradox

To summarize I have shown that reduplication within lexically/pre-syntactically derived complex stems in Indonesian poses non-trivial empirical and architectural problems for a number of well-known versions of the weak and strong lexicalist theory as presented in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c, 1985), Mohanan (1986), Di Sciullo and Williams (1987), and Williams (2007). I have also shown that those lexical approaches would have little to say about how the asymmetry between nominal and verbal reduplication arises in this language. Thus, those facts on Indonesian reduplication provide strong arguments against certain versions of the weak/strong lexicalist theory.

It is important to point out that this type of inverse ordering is a problem only when we postulate the lexicon as a pre-syntactic generative component that

is responsible for certain types of word formation characterized by productivity, semantic/phonological compositionality, the relevance of morphological primes to the syntax, and so on, as assumed in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c), and Mohanan (1986). In other words, this problem does not (or cannot) arise in non-lexicalist theories of the lexicon–syntax interface that do not posit such an independent component prior in addition to the generative system of syntax. In light of this consideration, in the next section, I pursue an alternative, non-lexicalist analysis of the reduplication in Indonesian within the more recent morphosyntactic framework of Distributed Morphology as reviewed in Section 2.2.

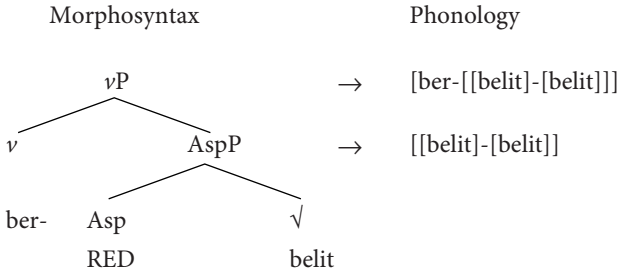
5. A distributed morphology approach to reduplication asymmetries in Indonesian

In this section, I show that the asymmetry between nominal and verbal reduplication and the word-internal reduplication pattern receive a straightforward account within the theory of Distributed Morphology (Halle & Marantz 1993, 1994; Harley & Noyer 1999; Embick & Noyer 2007). Specifically, I propose that these facts are explained as a natural consequence of a particular hierarchical arrangement of morphosyntactic features such as Aspect and Number in Indonesian. I assume, in line with much recent work on reduplication in a number of different theoretical frameworks, that this process consists in affixation of the reduplicative null morpheme RED (UPLICATION) that triggers copying on a stem on its local environment; see Marantz (1982), McCarthy and Prince (1986, 1993, 1995); see also Travis (1999) and Haugen (2004) for a syntactic approach to reduplication. I argue that this particular analysis has an important bearing on the validity of the minimalist interface thesis.

5.1 Verbal reduplication

Consider first verbal reduplication. As we have seen in Section 2, derivational verbal affixes can only allow stem reduplication. This pattern is naturally explained if verbal reduplication is mediated by the Inner Aspect head (Travis 1999) that dominates the reduplicative null morpheme and if *ber-* prefixation represents the addition of the higher *v* projection to the Inner Aspect structure. This assumption is supported by the fact that, as noted in Section 2, verbal reduplication has various effects related to the Aktionsart of the predicate. Under this set of assumptions, then the morphosyntactic derivation for the example in (6a), [ber-[belit-belit]], will be as in (18).

(18) The Morphosyntactic Derivation of the Stem-Reduplication



In this derivation, the Asp head merges with the acatgeorial root *belit* 'twist'. The object that results from this merger is phonologically realized as the reduplicative form, [[belit]-[belit]], because the only stem that the RED morpheme in the Asp head triggers copying of is the root *belit* on its local c-commanding environment. The Asp head undergoes further merger with the verbalizing prefix *ber-*. The complex morphosyntactic object, then, is interpreted at the syntax-external phonological component as [ber-[[belit]-[belit]]], as desired.

It is important to note that the reduplicative morpheme intervenes between the *v* head and the root in this derivation. Accordingly, the RED morpheme cannot reach up to the position of the *v* head to include the verbalizing prefix in its domain for reduplication to yield the ungrammatical form as in [[ber-belit]-[ber-belit]]. This derivation, thus, correctly predicts the unavailability of the stem-affix reduplication pattern for derivational verbal affixes such as *ber-*. In this way, the fact that verb stems only allow stem reduplication naturally falls into place by assuming a particular hierarchical arrangement of morphosyntactic features/heads.

It is also to be stressed that the state of affairs observed above in which the functional heads are linearized in the direction predicted by the hierarchical alignment of morphosyntactic features is exactly what is expected under the theory of Distributed Morphology. As we have seen, the word formation of all kinds is conducted by the single generative procedure as the sentence formation of any kind is in this non-lexicalist theory. Accordingly, the verbal reduplication pattern in Indonesian is simply the direct consequence of the grammatical architecture of the Distributed Morphology. On the contrary, under non-lexicalist views of the syntax–lexicon interface, there is no reason to expect that the syntactic structure and the morphological structure match in this manner, as the interface between the lexicon and syntax is indirect. Thus, the reduplication for verb stems in Indonesian can be construed as one good testing ground to tease apart the predictions of the two competing theories.

The proposed analysis of verbal reduplication in Indonesian also supports the locality of post-syntactic phonological feature assignment at the syntax-external

interface. The proposed analysis crucially rests on the idea that the post-syntactic late insertion of phonological material at the interface closely mirrors the way the syntactic derivation proceeds; *ber-* cannot be included as part of input for verbal reduplication because it is merged in a structurally higher position than the object (AspP) that becomes the target for reduplication. The root must be included for reduplication because it is in the c-commanding domain of the RED morpheme. By contrast, the stem-affix reduplication pattern as in [[ber-belit]-[ber-belit]] is simply underivable under the syntax-driven interpretive nature of the phonological component. The proposed analysis, thus, can be considered another particular instantiation of the theoretical position entailed by the thesis of minimalist interface that the syntax-external sound component is fundamentally interpretive, doing the best it can to satisfy the structural requirements imposed on it by the syntactic derivation. This point also holds true for the analysis of nominal reduplication presented in the next subsection.

5.2 Nominal reduplication

Let us now turn to nominal reduplication. We have seen that derivational nominal suffixes allow both stem and stem-affix reduplication. We have also noted that the choice between the two types of reduplication is not entirely free but rather is governed by the syntactic category of the input stem. This latter point is crucial for the account presented below.

Consider again (8a–c) and (9a–c), repeated as (19a–c) and (20a–c), respectively.

(19) Stem Reduplication with the Derivational Nominal Suffix *-an*

a.	sayur	'vegetable'	→	[[sayur-sayur]-an]]	'many types of vegetables'
			→	*[[sayur-an]-[sayur-an]]	
b.	buah	'fruit'	→	[[buah-buah]-an]]	'many types of fruit'
			→	*[[buah-an]-[buah-an]]	
c.	biji	'seed'	→	[[biji-biji]-an]]	'many types of seeds'
			→	*[[biji-an]-[biji-an]]	

(20) Stem-Affix Reduplication with the Derivational Nominal Suffix *-an*

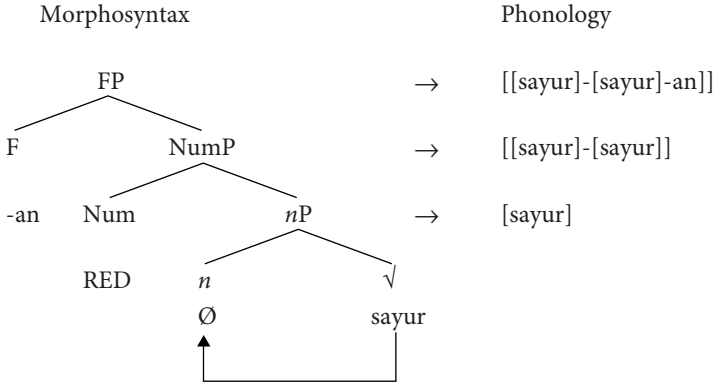
a.	pikir	'think'	→	[[pikir-an]-[pikir-an]]	'thoughts'
			→	*[[pikir-pikir]-an]]	
b.	tulis	'write'	→	[[tulis-an]-[tulis-an]]	'writings'
			→	*[[tulis-tulis]-an]]	
c.	masuk	'enter'	→	[[masuk-an]-[masuk-an]]	'inputs'
			→	*[[masuk-masuk]-an]]	

The input nominals in (19a–c) that allow only stem reduplication are all simplex nominals (i.e. s*ayur* 'vegetable', *buah* 'fruit', and *biji* 'seed') whereas the input nominals in (20a–c) that allow only stem-affix reduplication are all complex

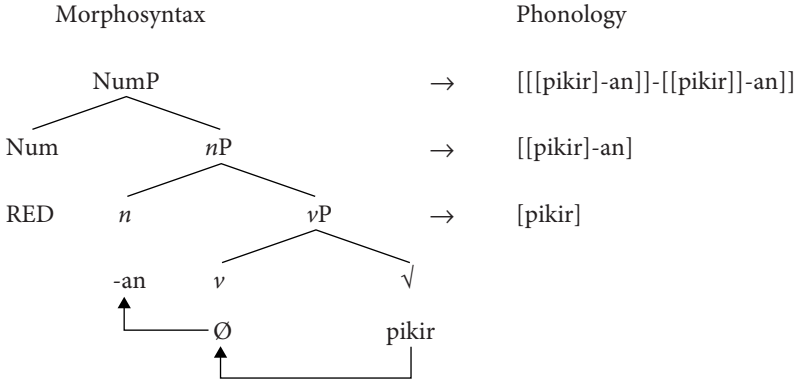
deverbal nominals (i.e. *pikir* 'think' → *pikir-an* 'thought', *tulis* 'write' → *tulis-an* 'writing', and *masuk* 'enter' → *masuk-an* 'input'). This difference, I claim, holds a key to a full understanding of why nominal derivational affixes in principle allow two types of reduplication unlike their verbal counterparts.

Let us assume that nominal reduplication consists in the copying of a nominal stem by the reduplicative null morpheme located in the Num head. The Num head selects a nominal stem as its complement, a rather natural assumption provided that reduplication of a nominal element yields the form that is specifically plural in Indonesian. Under this analysis, then, simplex nominal stems as in (19a–c) can directly merge with the Num head. Verbal stems as in (20a–c), by contrast, cannot merge with the Num head this way because this head only selects a nominal stem as its complement, as stated in the previous paragraph. Thus, they are nominalized by the suffix *-an* before they can merge with the Num head. The morphosyntactic derivations for the examples in (19a) and (20a), then, will be as in (21) and (22), respectively. I designate the head that host the suffix *-an* in (21) as the F, returning to its precise nature shortly.

(21) The Morphosyntactic Derivation of the Stem-Reduplication



(22) The Morphosyntactic Derivation of the Stem-Reduplication



In (21), the root *sayur* 'vegetable' is instantiated as a noun by adjoining to the null nominalizing head. This stem, being a nominal, can directly merge with the Num head as input for reduplication, which creates the form [[pikir]-an] at the syntax-external sound component. The derivation further continues by merging the *n*P with the Num head that hosts the RED morpheme. Since the RED morpheme can have access to the *n*P in its local c-commanding domain, the output of the *n*P must be included for reduplication at the Num head level. This information is realized at the post-syntactic phonological component as [[sayur-sayur]-an]]. Note that the form *[[sayur-an]-[sayur-an]] cannot be created at the interface because the syntactic derivation here dictates that late insertion of phonological material at the interface must mirror the history of syntactic derivation in a cyclic manner, as expected under the thesis of minimalist interface. The derivation in (22) is crucially different from that in (21), in that the base stem is verbal. Accordingly, the stem must undergo zero-derivation into the nominal stem by the suffixation of the nominalizing suffix *-an* to serve as the complement that can satisfy the categorial restriction imposed by the Num head. Since the RED morpheme contained in this head includes the nominalizing suffix as well as the base stem in its local c-commanding domain, the syntactic derivation dictates that the phonological component include both elements as input for reduplication, thereby closely following the path curved by syntactic derivation in a local manner. Under this derivation, then, the stem reduplication pattern as in the hypothetical *[[[pikir]-[pikir]]-an] is simply underivable due to the way syntactic derivation proceeds and the way a particular set of morphosyntactic features is organized as shown in (22). In this way, the proposed non-lexicalist, morphosyntactic analysis provides a straightforward explanation for the fact that the choice between the stem and stem-affix reduplication correlates with the underlying category of the input stem (verbal vs. nominal).

There is one important question that remains under the proposed account of nominal reduplication, which concerns the status of the suffix *-an*.[5] As is clear from the position of this suffix in the two morphosyntactic derivations in (21) and (22), the proposed analysis entails that this single suffix has two separate functions in the two cases. It is clear that the function of *-an* is that of nominalization in the stem-affix reduplication. The question is what role the suffix plays in the stem reduplication. It is important to recall in this connection that, in examples such as (8a–c), *-an* yields the reading that can be roughly "many types of". Thus, *buah-buah-an*, derived from *buah* 'fruit', means 'many types of fruits'. This observation is related

5. Thanks to Heidi Harley (personal communication) and an audience member at the 33rd Meeting of the Berkeley Linguistic Society for asking this question.

to the remark made in MacDonald and Dardjowidjojo (1967: 66), who observe that "when added to a noun root (usually reduplicated) the suffix *-an* forms a noun which refers to a collection of the referents of the simple noun, or of related referents," as shown in (23a, b).

(23) The Function of *-an* in Stem Reduplication

a. kaleng 'tin can' → [[kaleng]-[kaleng]-an] 'canned goods'

b. pohon 'tree' → [[pohon]-[pohon]-an] 'trees, the vegetable kingdom'

(MacDonald and Dardjowidjojo 1967: 66)

Interestingly, however, the same suffix cannot be attached to stems like *jeruk* 'lemon' to derive *jeruk-jeruk-an*; according to my native language consultant, the form itself is not ungrammatical but means something entirely different, something like "fake orange." This is presumably related to the kind-denoting nature of bare nominals in Indonesian, as argued extensively in Chapter 5 of the book.[6] Since the name of a kind refers to an amorphous, mass-like property of that kind under Carlson's (1977)/Chierchia's (1998a, b) sense of the term, it is natural that *-an* attached to a bare nominal yields readings such as "many types of X".

However, this line of thinking still leaves unexplained why bare nominals such as *jeruk* 'lemon' do not yield "many types of lemons"-readings when the stem is reduplicated and suffixed by *-an*. I maintain that the suffixability of *-an* is determined by the world-knowledge of what constitutes the most natural kind in classificatory terms in the mind of Indonesian speakers. The same consultant points out that the noun *buah* admits *-an* when reduplicated because it refers to what the consultant would take to be a natural classificatory term; on the other hand, the noun *jeruk* 'lemon' does not in the consultant's opinion because it is a specific instance of the classificatory term *buah* and does not presumably serve a natural classificatory function in the light of encyclopedic knowledge. This observation is reminiscent of Chierchia's (1998a) discussion of the nature of a kind. For example, he (p. 348) makes the following remark, citing Carlson (1977: 26ff) and Krifka et al. (1995).

(24) Chierchia's (1998a) discussion on the nature of a kind (Chierchia 1998a: 348)

By 'natural' kinds, we do not necessarily mean, in the present context, just biological ones or even 'well-established' ones. Artifacts (like chairs or cars) or complex things (like intelligent students or spots of ink) can qualify as kinds, to the extent that we can impute to them a sufficiently regular behavior…What counts as kind is not set by grammar, but by the shared knowledge of a community of speakers.

6. Thanks to an anonymous *Morphology* reviewer for suggesting this possibility.

Note that this line of thought provides somewhat interesting support for the Distributed Morphology view of roots as assigned idiomatic meanings in a language-particular manner in the post-syntactic Enclopedic component (see Harley 2009 for much relevant discussion on the nature of roots in Distributed Morphology from a case study in English compounds). The decision on whether a particular root such as *sayur* 'vegetable' constitutes a natural kind or not depends on the speaker's perception of whether the root makes a natural classification in his/her mind. The Distributed Morphology model predicts precisely this state of affairs because the relevant decision is a matter of the encyclopedic component that deals with linguistically unpredictable meanings for expressions such as *cats, kick the bucket*, and so on. Therefore, I conclude that (a) *-an* is an exponent of what native speakers of Indonesian take it to a natural kind in a classicatory sense and that (b) it is generated in the head of whatever projection that selects the phrase that denotes a kind. This conclusion is also independently supported by the morphosyntax of bare nominals in Indonesian discussed in Chapter 5 of the book, where I provide independent evidence that whatever value the Num head takes (specifically, be it plural or neutral), the denotation of the NumP is computed at the interface as a kind in languages such as Indonesian and Javanese. Thus, these considerations further support my conclusion that *-an* occupies the head that selects the NumP as its complement as in (21).

6. Conclusions

I have started this chapter by introducing the results of the corpus study of four popular newspapers published in Indonesia. This study has revealed that (a) nominal derivational affixes such as *-an* in principle allow both stem and stem-affixation reduplication whereas verbal derivational affixes such as *ber-* allow only stem reduplication and that (b) both nominal and verbal stems may allow reduplication to target part of a morphologically/lexically derived complex word rather than its left or right edge. I have also shown that these results of the corpus study are indeed verified by native speakers' intuition by conducting grammaticality judgment tasks.

Then, I have demonstrated that these two facts concerning Indonesian reduplication pose non-trivial architectural and empirical challenges for a number of well-known versions of the weak and strong lexicalist theory as in Chomsky (1970), Anderson (1982, 1992), Kiparsky (1982a, b, c, 1985), Mohanan (1986), Di Sciullo and Williams (1987), and Williams (2007). I have also emphasized that the inverse ordering paradox caused by the word-internal reduplication pattern only arises in a theory of the lexicon–syntax interface that postulates the generative lexicon as an autonomous pre-syntactic component. Accordingly, the inverse ordering problem ceases to be a problem under non-lexicalist theories of the interface because

we do not have any pre-syntactic word-formation component prior to the syntactic component in the first place.

I have argued that the two facts above receive a straightforward explanation within the more recent, non-lexicalist, morphosyntactic theory of Distributed Morphology outlined in Halle and Marantz (1993, 1994), Harley and Noyer (1999), and Embick and Noyer (2007) once we take seriously a particular hierarchical arrangement of certain morphosyntactic features/heads such as Asp and Num as well as the underlying syntactic category of input stems for reduplication. The key assumption of the proposed analysis is that the post-syntactic phonological feature assignment closely mirrors the bottom-up derivation of morphosyntactic structures; the phonological component requires the reduplicative morpheme to target only the constituent within its c-commanding domain and the assignment of phonological feature applies in a bottom-up fashion, much in the way that syntax works. According to this analysis, the stem-affix reduplication in cases such as *[[[sayur]-an]-[[sayur]-an]]] and the stem reduplication in cases such as *[[pikir]-[[pikir]-an]]] are simply underivable.

The overall result in this chapter, therefore, provides a strong piece of evidence against the traditional lexicalist architecture of the syntax–lexicon interface, and, at the same time, argues in favor of non-lexicalist theories as in the recent Distributed Morphology framework that attempt to locate all types of word formation within the sole realm of the syntactic derivation.

In the rest of this chapter, I briefly discuss further implications of the results achieved in this chapter for the proper theory of the syntax–lexicon interface and, most importantly, for the thesis of minimalist interface. Let us first note that minimalist considerations of parsimony, elegance, and simplicity, known as the *methodological minimalism*, "the drive for simple and nonredundant theories of the world" or "seeking the best way to theorize about a particular domain of inquiry" (Martin & Uriagereka 2000: 1), favor the non-lexicalist hypothesis in which the single generative syntactic component is responsible for all types of word formation rather than the lexicalist hypothesis in which a separate pre-syntactic component is postulated for certain types of word formation in addition to the syntactic component. That is, the non-lexicalist position is the null hypothesis in light of this formal consideration. In terms of the empirical question of which theory is right, as Embick and Noyer (2007: 291, 321, 322) note, the lexicalist claim that the generative lexical component be posited in addition to the syntax can only be motivated to the extent that a certain important generalization *cannot* be stated in a syntactic approach to word formation but instead *must* be treated in a lexicalist approach to word formation; the simple observation that a lexicalist approach works is simply irrelevant to the debate between lexicalism and non-lexicalism. Without this type of demonstration, the methodological parsimony noted above always tells us that the single-engine hypothesis of the non-lexicalist theory is the

null hypothesis. A similar argument holds for the other part of the lexicalist claim that "words" are different from "phrases". Again, the burden is on lexicalist theorists to show that certain patterns of "words" cannot be accommodated within the syntactic approach to word formation and that rules of word formation must be treated differently from rules of phrase formation.

Importantly, the results achieved in this chapter provide a new type of empirical evidence against the lexicalist theory from another perspective; the postulation of a pre-syntactic level such as lexicon actually would lead us to miss certain important generalizations that could be most naturally statable within the morphosyntactic structure. In this sense, the patterns of reduplication in Indonesian provide a unique empirical demonstration that the general architecture of the lexicalist theory is untenable inasmuch as it postulates a pre-syntactic lexical component prior to the syntactic component. In other words, the proper theory of the lexicon–syntax interface must be one of the variants of the grammatical models such as Distributed Morphology that posits a single level, namely, the syntactic component, for all types of word formation that has been independently shown to be a generative system in the framework of generative grammar.

The conclusion reached at the end of the previous subsection is quite in line with the idea of minimalist interface that the syntax-external components are purely interpretive, doing the best they can to assign interpretation to the output of the generative syntactic system in the manner required by the system. This chapter has shown that the thesis of minimalist interface is substantiated in three domains. First, the late insertion model as in Distributed Morphology is what the minimalist would lead us to adopt, given that the phonological component is purely interpretive. Second, the way late phonological feature assignment works in the syntax-external interpretive component crucially depends on the structural notions such as locality and c-command that have been shown to be important theoretical ingredients in the generative syntactic research. Finally, the proposed non-lexicalist analysis within the Distributed Morphology framework leads to the theoretical consequence that there is no such thing as the syntax–lexicon interface, as also pointed out by Embick and Noyer (2007), because words are constructed in the same way as sentences and phrases are by the same set of rules and principles. This is an optimal consequence of the thesis of the minimalist interface, which views the role of syntax-external linguistic interface as autonomous systems that interpret whatever objects are sent out by the sole generative engine of syntax and add certain modifications to make them usable for the language-external conceptual and articulatory systems within the range of options set up by syntax. In this way, close examination of the existing reduplication patterns in Indonesian conducted in this chapter provides further substantiation for the thesis of minimalist interface defined as above.

CHAPTER 3

Successive cyclicity at the syntax–morphology interface

1. Introduction

In this chapter, I present a new analysis of the distribution of the active voice/AV morphology in certain dialects of Indonesian and Javanese within a phase-theoretic approach (Chomsky 2000, 2001, 2004) to the syntax–morphology interface, coupled with certain key assumptions of the framework of Distributed Morphology (Halle & Marantz 1993). It is known since Cole and Hermon (1998) (see also Saddy 1991 for a preliminary observation of this sort) that, in Malay/Indonesian, the movement of an NP across a verb results in the obligatory deletion of the AV prefix *meN-* from the verb (see Gil 2002 for a review of the historical development of this marker). I propose that this "deletion" is a two-step process. The moved NP enters into the Spec-Head D-feature checking relation in the syntax with its local v^*, as required by the Phase Impenetrability Condition/PIC (Chomsky 2000, 2001, 2004). Since the D-feature of the v^* is uninterpretable, it is erased upon checking, changing the feature content of the head. This change, in turn, blocks the insertion of *meN-* under v^* in the post-syntactic morphological component. Instead, its null counterpart $\emptyset_{\text{meN-}}$ is inserted as the elsewhere vocabulary item.

This chapter is organized as follows. In Sections 2 and 3, I provide data from Standard Indonesian and Kendal Javanese to illustrate the generalization due to Cole and Hermon (1998) that the movement of an NP across an active verb results in the deletion of the otherwise obligatory AV prefix from the verb. In Section 4, I propose a new analysis of this generalization within Phase Theory coupled with the Distributed Morphology framework. In Section 5, I compare this analysis with two recent alternative analyses proposed by Cole et al. (2008) and Aldridge (2008), who both attempt to account for the AV deletion in Indonesian from an Austronesian perspective, as informed by recent minimalist inquiry into the Philippine-type voice system in Tagalog (Rackowski & Richards 2005). I point out problems with these alternatives that concern Case agreement, (the absence of) one-to-one correspondence between voice morphology and argument structure, and a typological

correlation between word order and ergativity and show that my analysis naturally resolves these problems. Section 6 is the conclusion.

2. Active voice morphology in Standard Indonesian

In this section, I review data from Standard Indonesian to illustrate Cole and Hermon's (1998) generalization about the distribution of the AV prefix *meN-*.

Cole and Hermon (1998) establish the generalization (1) for a dialect of Malay used by educated speakers in Singapore. They note that this generalization also holds for Indonesian.

(1) The obligatory omission of *meng-* with verbs that would otherwise permit *meng-* indicates the movement of an NP argument over the *meng-* + verb.

The AV prefix *meN-* takes one of the phonologically conditioned allomorphs in (2a–e).

(2) a. *meN-* → *meng/menge* (if the stem starts with a, e, g, h, i, o, u)
b. *meN-* → *mem* (if the stem starts with b, f, p, v)
c. *meN-* → *men* (if the stem starts with c, d, j, t, z)
d. *meN-* → *men/meny* (if the stem starts with s)
e. *meN-* → *meny* (if the stem starts with k, l, m, n, v, w, y)

One caveat is in order. Judgments reported below are based on what my consultants consider as formal/Standard Indonesian. The same judgments may or may not hold for other (colloquial) varieties of Indonesian. See Cole et al. (2008) for additional relevant discussion.

Let us now illustrate (1) with A′-movement, A-movement, and the movement of an NP vs. non-NP in turn. Firstly, examples (3a, b) and (4a, b) show that *wh*-movement and relativization cause *meN-* deletion from the verb within their extraction path.

(3) a. Siapa$_i$ yang Bill (***mem**)-beritahu ibu-nya [$_{CP}$ yang t_i
who that Bill AV-tell mother-his that
***(men)**-cintai Fatimah]?
AV-love Fatimah
'Who does Bill tell his mother that loves Fatimah?'

b. Apa$_i$ yang Ali (***mem**)-beri t_i kepada Fatimah?
what that Ali AV-give to Fatimah
'What did Ali give to Fatimah?'

(Standard Indonesian; based on Cole & Hermon (1998: 231, 232), their (25a, 27a))

(4) a. [Lelaki$_i$ [$_{CP}$ OP$_i$ yang [t_i *(**mem**)-beli buku itu]]] adik saya.
man that AV-buy book that brother my
'The man who bought that book is my brother.'

b. [Buku$_i$ [$_{CP}$ OP$_i$ yang [John (*mem)-beli t_i]] itu] menarik.
book that John AV-buy that interesting
'The book that John bought is interesting.'
(Standard Indonesian; based on Cole & Hermon (1998: 233), their (29a, b))

In (3a), the movement of *siapa* 'who' crosses the matrix verb but not the embedded verb. The AV prefix must be deleted from the matrix verb whereas it must not be deleted from the embedded verb. A similar characterization holds for the examples in (3b) and (4a, b).

Secondly, *meN-* deletion is also caused by A-movement, as shown in (5).

(5) Ali$_i$ saya (*mem)-cubit t_i.
Ali I AV-pinch
'I pinched Ali./Ali was pinched by me.'
(Standard Indonesian; Cole & Hermon (1998: 232), their (28a, b))

One might analyze (5) as topicalizaton, which is an example of A′-movement in languages like English. However, Chung (1976) presents evidence from Equi NP/Control that the preposing of the NP in (5) involves A-movement. Consider (6a–d).[1]

(6) a. Dia datang untuk ber-cakap-cakap dengan Ali.
he come for INTR-talk-RED with Ali
'He came to talk with Ali.'

b. ?*Saya mem-bawa surat itu untuk teman saya (dapat) (mem)-baca.
I AV-bring letter the for friend my can AV-read
'I brought the letter for my friends to (be able to) read.'

c. Saya mem-bawa surat itu untuk (dapat) di-baca oleh
I AV-bring letter the for can PASS-read by
teman saya.
friend my
'I brought the letter to (be able to) be read by my friends.'

d. Saya mem-bawa surat itu untuk (dapat) kau baca.
I AV-bring letter the for can you read
'I brought the letter to (be able to) be read by you.'
(Standard Indonesian; Chung (1976: 46, 47))

1. The examples here from Chung (1976) are converted to the current spelling of Indonesian.

The contrast between (6a) and (6b) shows that the embedded subject in [Spec, TP] can undergo Equi NP/become PRO while the embedded object cannot. (6c) is a canonical *di-* passive construction. This type of passive takes the order of Neg + Aux + *di-* verb + (*oleh*) NP. (6c) shows that the derived subject of this construction can undergo Equi NP/become PRO. (6d) is our crucial case. This example illustrates a zero passive construction. This type of passive takes the order of Neg + Aux + pronominal subject + (stem) verb in Standard Indonesian (Sneddon 1996; Cole & Hermon 2005; see also Section 3). The fact that the derived subject in this construction patterns with the subject of the *di-* passive in its ability to undergo Equi NP/become PRO suggests that zero passives instantiate A-movement. Thus, we can conclude that (5) provides evidence that A-movement causes *meN-* deletion.

Finally, what matters for *meN-* deletion is the movement of an NP across *meN-* verbs. This observation is illustrated by examples (7a–c).

(7) a. Kenapa$_i$ Mary *(**mem**)-beli buku itu t_i?
why Mary AV-buy book that
'Why did Mary buy that book?'

b. [$_{PP}$ Di mana]$_i$ John *(**mem**)-beri Mary buku itu t_i?
at where John AV-give Mary book that
'Where did John give Mary that book?'

c. [$_{PP}$ Kepada siapa]$_i$ Mary *(**mem**)-beri buku itu t_i?
to who Mary AV-give book that
'To whom did Mary give that book?'

(Standard Indonesian; modeled on Cole & Hermon (1998: 231, 232), their (26a–c))

In these examples, the movement of the non-nominal *wh*-phrases does not trigger *meN-* deletion. The AV prefix is obligatory in this environment.

So far, we have seen examples from Standard Indonesian illustrating Cole and Hermon's Generalization in (1).[2] The question which arises here is: What is the nature of this "*meN-* deletion" governed by this generalization? More precisely, what mechanism underlies this phenomenon? I answer this question in Section 4.

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2. In Section 4.2, I discuss one counterexample to Cole and Hermon's Generalization. Specifically, the Unaccusative Hypothesis (Perlmutter 1978; Burzio 1986; Levin & Rappaport-Hovav 1995) states that the sole argument of an unaccusative verb is base-generated as the complement of the verb and later moved across the verb to [Spec, TP] for Case reasons. However, as recently shown by Soh and Nomoto (2009a), unaccusative verbs do not show the blocking effects of the AV prefix in Malay. I discuss a similar case in Standard Indonesian in Section 4.2 and argue that this fact naturally falls into place once we assume that unaccusative verbs do not have a strong phase head (v^* in Chomsky's 2000, 2001, 2004 sense).

Before doing so, however, I show in the following subsection that the same generalization also holds for a dialect of Javanese.

3. Active voice deletion in Kendal Javanese

In this section, I explore the distribution of the AV morphology in Javanese. I base my observations in this subsection entirely on a dialect of Javanese spoken by my three consultants. My primary consultant is a native bilingual Indonesian-Javanese speaker from Kendal, a *kabupaten* (regency) in the northern division of the province of Central Java in Indonesia, 34 kilometers west of Semarang, the capital of the province of Central Java. I dub this variety Kendal Javanese for convenience's sake, though this is not meant to imply the existence of such a geographically characterizable variety in this area. The judgments reported by my primary consultant were further checked in June 2009 with two other consultants, who are also native bilingual Indonesian-Javanese speakers from Kendal. As we will see shortly, this variety is different from the other varieties of Javanese studied in the literature – Standard Javanese (Conners 2008) and Semarang Javanese (Cole et al. 1999) – with respect to zero passive constructions. Nonetheless, the data below show that Cole and Hermon's Generalization in (1) holds for this variety in the same way it does for Standard Indonesian.

As in Standard Indonesian, in (Kendal) Javanese, the movement of an NP across a verb that must otherwise have a nasal prefix which assimilates to the place of articulation of the following consonant causes the obligatory omission of that prefix from the verb. Let us first illustrate this observation with A′-movement in (8a, b) and (9a, b).[3]

(8) a. Sapa$_i$ sing Bill (***ng**)kandha ibu-ne [$_{CP}$ sing t_i
who that Bill AV.tell mother-his that
***(ng)**epeli Fatimah]?
AV.hit Fatimah
'Who did Bill tell his mother that hit Fatimah?'

b. Apa$_i$ sing Bill (***ng**)kékke t_i nggo Fatimah?
what that Bill AV.give to Fatimah
'What did Bill give to Fatimah?' (Kendal Javanese)

3. In (8a, b), the stem-initial consonant /k/ is dropped in cases where the nasal prefix is realized, as in *ngandhani* 'tell' and *ngéi* 'give'.

(9) a. Uwong$_i$ [$_{CP}$ sing t_i **maca/*waca** buku kuwi] adikku.
man that AV.read/read book that brother.my
'The man who read that book is my brother.'

b. Buku$_i$ [$_{CP}$ sing John ***maca/waca** t_i] kuwi mboseni.
Book that John AV.read/read that boring
'The book that John read is boring.' (Kendal Javanese)

Using (8a) for illustration, the movement of the *wh*-phrase *sapa* 'who' crosses the matrix verb but not the embedded verb since it starts from the external argument position of the embedded clause. Thus, the nasal prefix must be deleted only from the matrix verb but must not be deleted from the embedded verb. The same story holds for (8b) and (9a, b).

Although for the purposes of the present discussion I treat (8a, b) as cases of *wh*-movement on a par with English *wh*-questions, they may well be more accurately analyzed as clefted *wh*-questions, consisting of a *wh*-question word in the subject position and a headless relative clause in the predicate position. The choice between these two analyses does not affect our exposition here; whichever analysis may be adopted for (8a, b), a *wh*-phrase (under the *wh*-movement analysis) or the null operator associated with it (under the cleft analysis) moves across the verb that must otherwise have an AV prefix. The same qualification applies for (9a, b), which may well be more properly analyzed as headless relative clause structures.

Let us next consider the effects of A-movement on the morphology of verbs with the otherwise obligatory nasal prefixes. Again, as in Standard Indonesian, evidence from zero passives in Kendal Javanese suggests that A-movement causes active voice deletion. Consider examples (10a–d).

(10) a. Buku kuwi$_i$ aku ***maca/waca** t_i. (first person pronominal subject)
book that I AV.read/read
'That book is read by me.'

b. Buku kuwi$_i$ kok ***maca/waca** t_i. (second person pronominal subject)
book that you AV.read/read
'That book is read by you.'

c. Buku kuwi$_i$ d(h)ewéke ***maca/waca** t_i. (third person pronominal subject)
book that he/she AV.read/read
'That book is read by him/her.'

d. Buku kuwi$_i$ Esti ***maca/waca** t_i. (independent NPs)
Book that Esti AV.read/read
'That book is read by Esti.' (Kendal Javanese)

In these examples, the movement of the NP *buku kuwi* 'that book' crosses the verb 'read', resulting in the deletion of the nasal prefix from the verb. This yields the zero passive variant *waca* instead of the active voice variant *mawa*. It may be tempting

to analyze these examples as topicalizaton, a case of A′-movement, but evidence from Equi NP/control suggests that these examples involve A-movement. Consider (11a–d).

(11) a. dhewéke teka arep ngomong karo Ali.
he come will talk with Ali.
'He will come to talk with Ali.'

b. *Aku nggowa surat kuwi nggo kancaku (isa) waca.
I bring letter that for friend.my can read
'I brought the letter for my friends to (be able to) read.'

c. Aku nggowa surat kuwi nggo di-waca karo kancaku.
I bring letter that for PASS-read by friend.my
'I brought the letter to (be able to) be read by my friends.'

d. Aku nggowa surat kuwi nggo kowe waca.
I bring letter that for you read
'I brought the letter to (be able to) be read by you.' (Kendal Javanese)

The contrast between (11a) and (11b) shows that the embedded subject can, but the embedded object cannot, undergo Equi NP/become PRO. (11c) illustrates the Javanese analogue of the canonical passive construction in (Standard) Indonesian: it takes the *di*-verb form followed by *karo* 'by' and the Agent NP. (11c) shows that the derived subject in [Spec, TP] can become PRO. Our crucial example illustrating the (Kendal) Javanese analogue of the zero passive construction is (11d). This construction takes a (pronominal) subject followed by the stem verb form. The fact that the derived subject *surat kuwi* 'that letter' in (11d) can become PRO indicates that (11d) involves A-movement into [Spec, TP]. Accordingly, we can conclude that A-movement in Kendal Javanese causes the AV deletion.

Kendal Javanese is different from Semarang Javanese and Standard Javanese with respect to zero passives. Cole et al. (1999) observe that this construction does not exist in Semarang Javanese based on the ill-formedness of (12a–c) in this dialect.

(12) a. *Buku kuwi aku waca.
book this I read
'This book is read by me.'

b. *Asu-ne Budi kowe pateni.
dog-NE Budi you kill
'Budi's dog was killed by you.'

c. *Siti Budi kepruk.
Siti Budi hit
'Siti was hit by Budi.' (Semarang Javanese: Cole et al. 1999: 91)

This judgment clearly does not hold for Kendal Javanese, as the well-formedness of the examples in (10a–d) show. Thus, Kendal Javanese provides crucial evidence, which would be unavailable from the investigation of Semarang Javanese alone, that A-movement, as well as A′-movement, triggers the deletion of the active voice morphology.

Although both Kendal Javanese and Standard Javanese possess the zero passive construction, the two dialects diverge with respect to restrictions imposed on the kind of subjects permitted in zero passives. Conners (2008) observes that this construction is limited to first and second person clitics in Standard Javanese. He (p. 182) remarks that "this type of passive is marked by the use of dependent clitic personal pronouns for the first and second person: *tak-*, *kok-*, respectively." This is illustrated in (13a, b).

(13) a. Buku iku tak-jupuk.
book that I-take
'That book was taken by me.'

b. Buku iku kok-jupuk.
book that you-take
'That book was taken by you.' (Standard Javanese; Conners 2008: 192)

Conner's observation does not hold true for Kendal Javanese, as (10c, d) show that the subject position in the zero passive construction can be filled by a third person pronominal or even a full-fledged NP. The question of why Kendal Javanese exhibits this deviation from Standard Javanese is a very important one but I leave this problem for future research, since it is orthogonal to the purpose of this chapter.

Let us finally consider the role of the syntactic category in the AV deletion. We observed in Section 2 that, in Standard Indonesian, only the movement of an NP across a *meN*-verb causes this deletion. The same observation holds for Kendal Javanese, as shown in (14a–c).

(14) a. Nangapa$_i$ Mary **maca/*waca** buku kuwi t_i?
why Mary AV.read/read book that
'Why did Mary read that book?'

b. [$_{PP}$ ning endi]$_i$ John *(**ng**)kéi Mary buku kuwi t_i?
at where John AV.give Mary book that
'Where did John give Mary that book?'

c. [$_{PP}$ Nggo sapa]$_i$ John *(**ng**)kéi buku kuwi t_i?
to whom John AV.give book that
'To whom did Mary give that book?' (Kendal Javanese)

We have seen thus far that Cole and Hermon's Generalization in (1) holds true for Kendal Javanese. The role of Kendal Javanese is important in establishing this

point since, unlike Semarang Javanese investigated by Cole et al. (1999), this variety possesses the zero passive construction derived by A-movement, and hence provides crucial evidence that A-movement as well as A′-movement causes the AV deletion. I have also pointed out that Kendal Javanese is different from Standard Javanese with respect to the nature of the restriction imposed on subjects in this construction: while the subject can be any personal pronoun or even a full NP in the former, it is restricted to a first or second person clitic personal pronoun in the latter.

The next question concerns the mechanism underlying the nasal prefix deletion in Javanese. Cole et al. (1999: 90) leave this question open, simply stating that "movement across the verb (perhaps to specifier of VP or to specifier of a functional projection above the verb) licenses the omission of the nasal prefix." Below, I provide an answer to this question from the perspective of Phase Theory and Distributed Morphology.

4. Locality and "deletion" at the syntax–morphology interface

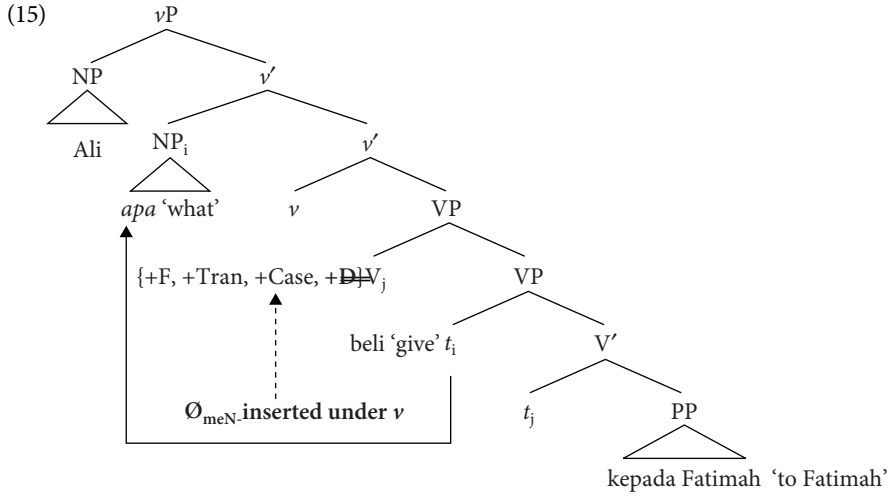
In this section, I propose a new analysis of the AV deletion within a phase-theoretic approach to the syntax–morphology interface. I also discuss a counterexample to Cole and Hermon's Generalization posed by the absence of blocking effects by *meN-* (Soh & Nomoto 2009a) in unaccusative constructions. I show that the new analysis also correctly predicts this fact under the recent working assumption that unaccusative verbs do not constitute a strong phase head (v^* in the sense of Chomsky 2000, 2001, 2004).

4.1 "*meN*-deletion" as failure of vocabulary insertion

Extending Harley's (2005) analysis of *one*-replacement in English, I propose to analyze the AV deletion in Standard Indonesian and Kendal Javanese as failure of vocabulary insertion along the lines of Distributed Morphology (Halle & Marantz 1993).[4] Let me illustrate this analysis with (15), a partial syntactic derivation for the Indonesian example in (3b).

4. I am grateful to Heidi Harley (personal communication, March 2008) for suggesting the analysis that follows.

(15)



In this derivation, the Agent NP *Ali* is merged in the outer specifier/edge of the *v*P. The direct object *apa* 'what' undergoes a "tucking-in" movement (Richards 1997) into the inner specifier/edge of *v*P, as required by the Phase Impenetrability Condition/PIC. This condition is stated in (16), where "the edge of the phase head H" includes any specifiers of, and any adjuncts to, H.

(16) Phase Impenetrability Condition (Chomsky 2000: 108)
"In phase α with head H, only H and its edge are accessible to operations outside α."

The moved NP in (15) undergoes D-feature checking with *v*. This checking results in the erasure of the uninterpretable D-feature of *v* (Chomsky 1995). This checking relation within the syntax, I claim, is the source of the AV deletion. Let us suppose for the sake of argument that Standard Indonesian has (as a partial list) two vocabulary items in (17i, ii).

(17) i. *meN-* ←→ [*v* ___ [+D]] (specific case)
ii. Ø$_{meN-}$ ←→ [*v* ___ […]] (elsewhere case)

As illustrated in (15), the D-feature is deleted from the *v* head due to the movement of the *wh*-phrase into [Spec, *v*]. As a result, when the syntactic derivation is sent to the post-syntactic morphological component, *meN-* cannot be inserted under the *v* since this morpheme can only be inserted under *v* when the phase head is associated with some feature bundles including the D-feature (17i). Thus, the null variant Ø$_{meN-}$ is inserted instead in compliance with the vocabulary specification in (17ii).

One important question arises here. If the AV deletion is triggered by the D-feature checking between *v* and an NP in its specifier, why can't external arguments like *Ali* in (3b) (also *siapa* 'who' in (3a) and *sapa* 'who' in (8a)) check the D-feature of its local *v* head *in situ* to cause *meN-* deletion? One answer to this question immediately suggests itself once we recognize the distinction between Internal Merge and External Merge. Chomsky (2004) observes that Merge comes free in two forms: when X is merged with Y, X can be either external to Y (External Merge) or part of Y (Internal Merge). Chomsky further hypothesizes that External Merge is associated with argument structure whereas Internal Merge is associated with everything else (scope, specificity, definiteness, topic, etc). It is clear that the uninterpretable D-feature of *v* is not related to argument structure but instead is a formal feature of phase heads to drive a purely mechanical computation. It follows that the External Merge of *siapa* 'who' cannot enter into the D-feature checking relation of *v*. Alternatively, if Agree is defined in terms of c-command, as is assumed in the minimalist literature, the Agent NP cannot be in an Agree relation with the *v* head, since it is merged in a specifier of the head. It follows, then, that the NP cannot delete the uninterpretable D-feature of *v* due to the lack of the Agree relation between *v* and the NP.[5]

The proposed analysis also captures the category sensitivity of the AV deletion in Indonesian and Javanese. The movement of non-nominal phrases does not trigger the deletion since they either lack D-features to be checked against *v* (in the case of adverbial phrases; see (7a) and (14a)) or their D-features do not percolate onto their dominating PPs to be checked against local *v* heads (in the case of PPs; see (7b, c) and (14b, c)).

My analysis is similar to Rackowski and Richards' (2005) analysis of the voice-movement correspondence in Tagalog. Assuming that Tagalog is a nominative-accusative language, they propose that the voice morphology realized on a verb is the PF reflex of the Case–agreement relation between *v* and the NP that is attracted to its specifier by the EPP feature. See Chung (1994, 1998) and Pearson (2005) for analyses, quite similar to Rackowski and Richards', regarding *wh*-agreement in Chamorro and the voice-movement interaction in Malagasy, respectively. Cole et al. (2008) have recently proposed an extension of this "*wh*-agreement" analysis to the AV deletion in Standard Indonesian and many varieties of Malay/Indonesian. In Section 5.1, I review this Case–agreement analysis and provide arguments that this analysis is hard to extend to Standard Indonesian and Kendal Javanese at least in the form Rackowski and Richards and Cole et al. have presented it.

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5. I thank Heidi Harley (personal communication, June 2006) for suggesting the first analysis and Christer Platzack (personal communication, September 2009) for suggesting the second analysis.

My analysis makes one important prediction. Specifically, DPs *other than* direct objects should also be able to trigger the deletion of the AV morphology. This is because the analysis states that the deletion occurs as long as an NP moves across an active voice verb marked with *meN*-/the nasal prefix, irrespective of the grammatical/thematic role of the moved NP (e.g. direct object, subject, indirect object, etc.). This prediction is indeed borne out by the following two facts; first, (3a) and (8a) show that raising the external argument/subject in an embedded clause triggers the AV deletion on the matrix verb. This is exactly the pattern my analysis predicts since the NP enters into the Spec-Head D-feature checking relation with the matrix *v* in compliance with the PIC before it reaches the matrix [Spec, CP]. This checking deletes the uninterpretable D-feature from *v*, which, in turn, is realized as the insertion of the null prefix in the morphological component. Second, (18b, c) from Standard Indonesian and (19b, c) from Kendal Javanese show that both the second Theme object and the first Goal object in applicatives trigger the AV deletion.

(18) a. Kamu *(**mem**)-beli-kan ibu-mu bunga.
you AV-buy-APPL mother-your flower
'You bought your mother a flower/flowers.'

b. Apa$_i$ yang kamu (***mem**)-beli-kan ibu-mu t_i?
what that you AV-buy-APPL mother-your
'What did you buy your mother?'

c. Siapa$_i$ yang kamu (***mem**)-beli-kan t_i bunga?
who that you AV-buy-APPL flower
'Who did you buy a flower/flowers?' (Standard Indonesian)

(19) a. Kowe **nukokke/*tuku** ibu-mu kembang.
you AV.buy.APPL/buy mother-your flower
'You bought your mother a flower/flowers.'

b. Apa$_i$ sing mok ***nukokke/tukokke** ibu-mu t_i?
what that you AV.buy.APPL/buy.APPL mother-your
'What did you buy your mother?'

c. Sapa$_i$ sing mok ***nukokke/tukokke** t_i kembang?
who that you AV.buy.APPL/buy.APPL flower
'Who did you buy a flower/flowers?' (Kendal Javanese)

Once again, the pattern observed here naturally falls out from my analysis. The AV deletion occurs in the morphological component as long as some NP moves across a verb otherwise obligatorily marked with an AV prefix, no matter what thematic function the NP may bear.

4.2 Unaccusativity in Standard Indonesian and the phasehood of little *v*[6]

In this section, I discuss the distribution of the AV prefix in unaccusative constructions in Standard Indonesian. The data from this variety indicates that no blocking effects are observed in unaccusative verbs with the prefix, contrary to Cole and Hermon's Generalization. I argue that our analysis correctly predicts the lack of the blocking effect in this environment once we assume that unaccusative verbs in Indonesian do not constitute phasal *v*'s (*v** in the sense of Chomsky 2000, 2001, 2004), unlike transitive constructions with full argument structure.

The standard analysis of unaccusative verbs like *come, fall,* and *arrive* in languages such as English and Italian (Perlmutter 1978; Burzio 1986; Levin & Rappaport-Hovav 1995) holds that the surface subject DP is base-generated in the complement of an unaccusative verb and later A-moved into [Spec, TP] for Case reasons. Soh and Nomoto (2009a) shows that in Malay, the sole argument of an unaccusative verb can appear in a pre-verbal or a post-verbal position in a way that is consistent with the Unaccusative Hypothesis. Standard Indonesian behaves similarly to Malay in this regard, as shown in (20a, b).

(20) a. Kalau harga minyak tidak **turun**, kita akan bankrut.
if price oil NEG fall we will bankrupt
'If the oil price doesn't fall, we'll go bankrupt.'

b. Kalau tidak **turun** harga minyak, kita akan bankrut.
if NEG fall price oil we will bankrupt
'If the oil price doesn't fall, we'll go bankrupt.'
(Standard Indonesian; based on Soh & Nomoto (2009a: 4), their (12a, b))

Note that in contrast to unaccusative verbs, the sole argument of unergative verbs like *pergi* 'go' must appear in a pre-verbal position, as shown in (21a, b).

(21) a. Se-orang lelaki tinggi **pergi** ke pasar.
1-CL man tall go to market
'A tall man went to a market.'

b. *Ke pasar **pergi** se-orang lelaki tinggi.
to market go 1-CL man tall
'A tall man went to a market.'
(Standard Indonesian; based on Soh & Nomoto (2009a: 2), their (8a, b))

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6. I am very grateful to Christer Platzack (personal communication, October 2009) for directing my attention to the issue discussed in this section.

Evidence for the unaccusative status of *turun* 'fall' comes from Vamarasi's (1999: 27–33) observation that causativization by the suffix *-kan* is fine with *turun* 'fall', but not with *pergi* 'go', as shown in (22a, b).

(22) a. Pemerintah telah **me-nurun-kan** harga minyak.
government PERF AV-fall-KAN price oil
'The government has lowered the price of oil.'

b. *Fatimah **me-mergi-kan** Ali ke pasar.
Fatimah AV-go-KAN Ali to market
'Fatimah caused Ali to go to the market.'
(Standard Indonesian; (22a) based on Soh & Nomoto (2009a: 4), their (13))

The Unaccusative Hypothesis makes sense of this contrast: *-kan* as an external argument-introducing head can only combine with an unaccusative verb that lacks an external argument.

Now, given what has been said so far, we expect that there should be no AV marker with unaccusative verbs in Standard Indonesian. (23b), however, shows that *turun* 'fall' *can* occur with the AV prefix with its sole argument in a preverbal position.

(23) a. Tarif listrik **turun**
price electricity fall
'The electricity price fell.'

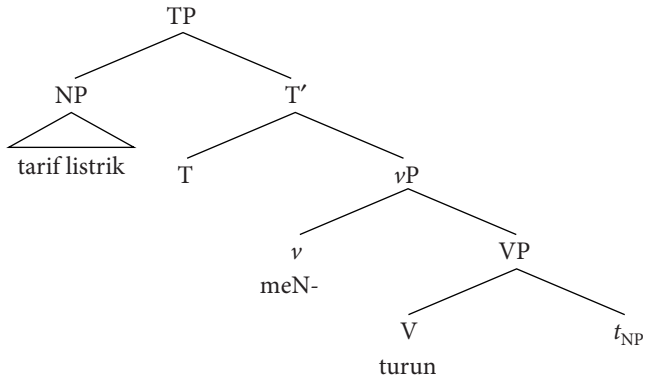
b. Tarif listrik **me-nurun.**
Price electricity AV-fall
'The electricity price is falling.'
(Standard Indonesian; based on Soh & Nomoto (2009a: 4), their (14a, b))

The grammaticality of (23b), thus, is unexpected since the movement of the internal argument is moved across the unaccusative verb. Soh and Nomoto attempt to maintain Cole and Hermon's Generalization by saying that the base position of the sole argument of an unaccusative differs depending on the presence of *meN-*. More specifically, they suggest that the sole argument of an unaccusative verb with this prefix is base-generated as an external argument (arguably in [Spec, *v*]), whether the verb root itself is considered unergative or unaccusative. This analysis is in compliance with Borer's (2005) recent view that the unaccusative vs. unergative distinction is determined by the functional environments a verb is inserted within rather than lexical encoding (Perlmutter 1978; Levin & Rappaport-Hovav 1995). However, this analysis comes at the price of significantly complicating the standard picture of the lexicon–syntax correspondence. It also means that we lose an account of many linguistically significant generalizations documented in the literature (Perlmutter 1978; Burzio 1986; Levin & Rappaport-Hovav 1995)

that straightforwardly follow if the sole argument of an unaccusative verb is base-generated in the complement of the verb (e.g. facts concerning *ne/en*-cliticization, resultative/constructions, impersonal constructions, auxiliary selection, causative alternation, locative inversion, animacy, among others). For this reason, I seek an alternative analysis of the examples in (23b) that allows us to maintain the Unaccusative Hypothesis in its original form and that is more amenable to a phase-theoretic perspective.

Chomsky (2000, 2001, 2004) proposes that only transitive and experiencer verbs are headed by phasal *v*'s (what he calls *v**) while unaccusative and passive verbs do not constitute a phasal *v*; see Legate (2003) for several arguments that the latter also equally form strong phases, but see den Dikken (2006) for counter-arguments that none of the premises for Legate's arguments actually goes through. Following Chomsky's proposal, I submit that the lack of the blocking effects of *meN-* in unaccusative derivations is due to the lack of the phasal *v*. To illustrate, consider the syntactic derivation for the example in (23b), shown in (24).

(24)



In this derivation, the underlying direct object *tarif listrik* 'oil price' moves directly from the complement of the V into [Spec, TP]. Recall that our analysis treats *meN-* deletion as a two-step process: an NP moves to check and delete the uninterpretable D-feature of *v* in a Spec-Head configuration and this deletion results in the failure of vocabulary insertion at the post-syntactic morphological component. Since neither of these conditions is met in the derivation in (24), nothing forces the deletion of the active voice prefix. (23a) results when the null variant $Ø_{meN-}$ is inserted under *v*, in conformity with the vocabulary insertion rule in (17ii). For (23b), the AV prefix *meN-* should not be inserted by (17i). I maintain that *meN-* in unaccusative constructions is inserted under a different rule stated as in (25iii).

(25) i. *meN-* ←→ [*v* ___ [+D]] (= (17i))
ii. $Ø_{meN-}$ ←→ [*v* ___ […]] (= (17ii))
iii. *meN-* ←→ [*v* ___ [+PROG]]

The idea that *meN-* prefixed with unaccusative verbs is different from *meN-* as the AV marker is independently supported by the fact that the former, not the latter, contributes a progressive viewpoint aspect in Malay/Indonesian (Soh & Nomoto 2009b). Thus, (23b) means that the situation described by the sentence is more or less in progress and the theme argument is currently undergoing a gradual change, but (23a) does not have this reading.

My current analysis leads to another important question. Provided that unaccusative and passives do not constitute a strong verbal phase, as proposed by Chomsky (2000, 2001, 2004), then why is it that zero passives in Indonesian do cause the active voice deletion, as shown in (5), unlike unaccusative derivations. Despite what the traditional name for the construction suggests, however, there is convincing evidence in the literature (Alsagoff 1992; Guilfoyle et al. 1992; Arka & Manning 1998; see also Cole et al. 2008 for a succinct summary of the arguments) that this construction in fact instantiates a full argument structure, just like a transitive or experiencer configuration, and hence may well be headed by *v**. Thus, Arka and Manning (1998) show that the Agent NP in a zero passive construction can antecede a reflexive surface subject, as shown in (26a). Note that this binding ability is not observed in a canonical passive construction, as the ungrammaticality of (26b) shows.

(26) a. **Dirimu** mesti **kau** serahkan ke polisi.
self-2 must you surrender to police
'Yourself must be surrendered to the police.'
(Arka & Manning (1998), as cited in Cole et al. (2008: 1507), their (20))

b. ***Dirinya** tidak di-perhatikan **Amir**.
self-3 NEG PASS-care Amir
'Himself was not taken care of by Amir.'
(Arka & Manning (1998), as cited in Cole et al. (2008: 1509), their (29a))

Cole et al. (2008) suggest that the grammaticality of (26a) falls out if *kau* 'you' occupies the external argument position and binds the reflexive before the latter undergoes movement into [Spec, TP]. If *kau* 'you' were an adjunct located lower than the reflexive, there would be no point of the derivation where the Agent NP can bind the reflexive. (26b), on the other hand, is ungrammatical because *Amir* is base-generated as an adjunct lower than the base position of the reflexive. The contrast between (26a) and (26b), thus, suggests that the Agent subject in a canonical passive construction is a true external argument, and hence that zero passive instantiates a full argument structure, just like transitive and experiencer constructions. I conclude that the contradictory blocking effects of *meN-* in zero passives vis-à-vis unaccusative constructions are only apparent; only the former causes the AV deletion because it is headed by *v**. Therefore, the data discussed in this section, upon a

closer examination, provide further support for my phase-theoretic approach to the AV deletion rather than undermine it. The results arrived at here also suggest a need for a finer-grained classification of the typology of strong phases that is informed by detailed investigations of language-particular properties of passive constructions.

5. Other alternative analyses within Phase Theory

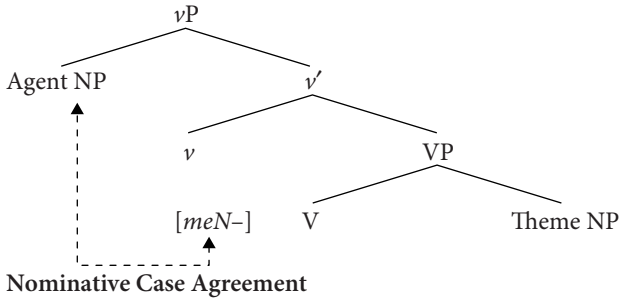
In this section, I compare my analysis with two recent alternative analyses of the AV deletion in Standard Indonesian proposed by Cole et al. (2008) and Aldridge (2008). Cole et al.'s and Aldridge's analyses, both couched within Phase Theory, have as their goal the analysis of this phenomenon within the larger theoretical context of comparative Austronesian syntax by drawing on recent minimalist research on Tagalog and Malagasy. I show that these analyses are faced with empirical/typological problems that are naturally resolved under my D-feature checking analysis.

There are several other alternative analyses of *meN-* deletion in the literature, including Keenan and Comrie's (1977) NP-Accessibility analysis, Voskuil's (2000) *pro*-based analysis, Soh's (1998) Relativized Minimality analysis, and Fortin's (in press) antipassive analysis. I will not discuss these analyses in this chapter but refer the reader to Aldridge (2008) and Cole et al. (2008) for reviews, discussions, and problems with these analyses.

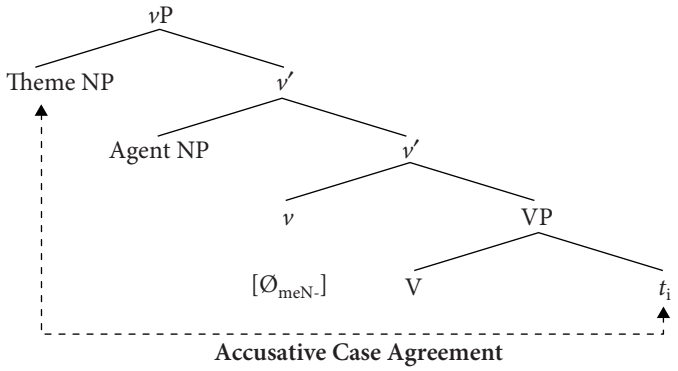
5.1 Cole et al.'s (2008) Case–Agreement analysis

Cole et al. (2008) propose a Case–Agreement analysis of *meN-* deletion in Standard Indonesian. Adopting the phase-theoretic analysis of the symmetric voice system of Tagalog presented by Rackowski and Richards (2005), Cole et al. propose that the AV prefix *meN-* and the object voice $\emptyset_{\text{meN-}}$ in Standard Indonesian are identical with analogous voices (Actor and Theme Voices, respectively) in Tagalog. Cole et al.'s analysis is illustrated in (27) and (28).

(27)



(28)



In (27), the presence of *meN-* indicates that the Agent argument is in the highest specifier of *v*P and that no object shift has been applied. Cole et al. analyze this movement as due to nominative Case agreement. Thus, the prohibition against extracting a non-Agent NP such as a Theme NP in (27) across *meN-* falls out from the PIC. In (28), the absence of *meN-* ($Ø_{meN-}$) indicates that object shift has been applied, and that the Agent NP is not in the highest specifier of *v*P. Cole et al. analyze this movement as due to accusative Case agreement. Cole et al. (p. 1503) assume the definition of *closest* in (29) from Rackowski and Richards (2005: 579).

(29) A goal α is the closest one to a given probe if there is no distinct goal β such that for some X (X a head or maximal projection), X c-commands α but does not c-command β.

Cole et al. use this definition in order to ensure that only the highest specifier of the *v*P phase is accessible to operations at the CP phase. Under this definition, it is the Theme NP in (28) that is closest to the probe C. Thus, only this NP is moved into [Spec, CP] at the CP phase.

Aldridge (2008) points out two empirical problems with Cole et al.'s (2008) analysis. One problem concerns cases that would involve the nominative agreement of an accusative-marked NP with finite T under Cole et al.'s assumptions. Consider examples (30a, b).

(30) a. Buku$_i$ [$_{CP}$ OP$_i$ yang [$_{TP}$ ia/dia **tidak akan** [$_{vP}$ t_i Ø-baca t_i]]] menarik.
Book that 3.SG NEG will read interesting
'The book that he/she will not read is interesting.'

b. Buku [$_{CP}$ OP$_i$ yang [$_{TP}$ t_i **tidak akan** [$_{vP}$ t_i ia/dia Ø-baca t_i]]] menarik.
Book that NEG will 3.SG read interesting
'The book that will not be read by him/her is interesting.'

(Standard Indonesian)

(30a) and (30b) instantiate active and zero passive constructions, respectively. This is evidenced by the relative order of a pronominal subject with respect to negation and auxiliary phrases: the pronominal subject precedes *tidak akan* in (30a) whereas the order is reversed in (30b). The problem with Cole et al.'s analysis posed by these examples is the following. Under their analysis, in the derivation of (30b), the null operator OP agrees with *v* in the Accusative Case within the *v*P phase since $\emptyset_{\text{meN-}}$ indicates that the Theme NP has undergone object shift into the specifier of *v*P for Accusative Case. Crucially, however, at the CP phase, the same operator enters into a second Case agreement relation with T, which assigns Nominative Case to it. The derivation of (30b) then should crash because the OP obtains conflicting information as to its case features. Alternatively, the derivation should be blocked by the Last Resort Condition (Chomsky 1986a, 1995), which bans movement of a single NP from a Case position to another Case position, as illustrated in (31a, b).

(31) a. He_i seems to Mary [$_{\text{TP}}$ t_i to be ill].
b. *He_i seems to Mary [$_{\text{CP}}$ that t_i is ill].

This problem does not arise under my analysis, which takes the motivation for the movement of an NP to be D-feature, not Case. Under my analysis, in (30b), the OP first undergoes movement into [Spec, *v*] to check and erase the uninterpretable D-feature of *v*. The OP undergoes further movement into [Spec, T] and then into [Spec, C] to check and erase the D-features of T and C. This multiple checking is possible precisely because the D-feature of an NP is interpretable and is not subject to erasure upon checking (Chomsky 1995).

The other problem with Cole et al.'s analysis, noted by Aldridge (2008), concerns the lack of one-to-one correspondence between voice and argument structure. To illustrate this problem, compare (18a–c) and (19a–c) with (34a–c) from Tagalog. (18a–c) and (19a–c) are repeated here as (32a–c) and (33a–c), respectively.

(32) a. Kamu *(**mem**)-beli-kan ibu-mu bunga. (=18a)
you AV-buy-APPL mother-your flower
'You bought your mother a flower/flowers.'

b. Apa_i yang kamu (***mem**)-beli-kan ibu-mu t_i? (=18b)
what that you AV-buy-APPL mother-your
'What did you buy for your mother?'

c. Siapa_i yang kamu (***mem**)-beli-kan t_i bunga? (=18c)
who that you AV-buy-APPL flower
'Who did you buy a flower/flowers?'

(33) a. Kowe **nukokke/*tuku** ibu-mu kembang. (=19a)
you AV.buy.APPL/buy mother-your flower
'You bought your mother a flower/flowers.'

b. Apa$_i$ sing mok ***nukokke/tukokke** ibu-mu t_i? (=19b)
what that you AV.buy.APPL/buy.APPL mother-your
'What did you buy your mother?'

c. Sapa$_i$ sing mok ***nukokke/tukokke** t_i kembang? (=19c)
who that you AV.buy.APPL/buy.APPL flower
'Who did you buy a flower/flowers?'

(34) a. B-in-ili-**Ø** ng bata ang tela sa palengke para sa nanay.
ASP-buy-ACC CS child ANG cloth DAT market for DAT Mother
'The child bought the cloth at the market for Mother.'

b. **I**-b-in-ili ng bata ng tela sa palengke ang nanay.
OBL-ASP-buy CS child CS cloth DAT market ANG Mother
'The child bought (the) cloth at the market for Mother.'
(Tagalog; Rackowski & Richards 2005: 566)

(32b)/(33b) involve extraction of the Theme object whereas (32c)/(33c) involve extraction of the Applicative/Goal object. In both cases, the null variant $Ø_{meN-}$/the stem without the nasal prefix is employed. In other words, this single morpheme signals the object shift of either the Theme or Applicative arguments into the highest specifier of *v*. Crucially, however, this one-to-many correspondence between voice and argument structure does not obtain in Tagalog. As shown in (34a, b), this language has a different morpheme for the object shift of a Theme and an Applicative argument (Ø and *I*, respectively). This difference between Standard Indonesian/Kendal Javanese and Tagalog is detrimental to Cole et al.'s analysis because the most important claim behind their analysis is that Standard Indonesian instantiates the Philippine-type voice system in the syntax and morphology of the active and object voice in the form of *meN-* vs. $Ø_{meN-}$. The contrast between the two languages observed above, therefore, suggests that Cole et al.'s attempt to analyze *meN-* deletion as a language-particular case of the Tagalog-type voice system is difficult to sustain at least in the present form.

My analysis, however, neatly explains why this one-to-many correspondence between voice and argument structure comes about in Indonesian. Of crucial importance is that under my analysis, $Ø_{meN-}$ is not the object voice marker but rather the elsewhere vocabulary item that is inserted under *v* as the result of the D-feature checking between the *v* and the NP moved to its specifier, as illustrated in (15). This means that $Ø_{meN-}$ can be inserted under the *v* node in all miscellaneous cases that involve extraction across active voice verbs of non-externally merged phrases, including Theme and Applicative arguments. Thus, a one-to-many correspondence relation here is exactly what this analysis predicts.

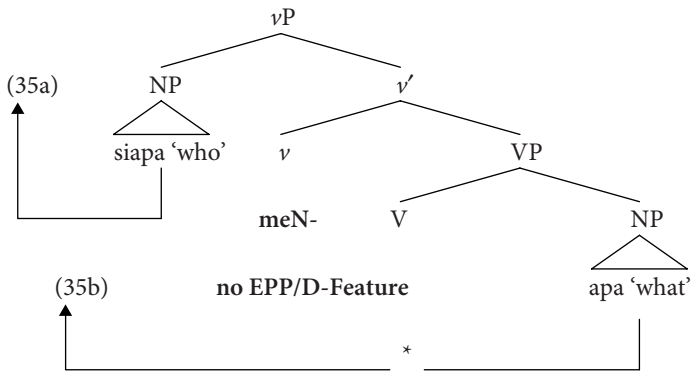
5.2 Aldridge's (2008) antipassive analysis

Aldridge (2008) proposes that the feature bundle inserted under *v* and spelled-out as *meN-* in Indonesian does not carry an EPP/D-feature. Aldridge attributes this property to the historical remnant of its origin as an antipassive marker found in Tagalog/Malagasy. Her analysis for *meN-* deletion is illustrated in (36) for the data in (35a, b).

(35) a. Siapa$_i$ yang t_i **mem**-beli buku-nya?
who that AV-buy book-DEF
'Who bought the book?'

b. *Apa$_i$ yang Ali **mem**-beli t_i?
what that Ali AV-buy
'What did Ali buy?' (Aldridge (2008: 1448, 1449))

(36)



Due to the Phase Impenetrability Condition

(Adopted from Aldridge (2008: 1448, 1449), her (19b, 20b))

(35a) results when *siapa* 'who' undergoes movement into [Spec, CP]. The presence of *meN-* under *v* does not affect this movement. (35b) is ungrammatical with this prefix: the direct object *apa* 'what' cannot move to the edge of *v*P to be accessible to operations at the next phase since *v,* spelled-out as *meN-*, cannot have the EPP feature. As a result, *apa*, being frozen within the VP, cannot move to [Spec, CP], for the movement would violate the PIC.

One significant issue remains within Aldridge's analysis. Under Chomsky's (2004) conception of the Generalized EPP on phase heads, nothing seems to block transitive *v* heads from being assigned an EPP feature that would enable the movement of a VP-internal element to the *v*P edge. Aldridge attempts to seek a diachronic motivation for the lack of the EPP feature on *meN-* verbs. Specifically, she argues that *meN-* is a historical remnant of the Malagasy antipassive marker *man-* in that it carries a structural Case feature but lacks the EPP feature. This analysis, however, is inconsistent with a widely known typological observation about

morphosyntactic ergativity and word order. It has been acknowledged in the literature (Trask 1979; Mahajan 1994, 1997; see also Anderson 1976 and Manning 1996) that ergative languages tend to be verb-peripheral. Comrie (2008) observes that out of 38 languages with ergative case marking, 34 languages are (S)OV while the remaining 4 languages are VSO/VOS. Polinsky (2009) confirms this observation within the Austronesian family on two grounds: first, none of the Austronesian languages with morphological ergativity in Table 2 is SVO (see also Ball 2007).

Table 2. Austronesian languages with morphological ergativity

Language	**Word order**
Roviana	VSO
Nêlêmwa	VOS
Némi	VOS
Tongan	VSO/VOS
Niuean	VSO/VOS
Samoan	VSO/VOS
Rennellese	VOS/VSO
Tokelau	VSO
E.Futuna/Uvea	VSO/VOS

(Polinsky (2009: 2), her (7))

Second, none of the SVO Austronesian languages other than Indonesian, such as Rotuman, Chuukese, and Drehu, exhibit morphological ergativity. Now, if Indonesian is indeed a morphosyntactically ergative language, as claimed by Aldridge, then Indonesian should not be SVO. However, Chung (2008) argues convincingly that Indonesian is precisely such a language with a derivation similar to English. This typological problem does not arise under my analysis, however, which is consistent with Chung's characterization of Indonesian as an SVO nominative-accusative language.

6. Conclusions

This chapter has proposed a new analysis of the distribution of the active voice markers in Standard Indonesian and Javanese. I have proposed to analyze this "deletion" as a two-step process: Spec-Head Agreement in the syntax and the Failure of Vocabulary Insertion in the post-syntactic morphology. More precisely, an NP undergoes movement into the edge of v^*P to check and erase the uninterpretable feature of the phase head in the syntax. This checking relation causes a change in the feature content of the v^*. This change, in turn, blocks the active voice

prefix from being inserted under *v** in the post-syntactic morphological component; its null counterpart ($Ø_{meN-}$ in Standard Indonesian) is inserted instead as the elsewhere vocabulary item. I have compared this analysis with two recent alternative phase-theoretic analyses presented by Cole et al. (2008) and Aldridge (2008). I have pointed out problems with these analyses related to Case agreement, one-to-many correspondence between argument structure and voice morphology, and typological correlation between word order and morphosyntactic ergativity, and have shown how my proposed analysis resolves them.

My analysis has two theoretical implications for the syntax–morphology interface and deletion phenomena. First, my treatment of the active voice deletion in Standard Indonesian and Kendal Javanese provides direct morphological evidence for the role of *v*P-mediated locality at the syntax–morphology interface. This result is important because direct evidence for *v*P phases has been somewhat hard to come by, in contrast to robust evidence for successive cyclicity via CP phases (McCloskey 1979, 2001; McDaniel 1989; Thornton 1995; Chung 1994, 1998; Horvath 1997). In this regard, contributions from relatively under-represented languages such as Indonesian and Javanese are significant. Second, my analysis yields an improved understanding of "deletion", one of the most controversial terms in contemporary studies on the syntax–phonology interface (see Merchant 2001 for a recent survey of various analytical possibilities on deletion based on his detailed case study of sluicing), by treating it as failure of vocabulary insertion in the technical sense of Distributed Morphology (Harley 2005). The investigation conducted in this chapter, thus, can be construed as powerful support for the idea of minimalist interfaces that the working of the sound-related interface component is fundamentally interpretive and subservient to the universal law of syntax in that it has a handful of domain-specific operations to reflect the locality of syntactic derivation.

CHAPTER 4

P-stranding under sluicing at the syntax–phonology interface

1. Introduction

This chapter has two goals. First, I discuss the syntax of P-stranding under *wh*-movement and sluicing in Indonesian. In favor of his "movement plus deletion" analysis of sluicing, Merchant (2001) established a generalization that P-stranding under sluicing is possible only in those languages that independently allow this option under regular *wh*-movement. I provide novel evidence that Indonesian presents a problem for this generalization since it disallows P-stranding under *wh*-movement but allows this option under sluicing. I show that potential alternative analyses resorting to clefts, resumption and PF P-drop, which have been proposed for other languages with the superficially identical P-stranding profile (e.g. Brazilian Portuguese, Spanish, French, Mandarin Chinese, Serbo-Croatian), would not be transported to Indonesian P-less sluicing. Second, I claim that this apparently peculiar P-stranding pattern in Indonesian receives a straightforward account under "repair by ellipsis" (Ross 1969; Merchant 2001; Boeckx & Lasnik 2006). Specifically, I propose that the representational violation at the PP level caused by the failure of the *wh*-feature percolation (Chomsky 1972; Lasnik 2005) is remedied at PF by deleting the offending constituent. This analysis receives independent empirical support from the fact that the same repair effect is observed in P-stranding under pseudogapping in Indonesian, which I analyze as the movement of a focused constituent out of the VP, followed by the VP deletion.

I also briefly discuss why P-stranding violations are not remedied in French and German. I argue, drawing on the analysis and evidence, presented by Law (1998, 2006) and van Riemsdijk (1998), that these languages have overt D-to-P incorporation in the syntax, with the result that all potential derivations for P-less sluices in these languages involve one or the other syntactic violation. As a result, the PF deletion strategy cannot remedy the violation. I conclude by showing that this contrast in "reparability" between French/German and Indonesian falls out naturally from the very architecture of the syntax–phonology interface. One major theoretical consequence of this analysis is that syntactic computation is not entirely

crash-proof (Frampton & Gutmann 1999, 2002); it may result in certain "mistakes" for which the syntax-external PF component conducts its domain-specific operation in order to remedy within the narrow range of options set by the combination of general principles of syntax and language-particular parametric values.

This chapter is organized as follows. In Section 2, I review Merchant's (2001) analysis of sluicing as *wh*-movement of the sluice followed by TP deletion at PF. I introduce one of his Form-Identity Generalizations pertaining to P-stranding in favor of his analysis. In Section 3, I discuss the syntax of P-less sluicing in Indonesian and consider whether the construction could be analyzed as an elliptical cleft. I apply the diagnostics developed by Merchant for English and by Fortin for Indonesian that could distinguish between the sluice and the cleft construction. The results are shown to be quite equivocal about whether P-less sluices in Indonesian are assimilated to clefts or not. Based on this consideration, I provide three novel arguments, based on deep vs. surface anaphora (Hankamer & Sag 1976), sloppy vs. strict identity readings (Ross 1969; Takahashi 1994), and multiple linguistic antecedents, that P-less sluices in Indonesian *cannot* be derived from cleft sources. I also critically examine two recent analyses proposed by Wang (2006) and Stjepanović (2008) drawing on resumption and PF-drop for Mandarin Chinese and Serbo-Croatian, two languages that behave like Indonesian with regard to P-stranding, and argue that these analyses cannot be transported to Indonesian. In Section 4, I propose a PF repair analysis of Indonesian P-stranding, according to which the representational violation at the PP level caused by the failure of the *wh*-feature percolation is remedied at PF by deletion. I provide independent evidence for this analysis from P-stranding under pseudogapping in this language. In Section 5, I turn to French and German, which do not allow P-stranding under either *wh*-movement or sluicing. Drawing on the incorporation analysis for the D-P coalescence in these languages developed by Law (1998, 2006) and van Riemsdijk (1998), I argue that P-stranding violations in these languages cannot be repaired by deletion because all potential derivations for P-stranding involve one or the other syntactic violation: as a result, PF deletion applies too late to repair such violations internal to syntax. Section 6 is the conclusion.

2. Merchant's (2001) theory of sluicing, the P-stranding generalization and Indonesian

Drawing on the classical analysis presented by Ross (1969), Merchant (2001) argues that sluicing constructions in English, as illustrated in (1a), are the product of the syntactic *wh*-movement of an interrogative *wh*-phrase, followed by the deletion of the TP in the phonology, as shown in (1b).

(1) a. Somebody just left. – Guess who.
b. Somebody just left. – Guess [$_{CP}$ who$_i$ [$_{\sout{TP}}$ ~~t_i just left~~]].

Merchant's central argument for this analysis comes from what he calls the Form-Identity Generalization: P-Stranding, stated in (2). Following Almeida and Yoshida (2007), I dub this generalization the P-Stranding Generalization/PSG in this chapter.

(2) Preposition-Stranding Generalization/PSG
A language *L* will allow preposition stranding under sluicing iff *L* allows preposition stranding under regular *wh*-movement (Merchant 2001: 92, 107)

The logic behind the PSG is clear. Under Merchant's analysis, sluicing is derived from regular *wh*-movement plus TP deletion. Thus, the ability to strand a preposition under sluicing means that the same option is independently available under regular *wh*-movement. Surveying the P-stranding pattern under *wh*-movement and sluicing in 24 languages, Merchant argues that the PSG is crosslinguistically robust. To illustrate, English allows P-stranding both under *wh*-movement and sluicing, as shown in (3a, c). Note that the preposition *with* can also be pied-piped along into [Spec, CP], as illustrated in (3b, c).

(3) a. Who was he talking with?
b. With whom was he talking ?
c. Peter was talking with someone, but I don't know (with) who.
(Merchant 2001: 92)

This pattern falls out from Merchant's analysis. The P-less variant of the sluice in (3c) is grammatical because it is derived via TP deletion from the independently grammatical P-stranding *wh*-question in (3a).

Unlike English, French disallows P-stranding under *wh*-questions, as shown in (4a, b). Thus, French also disallows P-stranding under sluicing, as shown in (4c).

(4) a. *Qui est-ce qu' elle l'a offert à?
who Q she it-has offered to
'Whom has she offered it to?'

b. À qui l'a-t-elle offert?
to whom it-has-she offered
'To whom has she offered it?

c. Anne l'a offert à quelqu'un, mais je ne sais pas *(à) qui.
Anne it-has offered to someone but I NEG know NEG to whom
'Anne has offered it to someone, but I don't know (to) whom.'
((4a, c) from Merchant (2001: 98))

Merchant's theory, therefore, predicts that there are no languages which disallow P-stranding under regular *wh*-movement but allow it under sluicing. Yet, as first

noted by Fortin (2007a, b), Indonesian is precisely of this type, as in (5a–c), presenting a *prima facie* case against the PSG.[1]

(5) a. *Siapa yang kamu berdansa dengan?
who that you dance with
'Who did you dance with?'

b. Dengan siapa kamu berdansa?
with who you dance
'With whom did you dance?'

c. Saya ingat Ali berdansa dengan seseorang, tapi saya tidak
I remember Ali dance with someone but I NEG
tahu (dengan) siapa.
know with who
'I remember Ali danced with someone, but I don't know (with) whom.'

The contrast between (5a) and (5b) shows that Indonesian disallows P-stranding under what looks like a *wh*-question in other languages like English. However, the availability of the P-less sluice in (5c) indicates that the preposition can be omitted under sluicing. This P-stranding profile is general; it holds for all other nominal *wh*-phrases (i.e. *apa* 'what' and *yang mana* 'which'), as shown in (6a–c) and (7a–c).

(6) a. *Apa yang kamu bicara tentang?
what that you talk about
'What did you talk about?'

b. Tentang apa kamu bicara?
about what you talk
'About what did you talk?'

c. Saya ingat Ali bicara tentang sesuatu, tapi saya tidak
I remember Ali talk about something but I NEG
tahu (tentang) apa.
know (about) what
'I remember Ali talked about something, but I don't know (about) what.'

1. There is a second type of language not predicted by the PSG, namely, languages that allow P-stranding under *wh*-movement but disallow P-stranding under sluicing. I show that the theory of P-stranding developed in Section 4.2 correctly predicts the absence of this type of language on the assumption that deletion occurs at PF only as Last Resort to save an otherwise illicit syntactic derivation.

(7) a. *Pria yang mana kamu bicara tentang?
man which you talk about
'Which man did you talk about?'

b. Tentang pria yang mana kamu bicara ?
about man which you talk
'About which man did you talk?'

c. Saya ingat Ali bicara tentang seseorang, tapi saya tidak
I remember Ali talk about someone but I NEG
tahu (tentang) pria yang mana.
know about man which
'I remember Ali talked about someone, but I don't know (about) which man.'

It is premature, however, to jump to the conclusion that Indonesian presents a problem for the PSG merely based on this superficial examination of the P-stranding pattern illustrated in (5–7). Only after showing that the syntactic source for the P-less sluice in (5c)/(6c)/(7c) involves *wh*-movement and thereby leaves the preposition behind in the syntax can we safely conclude that Indonesian indeed directly contradicts the PSG. In the next section, I provide evidence for this position, rejecting potential alternative accounts in the literature that otherwise would make the P-stranding pattern in Indonesian consistent with the PSG.

3. The internal syntax of P-stranding sluices in Indonesian

Merchant (2001) considers two potential derivations for the English sluicing construction in (8a). One involves genuine sluicing, derived by regular *wh*-movement followed by TP deletion (8b). The other involves pseudosluicing, derived from a cleft source through deletion of the copula and subject (8c).

(8) a. Ben danced with someone, but I don't remember who.
b. Ben danced with someone, but I don't remember
$[_{CP}$ who$_i$ $[_{\sout{TP}}$ ~~Ben danced with t_i~~$]]$.
c. Ben danced with someone, but I don't remember $[_{CP}$ who$_i$ $[_{\sout{TP}}$ ~~it was t_i~~$]]$.

Merchant (2001: 120–127) argues against a pseudosluicing analysis of (English) sluicing based on the divergent behavior of sluicing and cleft constructions with respect to the following ten diagnostics: (a) the licensing of implicit arguments/adjuncts, (b) prosody, (c) aggressively non-D-linked *wh*-phrases, (d) 'mention-*some*' modification, (e) 'mention-*all*' modification, (f) *else*-modification, (g) swiping (sluiced *wh*-phrase inversion with prepositions in Northern Germanic), (h) languages with limited or no cleft strategies, (i) case-marking of the remnant in

sluices and clefts, and (j) left branch extraction. The point of these diagnostics is to show that the very existence of the differences between sluices and clefts makes the assimilation of the former to the latter untenable. In the first comprehensive study on Indonesian ellipsis, Fortin (2007a, b) applies these tests to sluicing in Indonesian. The purpose of the following subsection, however, is to apply them specifically to *P-less sluices* in Indonesian.

3.1 Is P-less sluicing in Indonesian pseudosluicing?

Out of the ten diagnostics mentioned above, the four tests (c), (g), (h) and (i) are not applicable to Indonesian for the following reasons. First, like Fortin (2007a), I have not been successful in identifying any homologue of aggressively D-linked *wh*-phrases such as *the hell* in English or *diabos* 'devils', *porra* 'fuck' in Brazilian Portuguese (Almeida & Yoshida 2007; Rodriguez et al. 2009) and *cojones* 'testicles' in Spanish (Rodriguez et al. 2009). Second, as the very name of the construction suggests, swiping is limited to the Northern Germanic subfamily and is not observed in Indonesian. Third, Indonesian does have cleft constructions as we will see shortly. Finally, Indonesian has no overt case matching whose existence could tease apart sluices and clefts. These considerations reduce the number of diagnostics available to six. Furthermore, of these 6 tests, tests (a) and (j) must also be omitted from the present discussion (see also Almeida & Yoshida (2007: 353) for relevant discussion). Test (a) is not revealing since Chung (2006) provides convincing arguments from Danish, Norwegian and English that the P-stranding in implicit arguments/adjuncts is independently controlled by a lexico-syntactic requirement that the items for the sluice be a subset of the items for the antecedent. A similar methodological caution applies for test (j). Left branch extraction involves extraction from within the DegP, not strictly from the complement of P. Accordingly, we do not expect this test to give us meaningful results for our present purposes. These considerations reduce the number of tests applicable to four, namely, (b), (d), (e) and (f).

3.1.1 *Prosody*

Merchant (2001: 121) observes that in English, the greatest pitch accent falls on the *wh*-phrase in sluices but on the copula in clefts, as shown in (9a–c).

(9) Someone gave me a valentine, but
   a. I don't know WHO.
   b. I don't know who it WAS.
   c. *I don't know WHO it was. (Merchant 2001: 121)

Applying this diagnostic to Indonesian, we get the following pattern.

(10) Ali berdansa dengan seseorang, tapi
Ali dance with someone but

a. Saya tidak tahu SIAPA.
I NEG know who
'I don't know who.'

b. *Saya tidak tahu siapa ITU
I NEG know who that
'I don't know who it was.'

c. Saya tidak tahu SIAPA itu.
I NEG know who that
'I don't know who it was.'

The highest pitch accent falls on the *wh*-phrase in both P-less sluices and clefts. The present test, therefore, is equivocal at best about whether the former can be assimilated to the latter in Indonesian.

3.1.2 *Exhaustivity diagnostics*

Tests (d), (e) and (f) are concerned with three different types of modification. Kiss (1998) and Groenendijk and Stokhof (1997: Section 6.2.3) note that the pivot of a cleft entails exhaustivity. Merchant (p. 122) observes that the *wh*-pivot of a cleft is incompatible with modifiers such as *for example*, which force the 'mention-*some*' interpretation; however, there is no such requirement for sluices. This contrast is illustrated in (11Ba, b).

(11) 'Mention-*some*' modification

A: You should talk to somebody in the legal department for help with that.
B: a. Who, for example?
b. *Who is it, for example? (Merchant 2001: 122)

The modifier *else* serves the same function as *for example*. Thus, we expect the same contrast between sluices and clefts, as shown in (12a, b).

(12) *Else*-modification

a. Harry was there, but I don't know who else.
b. *Harry was there, but I don't know who else it was. (Merchant 2001: 122)

Now, the reverse argument holds if we replace these "mention-*some*" modifiers with "mention-*all*" modifiers such as *all*. As the contrast in (13a, b) shows, *all*-modification causes sluices to be degraded, but this modification is perfectly compatible with clefts.

(13) 'Mention-*all*' modification

a. *A bunch of students were protesting, and the FBI is trying to find out who all.
b. A bunch of students were protesting, and the FBI is trying to find out who all it was. (Merchant 2001: 122)

Applying these three tests to P-less sluices in Indonesian, we get the following results.

(14) 'Mention-*some*' modification

A: Kamu harus bicara dengan seseorang tentang masalah ini.
You should talk with someone about issue this
'You should talk with someone about this issue.'

B: a. Siapa misalnya?
Who for example
'Who, for example?'

b. ?Siapa itu misalnya?
Who that for example
'*Who is it, for example?

(15) *Else*-modification

Ali berdansa dengan Fatimah kemarin, tapi
Ali dance with Fatimah yesterday but
'Ali danced with Fatimah yesterday, but…'

a. Saya tidak ingat siapa lagi.
I NEG remember who else
'I don't remember who else.'

b. ?Saya tidak ingat siapa itu lagi.
I NEG remember who that else
'*I don't remember who else it was.'

(16) 'Mention-*all*' modification

Ali berdansa dengan banyak orang kemarin, tapi
Ali dance with many people yesterday but
'Ali danced with many people yesterday, but …'

a. Saya tidak ingat siapa saja.
I NEG remember who all
'*I don't remember who all.'

b. ?Saya tidak ingat siapa saja itu.
I NEG remember who all that
'I don't remember who all it was.'

My consultant prefers the P-less sluice variant to the cleft variant in both (14) and (15). However, to the best of my knowledge, this seems to be simply due to stylistic preferences: as the consultant puts it, "(14Ba) and (15a) sound more natural than (14Bb) and (15b), respectively, because the former are simpler". Aside from this, the consultant finds both variants fully acceptable. The effect of this factor on the consultant's preference is also evidenced by the consulant's judgment reported

in (16): the P-less sluice sounds better than the cleft since the former is simpler. It is possible that the pattern here arises because clefts in Indonesian do not have the obligatory exhaustivity requirement that holds for clefts in English. Thus, the former are compatible with *misalnya* 'for example' and *lagi* 'else'. In fact, the lack of the exhaustivity requirement is a property of Indonesian clefts in general. Thus, the acceptability of the discourse in (17) shows that the other type of cleft – long clefts – is also free from this requirement, just like the full-fledged *wh*-question (18).

(17) A: Siapa itu yang kamu lihat kemarin?
who that that you see yesterday
'Who was it that you saw yesterday?'

B: Ali.
Ali
'Ali.'

A: Siapa lagi?
who else
'Who else?'

B: Fatimah
Fatimah
'Fatimah.'

(18) A: Siapa yang kamu lihat kemarin?
who that you see yesterday
'Who did you see yesterday?'

B: Ali.
Ali
'Ali.'

A: Siapa lagi?
who else
'Who else?'

B: Fatimah
Fatimah
'Fatimah.'

In summary, it is clear that all the tests developed by Merchant to distinguish between genuine sluicing and clefting that are in principle applicable to Indonesian are quite inconclusive regarding whether the former can be assimilated to the latter.

3.1.3 *The distribution of the question particle -kah in Indonesian*

Fortin (2007a) presents one argument, internal to Indonesian, that sluicing in Indonesian cannot be assimilated to a cleft option. Specifically, she observes that the question particle *-kah* can occur with the *wh*-pivot of a cleft (19b), but not with the *wh*-remnant of a sluice (19a). Fortin further notes that the particle is also

incompatible with a full-fledged *wh*-question, as shown in (19c), suggesting that the derivational source for (19a) is not a cleft but a *wh*-question, as in English.

(19) Ada seseorang yang menelpon tadi…
exist someone that phone just now
'Somebody just called …'

a. coba tebak siapa-(*kah) !
try guess who-Q
'try to guess who!'

b. coba tebak siapa-(kah) itu!
try guess who-Q that
'try to guess who it was!'

c. coba tebak siapa-(*kah) yang menelpon tadi!
try guess who-Q that phone just now
'try to guess who just called now!' (Fortin 2007a: 207, 208)

The difference in the distribution of the question particle between (19a) and (19b), thus, suggests one possible clue as to whether or not P-less sluices in Indonesian can be assimilated to clefts. Applying this diagnostic to this particular type of sluicing, we get the following results.

(20) Saya bicara dengan seseorang tadi …
I talk with someone just now
'I just talked with someone …'

a. coba tebak siapa-(kah)!
try guess who-Q
'try to guess who!'

b. coba tebak siapa-(kah) itu!
try guess who-Q that
'try to guess who it was!'

c. *coba tebak siapa-(kah) yang saya bicara dengan!
try guess who-Q that I talk with
'try to guess who I talked with!'

My consultant reports that there is no difference in acceptability between (20a) and (20b), indicating that the *kah*-test cannot distinguish between the genuine sluicing analysis and the cleft analysis for P-less sluices. Notice that (20c) is ill-formed for the independent reason that Indonesian disallows P-stranding under movement (see (5a)).

3.2 Indonesian-internal evidence for P-less sluicing ≠ pseudosluicing

Having demonstrated that none of the diagnostics developed by Merchant and Fortin serves to clearly identify the source of P-less sluicing in Indonesian, an

important question remains whether there is any grammatical pattern, strictly internal to Indonesian, which *unequivocally* distinguishes sluice and cleft derivations for P-less sluicing. In this section, I provide three novel arguments related to surface vs. deep anaphora (Hankamer & Sag 1976), sloppy identity readings, and multiple antecedents that P-less sluicing in Indonesian is not an elliptical cleft. The arguments in Sections 3.2.1 and 3.2.2 against the cleft analysis are modeled after Takahashi's (1994) arguments against a similar analysis of Japanese sluicing.

3.2.1 *Surface anaphora vs. deep anaphora*

The first argument against the reduction of a P-less sluice to a cleft in Indonesian concerns the need for linguistic antecedents. Hankamer and Sag (1976) observe that sluicing requires a linguistic antecedent, on the basis of the contrast between (21) and (22).

(21) Hankamer: Someone's just been shot.
Sag: Yeah, I wonder who. (Hankamer & Sag 1976: 408)

(22) [Context: Hankamer produces a gun, points it off stage and fires, whereupon a scream is heard.]
Sag: # Jesus, I wonder who. (Hankmer & Sag 1976: 408)

This dependence on a linguistic antecedent is also observed in the P-less sluice in Indonesian, as shown by the contrast between (23) and (24). Suppose that Ali, Fatimah, and David are all college professors.

(23) Ali: David berteriak kepada salah satu mahasiswa-nya.
David yell to one.of student-his
'David is yelling at one of his students.'

a. Fatimah: Saya bertanya-tanya siapa.
I wonder-RED who
'I wonder who.'

b. Fatimah: Saya bertanya-tanya siapa itu.
I wonder-RED who that
'I wonder who it is.'

(24) [Context: Ali and Fatimah both hear David yelling at one of his students]

a. Fatimah: #Saya bertanya-tanya siapa.
I wonder-RED who
'I wonder who.'

b. Fatimah: Saya bertanya-tanya siapa itu.
I wonder-RED who that
'I wonder who it is.'

When a linguistic antecedent is supplied, both P-less sluice and cleft replies are acceptable, as shown in (23a, b). The examples in (24a, b), on the other hand, show that the behavior of the two constructions clearly diverges when no linguistic context is provided. If (24a) were derived from (24b) by the deletion of the expletive subject *itu* 'that', then we would expect no difference in felicity between the two examples. This result, therefore, shows that the source of the P-less sluice cannot be a cleft construction.

3.2.2 *Sloppy identity and c-command*

The second argument against the cleft analysis of P-less sluices in Indonesian comes from the sloppy identity reading. Ross (1969) observes that sluicing in English allows both strict and sloppy readings, as shown in (25).

(25) I know how to say I'm sorry, and Bill knows how, too.
(Ross 1969, as cited in Takahashi (1994: 268))

The second conjunct in this example allows two readings: (1) Bill knows how to say I'm sorry (the strict reading) and (2) Bill knows how to say Bill is sorry (the sloppy reading). Now, the following examples show that in Indonesian, the P-less sluice, unlike the cleft, allows the sloppy reading.

(26) Ali tidak ingat dengan siapa dia berdansa tapi David
Ali NEG remember with who he dance but David
ingat siapa.
remember who
'Ali doesn't remember with who he danced but David remembers who.'

(27) Ali tidak ingat dengan siapa dia berdansa tapi David ingat
Ali NEG remember with who he dance but David remember
siapa itu.
who that
'Ali doesn't remember with who he danced but David remembers who it was.'

The second conjunct in (26) allows both strict and sloppy readings: it can mean either that David remembers who Ali danced with (=the strict reading) or that David remembers who David danced with (=the sloppy reading). The second conjunct in (27), however, only allows the strict reading. If the P-less sluice in (26) were derived from the cleft source in (27), then it would not be obvious how this difference comes about. This interpretive contrast, therefore, provides a second argument against the equation "P-less sluicing = elliptical cleft" in Indonesian.

3.2.3 *Sluicing with multiple potential antecedents*

The final argument that P-less sluices do not have a cleft source in Indonesian comes from cases where the remnant *wh*-phrase has two potential candidates for antecedent. Consider examples (28a, b).

(28) Saya tahu seseorang dari Indonesia berdansa dengang seseorang dari
I know someone from Indonesia dance with someone from
Jepang tapi
Japan but
'I know someone from Indonesia danced with someone from Japan, but…'

a. Saya tidak ingat siapa.
I NEG remember who
'I don't remember who.'

b. Saya tidak ingat siapa itu.
I NEG remember who that
'I don't remember who it was.'

The continuation in (28a) allows two readings. One reading is that I don't remember who the Indonesian dancing with someone from Japan was. The other reading is that I don't remember who the Japanese dancing with someone from Indonesia was. Crucially, this ambiguity does not obtain in the cleft-based continuation in (28b), which only allows the latter reading ("I don't remember who the Japanese dancing with someone from Indonesia was"). I am agnostic about the source for this contrast, but the case can still be made that any proposed attempt to reduce the P-less sluice to a cleft is not tenable.

3.3 Other potential alternative treatments of P-stranding in Indonesian

In the previous section, I have presented three novel arguments that P-less sluicing is not derived from a cleft in Indonesian. Does that lead us to the conclusion that the P-stranding pattern in Indonesian is a counterexample to the PSG? Not necessarily. We need to confirm that there is no other source for the P-drop in P-less sluices in Indonesian other than the extraction of the NP complement of a preposition via syntactic movement. Recent work has presented two analyses resorting to resumption and P-drop, which, if extendable to Indonesian, would make the P-stranding pattern in Indonesian not problematic for the PSG. This is an important point because these two analyses were proposed for Mandarin Chinese and Serbo-Croatian, languages which exhibit the same P-stranding profile as Indonesian, at least at a superficial level. Thus, in this section, I present evidence that these two analyses cannot be transported to Indonesian P-less sluices. Since

these two options together with the cleft analysis (Rodriguez et al. 2009) exhaust all the analytical possibilities in the current literature for the P-less sluicing that would save the PSG, I conclude that Indonesian presents a real problem for the PSG.

3.3.1 *Resumption (Wang 2006)*

Wang (2006) reports that Mandarin Chinese shows a P-omission pattern, as shown in (29a, b), which superficially contradicts the PSG.[2]

(29) a. *(shi) [na-ge ren]$_i$ Lisi GEN t_i zai shuohua?
FOC/COP which-CL person Lisi with Prog talk
'Which one is Lisi talking with?'

b. Lisi GEN mou-ge ren quwan, dan wo bu zhidao shi
Lisi with certain-CL person go play but I NEG know FOC/COP
(GEN) shei.
with who
'Lisi has a trip with a certain person, but I don't know who.'
(Wang 2006: 9, 10)

Wang argues that the PSG can be maintained even when faced with these examples because P-omission under sluicing involves the generation of a resumptive pronoun, following *wh*-movement. This is evidenced by the availability of resumptive strategies in *wh*-questions and sluicing, as shown in (30a, b), respectively.

(30) a. [na-ge ren]$_i$ Lisi hen zihuan ta-t_i?
which-CL person Lisi very like him
'Which person does Lisi like (him) very much?'

b. keshi wo bu zhidao na-ge ren$_i$ <$_{TP}$ Lisi GEN ta-t_i qu
but I NEG know which-CL person Lisi with him go
kan dianying>
see movies
'..but I don't know which person (did) Lisi go to the movies with him.'
(Wang 2006: 10, 11)

This resumption analysis, however, cannot be transported to Indonesian since it would wrongly predict that Indonesian should also be able to make use of the resumptive pronoun strategy. Fortin (2007a: 71) shows that Indonesian does not use resumptive pronouns, even under contexts where they have been generally considered to ameliorate island violations (Sells 1984). This point is illustrated in (31a–c).

---

2. It is not obvious whether Mandarin Chinese has *wh*-movement. The point here, however, is simply to illustrate Wang's analysis developed for this language and to see whether this can be applied to Indonesian P-stranding.

(31) a. *Apa yang Ali jadi terlalu gemuk [$_{CP}$ karena dia
what that Ali be too chubby because he/she
makan *apa/pro*]?
eat what
'What$_i$ did Ali get fat because he ate t_i?'

b. *Apa yang Ali jadi terlalu gemuk [$_{CP}$ karena itu di-makan-nya]?
what that Ali be too chubby because it PASS-eat-he/she
'What$_i$ did Ali get fat because it$_i$ was eaten by him?'

c. *Apa yang Ali jadi terlalu gemuk [$_{CP}$ karena dia makan-*nya*]?
what that Ali be too chubby because he/she eat-it
'What$_i$ did Ali get fat because he ate it$_i$?'

(Fortin 2007a: 71)

(31a) shows that *wh*-movement shows the adjunct island effect. (31b, c) are two failed attempts to insert a resumptive pronoun via the pronominal clitic *-nya* 'his, her, it'. The result here, therefore, suggests that the resumptive strategy cannot be the right approach to the P-stranding pattern in Indonesian.

3.3.2 *P-drop (Stjepanović 2008)*

Stjepanović (2008) provides examples in (32a–c) to show that Serbo-Croatian presents a P-stranding pattern that (ostensibly) contradicts the PSG.[3]

(32) a. *Čega je Petar glasao protiv?
what.GEN is Petar voted against
'What did Petar vote against?'

b. Protiv čega je Petar glasao?
against what.GEN is Petar voted
'Against what did Petar vote?'

c. Petar je glasao protiv nečega, ali ne znam (protiv) čega.
Petar is voted against something but NEG I.know against what
'Petar voted against something, but I don't know what.'

(Stjepanović 2008: 181)

The contrast in (32a, b) shows that the preposition *protiv* 'against' cannot be stranded under *wh*-movement but the grammaticality of the P-less sluice in (32c) indicates that Serbo-Croatian is problematic for the PSG. Stjepanović's main claim, however, is that this conclusion is not warranted since there is independent

3. See Stjepanović (pp.183–186) for convincing arguments against a cleft analysis of P-less sluices in Serbo-Croatian, which I will not review here.

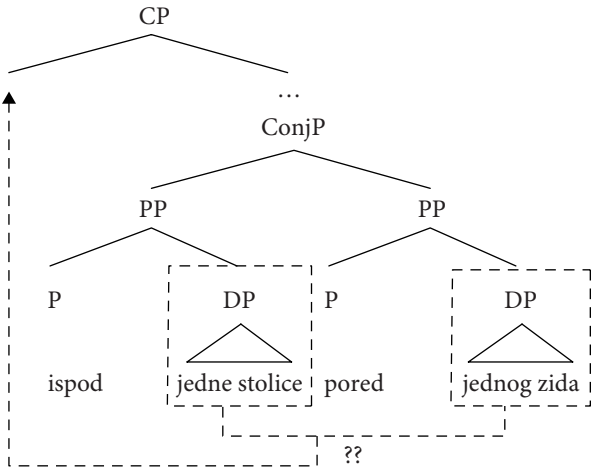
evidence that P-omission under sluicing is not due to the movement of the complement DP of the preposition. To illustrate her claim, consider example (33).

(33) Petar je sakrio igračku ispod jedne stolice i pored jednog zida,
Petar is hidden toy under one chair.GEN and beside one wall
ali ne znam (ispod) koje stolice i (pored) kojeg zida.
but NEG I.know under which chair.GEN and beside which wall.GEN
'Petar hid the toy under a chair and beside a wall, but I don't know which chair and which wall.'

(Stjepanović 2008: 183)

This sentence can be interpreted as involving only one place (one which is under a chair and beside a wall) where Petar hid the toy. This is evidenced by the fact that the sentence in (33) can be followed by sentences like "Eh, I'd really like to know where that place is!" If the remnant involves coordination of CPs, then the only interpretation available should be one where the remnant denotes two different places. The structure for the second clause of (33) under the "one-place reading" then will be as in (34).

(34)



This derivation involves extraction of two different *wh*-phrases into a single specifier of CP but such a derivation is impossible under any current theory of extraction. The grammaticality of the P-less option in (33), thus, clearly suggests that there is a different way to delete the preposition other than via *wh*-movement and stranding. Now that we know this P-drop exists independently of *wh*-movement in Serbo-Croatian, P-omission under sluicing in (32c) may well be reanalyzed in the same way. Accordingly, as the argument goes, the P-drop pattern in (32a–c) does not directly undermine the PSG. Stjepanović (p. 188) speculates that P-stranding in this language is "a post-syntactic phenomenon, occurring possibly at PF".

It is important to see whether this PF P-drop analysis can be extended to the analogous P-omission pattern in Indonesian. Consider the following example, the Indonesian analogue of the example in (33).

(35) Ali menyembunyikan mainan itu di bawah meja dan di samping sofa, tapi
Ali hide toy that under desk and beside couch but
saya tidak ingat (di bawah) meja dan (di samping) sofa yang mana.
I NEG remember under desk and beside sofa which
'Ali hid that toy under a desk and beside a couch, but I don't remember (under) which desk and (beside) which couch.'

As shown in (35), P-omission is acceptable in both conjuncts. Crucially, however, the only reading available here is one where Ali hid his toy once under a desk and once beside a couch. Thus, this sentence cannot be followed by another sentence like "Eh, I really want to know where that place is!" This result, therefore, suggests that there is no independent evidence that P-omission under sluicing is due to PF-drop in Indonesian as it is in Serbo-Croatian.

Can we save this P-drop analysis by saying that it occurs within the syntax? The answer is negative since it would then be unclear why P-omission is blocked with the fronted *wh*-phrase in the derivation of (36) below, where the whole PP is fronted and the P undergoes subsequent deletion within the syntax.

(36) $[_{PP}$ *(Dengan) siapa$]_i$ kamu berdansa t_i? (cf. (5a, b))
with who you dance
'Whom did you dance ?'

To the best of my knowledge, there is not any other alternative treatment in the literature that could deal with P-omission other than the PF/syntactic P-drop and the resumption strategies discussed in this subsection. Therefore, unless other independent strategies are presented, it seems safe to conclude that P-stranding under sluicing in Indonesian is caused by the syntactic movement of a *wh*-phrase followed by TP deletion, as originally proposed by Merchant.

4. P-stranding under sluicing in Indonesian and repair by ellipsis

In this section, I propose a novel analysis of the P-stranding pattern in Indonesian that draws on a few independently motivated assumptions. The most crucial idea pursued below is that certain imperfections created by the syntactic derivation can be ameliorated by deleting the offending part of the syntactic derivation. This idea of "repair by ellipsis" goes back to Ross' (1969) global analysis of the ameliorating effect of deletion on subjacency-violating movements and has been resurrected in recent minimalist research on the syntax–phonology interface by Merchant (2001), Lasnik (1999a, 2001, 2005, 2007), Fox and Lasnik (2003) and Boeckx and

Lasnik (2006). The proposed analysis indicates that the post-syntactic phonological component does whatever it can to save an otherwise illicit syntactic object within the narrow range of options permitted by the interaction of universal principles and parametrically defined options available in a particular language.

4.1 *Wh*-feature percolation as feature pumping

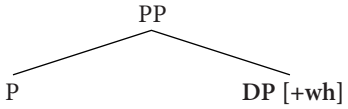
In answering a criticism raised by Postal (1972), Chomsky (1972) proposes that there is an optional percolation of the [+wh] feature of the interrogative element onto its dominating PP in English. Postal observes that, if movement is successive-cyclic, a preposition should be able to be stranded in any one of the specifiers of intermediate CPs. This prediction is wrong, as shown in (37d, e).

(37) a. I believe Mary thinks Joan talked to someone.
b. **Who** do you believe Mary thinks Joan talked **to?**
c. **To whom** do you believe Mary thinks Joan talked?
d. ***Who/Whom** do you believe **to** Mary thinks Joan talked?
e. ***Who/Whom** do you believe Mary thinks **to** Joan talked?

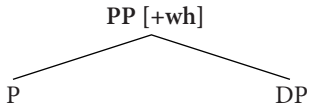
(Postal 1972: 213)

The generalization here is that prepositions in English must either be stranded in situ or pied-pied into the specifier of the matrix CP. Chomsky suggests that this generalization naturally falls out if the [+wh] feature of the interrogative DP *can* percolate onto its dominating PP in English. One way to implement Chomsky's suggestion is as in (38a–c).

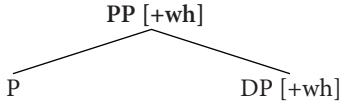
(38) a. No Percolation



b. Percolation as Pumping



c. Percolation as Copying



I assume for the moment that the percolation of the *wh*-feature is technically analyzed as pumping as seen in (38b) rather than copying as seen in (38c); I provide a conceptual argument for this position in the next subsection based on superiority effects. When the [+wh] feature does not percolate as in (38a), the closest element from the interrogative C is the DP. This derivation yields the P-stranding structure illustrated in (37b). When the feature does percolate as in (38b), it is now the PP that is closest to, and hence attracted by, the C. This derivation, thus, yields the pied-piping structure illustrated in (37c). Notice, crucially, that under this percolation analysis, there is no way in which the preposition can be stranded in intermediate CPs because the decision as to whether the feature is percolated or not is made when the derivation constructs the PP in a bottom-up fashion. Once it percolates, the syntax automatically demands that the PP move as a whole. If it does not, the syntax demands that the *wh*-phrase itself be carried onto the specifier of the matrix CP. Under the "movement + TP deletion" analysis of sluicing laid out in Merchant, the P-less variant of (3c), for example, is derived when the derivation does not involve percolation of the *wh*-feature and undergoes TP deletion at PF. The pied-piped variant of (3c), on the other hand, results if percolation takes place, followed by TP deletion.

The notion of *optionality for percolation* needs some clarification. I am giving English the optional value for the *wh*-feature percolation to capture its general tendency for which the majority of (particular uses of) prepositions are strandable. It is well-known, however, that certain prepositions do resist P-stranding under *wh*-movement, at least in certain cases like the following.

(39) a. Under what circumstances will we use force?
b. *What circumstances will we use force under? (Chung et al. 1995: 273)

(40) a. In what sense is this theory right?
b. *What sense is this theory right in? (Chung et al. 1995: 273)

I assume that the possibility of percolation is an idiosyncratic property of each preposition that does not follow from any structural principle. Thus, prepositions such as *under* and *in* as used in (39, 40), as their lexical property, force percolation of the *wh*-feature of its complement NP whereas prepositions such as *with* in (3a–c) do not. That the factor governing the feature percolation is idiosyncratic is evidenced by the fact that, even for generally strandable items, there is variation among speakers of English I have polled with respect to P-stranding. I will come back to this issue and its significance for my analysis of P-less sluicing in Sections 4.2 and 4.3.

Now, the fact that Indonesian prohibits P-stranding under *wh*-movement as shown in (5a, b) falls out straightforwardly. Lasnik (2005) proposes that there is

a parameter with respect to the feature percolation, namely, that the *wh*-feature CAN/MUST percolate. Suppose now that Indonesian selects the obligatory value for this parameter. Then, the closest element to be moved to C is always the PP, as shown in (38b). Hence, the movement of a *wh*-phrase which strands the preposition is impossible. The question then now becomes why Indonesian allows P-stranding under sluicing.

4.2 Failure of percolation and repair by ellipsis

My analysis for the P-stranding under sluicing adopts the "repair by ellipsis" idea first proposed by Ross (1969). Ross observes that sluicing ameliorates island-violations that would otherwise yield ungrammatical sentences. Some examples from Ross are given in (41, 42) with his own judgments indicated.

(41) The Complex NP Constraint

a. *She kissed a man who bit one of my friends, but Tom doesn't realize which one of my friends she kissed a man who bit.

b. ?She kissed a man who bit one of his friends, but Tom doesn't realize which one of my friends.

(Ross 1969: 276)

(42) The Sentential Subject Constraint

a. *That he'll hire someone is possible, but I won't divulge who that he'll hire is possible.

b. ??That he'll hire someone is possible, but I won't divulge who.

(Ross 1969: 277)

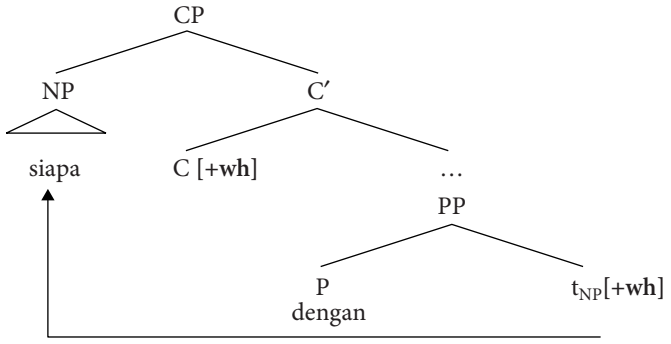
Based on this observation, Ross argues for the necessity of transderivational comparison, as stated in (43).

(43) If a node is moved out of its island, an ungrammatical sentence will result. If the island-forming node does not appear in surface structure, violations of lesser severity will (in general) result. (Ross 1969: 277)

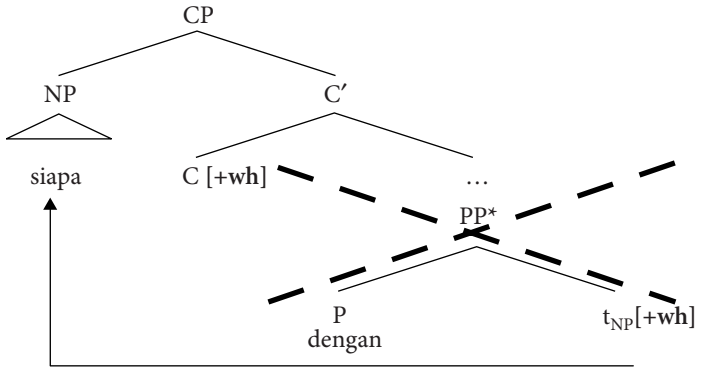
Recent research on sluicing (e.g. Lasnik 1999a, 2001, Fox and Lasnik 2003, Boeckx and Lasnik 2006) treat sluiced versions as in (41b) and (42b) as perfect rather than marginal. Following Chomsky (1972), Merchant (2001) updates Ross's proposal in PF terms. Specifically, TP deletion ameliorates certain island violations because they constitute PF islands; (41b) and (42b) become grammatical because the violation is nullified at PF by deleting the structure that encodes such a violation.

With this idea of repair by ellipsis in mind, consider now why Indonesian allows P-stranding under sluicing. The schematic derivations for (5a) and (5c) are shown in (44) and (45), respectively.

(44)



(45)

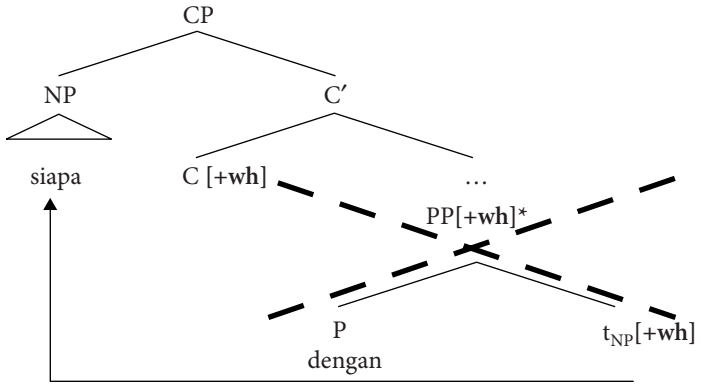


Let us propose that what is repaired in the present case is *a failure of the [+wh] feature to percolate at the PP level* and that a representational PF constraint to verify percolation will rule out the offending PP.[4] If the offending PP persists at PF, the constraint is violated, and the ungrammatical sentence in (5a) results. If the offending PP is deleted at the interface, on the other hand, the representational constraint has nothing to apply. Thus, the failure of percolation is repaired, and the grammatical P-less sluice in (5c) results. Suppose further that deletion applies at PF only as a Last Resort (cf. Chomsky 1986a, 1995; Reinhart 2006) to save a structure that would otherwise yield an ungrammatical output. Then, my analysis also correctly predicts the fact (see note 1) that there is no language which allows P-stranding under *wh*-movement but prohibits this option under sluicing. This type of language should have the optional value for the feature percolation under my analysis to allow P-stranding under *wh*-movement. Thus, the derivation for the P-less sluice is itself a well-formed output of the syntactic derivation. Accordingly, the Last Resort Principle blocks the superfluous application of ellipsis at PF.

4. Many thanks to Heidi Harley (personal communication, April 2008) for suggesting this analysis and for useful discussion on this analysis.

I have assumed so far without argument that the feature percolation is construed as feature pumping as seen in (38b) rather than feature copying as seen in (38c). Within the feature copying view, one could think of the following alternative account of the P-stranding pattern in Indonesian. The derivation for the P-less sluice in (5c) then would be as in (46).

(46)



The following argument suggests, however, that the feature pumping analysis is to be preferred over the feature copying analysis. The violation caused in (46) is a superiority/A-over-A type violation. Boeckx and Lasnik (2006) argue that superiority violations are inviolable derivational constraints within the syntax. To illustrate, consider examples from Serbo-Croatian (47–48).

(47) Ivan i Marko ne znaju….
Ivan and Marko NEG know.
'Ivan and Marko do not know…'

a. ko je šta kupio.
who is what bought
'Who bought what'

b. *šta je ko kupio.
what is who bought
'What who bought' (Boeckx and Lasnik 2006: 152)

(48) a. Somebody bought something, but…

b. i. Ivan i Marko ne znaju ko šta.
Ivan and Marko NEG know who what
'Ivan and Marko know who what.'

ii. *Ivan i Marko ne znaju šta ko.
Ivan and Marko NEG know what who
'Ivan and Marko don't know what who.' (Boeckx and Lasnik 2006: 152)

The examples in (47a, b) illustrate that Serbo-Croatian exhibits the superiority effect in multiple *wh*-questions. The contrast between (48bi) and (48bii) shows that this effect persists even after sluicing/TP deletion. In light of this data, Boeckx and Lasnik (see also Lasnik 2005) suggest that superiority is a derivational constraint *within syntax* and hence is immune to repair-by-deletion. Given this suggestion, the feature-copying analysis of the P-stranding in Indonesian leads to the consequence that superiority violations are representational/interface constraints in Indonesian but derivational/inviolable constraints in Serbo-Croatian. This result is highly undesirable in view of learnability. This consideration, thus, provides conceptual support for the technical implementation of percolation as pumping.

Recall from Section 4.1 that there are certain (uses of) prepositions in English that resist P-stranding under regular *wh*-movement, as shown in (39a, b) and (40a, b). I have analyzed this prohibition by assuming that as their lexical property, they select the obligatory value for the feature percolation parameter. My proposed analysis, therefore, makes an interesting prediction in these cases, namely, that the prepositions which are not strandable under regular *wh*-movement become strandable under sluicing. This prediction is indeed borne out, as first observed by Rosen (1976). The examples in point are (49a, b).

(49) a. We are willing to use force under certain circumstances, but we will not say in advance which ones.
b. This theory is surely right in some sense; it's just not clear which (what) exactly. (Chung et al. 1995: 273)

I take this pattern as important confirmation for my analysis drawing on "repair by ellipsis".

4.3 New predictions: P-stranding under pseudogapping in Indonesian

My analysis makes an important prediction: if the P-stranding violation is repaired at PF by deleting the offending PP structure, the deletion of a constituent smaller than TP but larger than PP should also save the violation. Pseudogapping constructions, illustrated by *Mary will select George, and Sue will John* (see (50a)), provide a crucial testing ground for this prediction for the following reason; as is well-known, the presence of an auxiliary before the pseudogapping site is a signature property of this construction that distinguishes it from gapping (Levin 1979/1986). Recent work on this construction (Jayaseelan 1990; Lasnik 1999a; Takahashi 2004; Merchant 2008) has argued that the derivation of this construction involves ellipsis (specifically of VP or Voice P) at PF. Therefore, to the extent that the PF deletion analysis is correct, then the presence of an auxiliary indicates that the amount of

structure elided in this construction is smaller than TP, the head of which is occupied by the auxiliary. In this section, I provide evidence that the prediction above is fulfilled by P-stranding under pseudogapping in Indonesian.

One could think of two lines of analysis for pseudogapping in Indonesian, on the basis of the previous studies on pseudogapping in more familiar languages like English, as in (50a). One line of analysis (Jayaseelan 1990) suggests that remnants/focused constituents in pseudogapping undergo rightward movement out of the VP, followed by the ellipsis of the VP, as shown in (50b). Jayaseelan identifies the movement in question as *Heavy NP Shift*. The other line of analysis (Lasnik 1999a, b) suggests that the movement responsible for the remnant is Object Shift, a case of leftward movement, as shown in (50c).

(50) a. Mary will select George, and Sue will John.

b. $[_{VP}\ [_{VP}$ select $t_i]$ $John_i]]$ $\rightarrow$ $[_{VP}$ ~~$[_{VP}$ select $t_i]$~~ $John_i]]$
(rightward movement + VP ellipsis)

c. $[_{AgrOP}\ John_i\ [_{VP}$ select $t_i]]$ $\rightarrow$ $[_{AgrOP}\ John_i$ ~~$[_{VP}$ select $t_i]$~~$]$
(leftward movement + VP ellipsis)

Indonesian has the Heavy NP Shift, as shown in (51a, b). (51c) shows that the rightward movement cannot strand a preposition.

(51) a. Fatimah harus berdansa $[_{PP}$ dengan seorang laki-laki yang kaya]
Fatimah must dance with a man that rich
hari ini.
day this
'Fatimah must dance with a rich man today.'

b. Fatimah berdansa t_i hari ini $[_{PP}$ dengan seorang laki-laki yang kaya$]_i$.
Fatimah dance day this with a man that rich
'Fatimah must dance today with a rich man.'

c. *Fatimah berdansa dengan t_i hari ini $[_{NP}$ seorang laki-laki yang kaya$]_i$.
Fatimah dance with day this a man that rich
'*Fatimah must dance with today a rich man.'

Recall also that leftward movement also cannot leave a preposition behind, as illustrated earlier in (5a). Thus, in Indonesian, no overt movement, leftward or rightward, strands a preposition. Accordingly, the predictions of the two analyses are the same with respect to P-stranding under pseudogapping. In this paper, I adopt the Jayseelan-type rightward movement analysis for Indonesian pseudogapping simply for convenience's sake, though the Lasnik-type leftward movement analysis would also do.

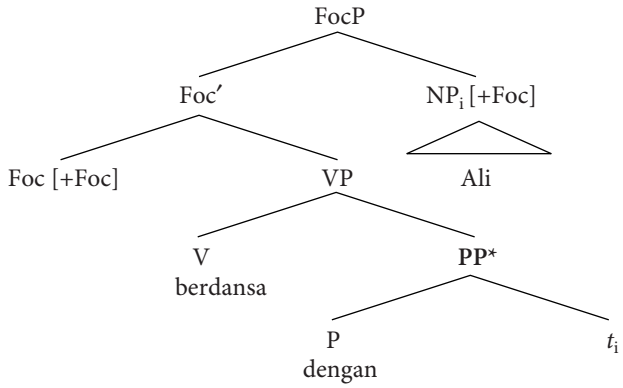
With the above observation in mind, consider now how P-stranding plays out under pseudogapping in Indonesian. The grammaticality of (52) without the

preposition *dengan* 'with' in the pseudogapped clause comes as a surprise since the rightward movement should not be able to strand a preposition.

(52) ?Esti harus berdansa dengan Fernando tapi Fatimah bisa (dengan) Ali.
Esti must dance with Fernando but Fatimah can with Ali
'Esti must dance with Fernando but Fatimah can (with) Ali.'

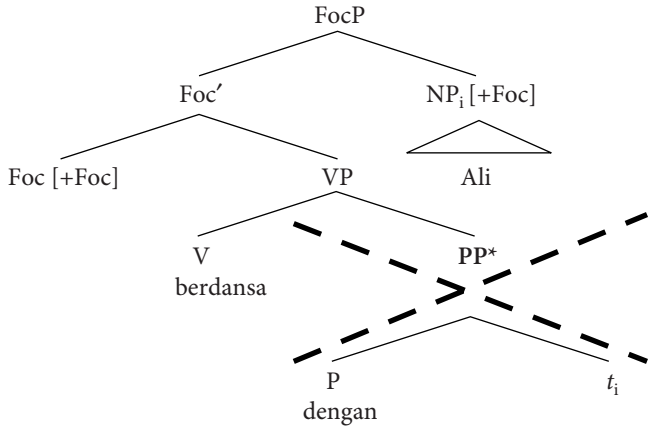
This apparently special pattern, however, naturally falls into place under the idea of "repair by ellipsis". Suppose that the focused NP constituent under pseudogapping is marked with the [+Foc] feature and is moved to the specifier of the the VP-peripheral focus projection and that this feature is obligatorily percolated onto the dominating PP in Indonesian, just like the [+wh] feature. Then, the derivation shown in (53) for (51c) is filtered out at PF since the offending PP remains unaffected.

(53)



Now, compare this derivation with that shown in (54) for the P-less pseudogapping in (52).

(54)



In this derivation, the PP records the representational violation caused by the failure of the percolation of the [+Foc] feature. However, the VP deletion at PF removes the offending configuration. This repair, thus, accounts for the otherwise mysterious behavior of the P-less pseudogapping. The contrast between (51c) and (52), therefore, provides independent empirical support for my analysis based on "repair by ellipsis."

My analysis also makes the correct prediction for English that prepositions such as *under* (as used in (39a, b)) that otherwise cannot be stranded by *wh*-movement may be stranded under pseudogapping. It is known (Jayaseelan 1990) that the Heavy NP Shift in English also cannot tolerate P-stranding, as illustrated in (55a–c).

(55) a. We will use force under this kind of circumstance tomorrow.
b. We will use force t_i tomorrow $[_{pp}$ under this kind of circumstance$]_i$.
c. *We will use force under t_i tomorrow $[_{NP}$ this kind of circumstance$]_i$.

Thus, *under* cannot be stranded by movement, be it leftward or rightward. My analysis predicts, however, that the same preposition should be able to be stranded under pseudogapping since the VP deletion deletes the offending PP constituent under the Jayaseelan-style analysis. This prediction is indeed borne out.[5]

(56) ?(*) We will use force under these circumstances but they will (under) those circumstances.

5. P-stranding under sluicing across languages: A case study with French and German

In this section, I discuss P-stranding under *wh*-questions and sluicing in French and German. Merchant (2001: 94, 98) observes, based on the following examples, that neither French nor German allows P-stranding under *wh*-questions or sluicing.[6]

5. I polled two native speakers on this example. One speaker judges it acceptable while the other judges it poorly. This mixed judgment, however, is also reported for pseudogapping in English. Lasnik (1999b: 158), for example, reports that "even the best instances of Pseudogapping are somewhat degraded." I will not dwell on this result further in this paper.

6. Merchant (2001: 94, 98) notes that all the three speakers he polled rejected (57c) without the preposition whereas the judgment indicated for the German example in (58c) without the preposition was 'uniform across speakers and sessions.'

(57) a. *Qui est-ce qu' elle l'a offert à? (=4a)
who Q she it-has offered to
'Whom has she offered it to?'

b. À qui l'a-t-elle offert? (=4b)
to whom it-has-she offered
'To whom has she offered it?

c. Anne l'a offert à quelqu'un, mais je ne sais pas
Anne it-has offered to someone but I NEG know NEG
*(à) qui. (=4c)
to whom
'Anne has offered it to someone, but I don't know (to) whom.'
((57a, c) from Merchant (2001: 98))

(58) a. *Wem hat sie mit gesprochen?
Who has she with spoken
'Who has she spoken with?'

b. Mit wem hat sie gesprochen?
With who has she spoken
'With whom has she spoken?'

c. Anna hat mit jemandem gesprochen, aber ich weiß nicht, *(mit) wem.
Anna has with someone spoken but I know NEG with who
'Anna has spoken with someone, but I don't know with who.'
((58a, c) from Merchant (2001: 94))

Rodriguez et al. (2009) report, contrary to Merchant (2001) (however, see Merchant (2001: 98, note 7)), that French does allow what on the surface looks like PSG-violations, as shown in (59a–c).

(59) a. *Qui tu as dansé avec?
who you have danced with
'Who have you danced with?'

b. Avec qui tu as dansé?
with who you have danced
'With who have you danced?'

c. ?Jean a dansé avec quelqu'un, mais je ne sais pas qui.
Jean has danced with someone, but I NEG know NEG who
'Jean has danced with someone, but I don't know who.'
((59a, c) from Rodriguez et al. 2009: Appendix)

Rodriguez et al. suggest a cleft analysis whereby the apparent P-less sluice comes from the underlying cleft that does not involve P-stranding. (60) shows that French independently has a cleft option for P-less sluices. The apparent P-less sluice can then be derived from (60) by deleting the copula *c'était* 'it.was'.

(60) Jean a dansé avec une des filles, mais je ne sais pas
Jean has danced with one of.the girls but I NEG know NEG
laquelle ~~c'était.~~
which it.was
'Jean has danced with one of the girls, but I don't know which (it was).'

In this chapter, I will be concerned only with the grammar of those French speakers who do not accept the P-stranding option in French, as originally reported by Merchant (2001), and leave aside a detailed examination of the cleft analysis for P-less sluices explored by Rodriguez et al.[7]

5.1 D-P coalescence, D-to-P incorporation, and the syntactic head movement

It is well-known that, in French and German, a preposition sometimes coalesces with an article into a suppletive form. Consider the following examples from French and German.

(61) a. Jean a parlé **du** sujet le plus difficile.
Jean has talked about-the subject the most difficult
'John talked about the most difficult subject.'

b. Suppletive forms:
au = à le, aux = à les, 'to the'; auquel = à lequel, auxquels = à lesquels 'to the which',du = de le, des = de les 'of the'; duquel = de lequel, desquels = de lesquels 'of the which' (French: Law 2006: 646)

7. To the best of my knowledge, besides Indonesian, French, Brazilian Portuguese, Spanish, Mandarin Chinese, and Serbo-Croatian, several other languages have also been reported in the literature whose P-stranding patterns under *wh*-questions and sluicing (at least superficially) contradict the PSG. For example, Szczegielniak (2006) observes that the P-stranding pattern in Polish and Russian is more complicated than what the PSG predicts. He shows that the P-less sluice is grammatical only with D-linked *wh*-phrases and proposes a cleft analysis for this type of sluice. In his unpublished manuscript, Tanaka (2007) also discusses an important observation that the judgments reported by Merchant (2001) for P-stranding in Greek and Polish lack agreement among his native consultants of these languages. In fact, Merchant (2001: 98–102) himself has a detailed discussion of the cross-linguistic observation that languages with little or no morphological case marking tend to be problematic for the PSG and admits that a huge divergence exists even among his own consultants concerning the acceptability of P-less sluices in languages like Italian and Hebrew that uniformly prohibit P-stranding under *wh*-questions. Thus, it is only in 12 out of 18 non-P-stranding languages that Merchant reports the P-less sluice as totally ungrammatical. His reported judgments in the rest of the languages vary dramatically. This indicates that TP deletion may improve an otherwise illegal P-stranding violation at least to a certain degree. Discussing these intricacies about the data in the languages mentioned here is far beyond the scope of this chapter and I leave detailed examination of it to researchers specializing in the syntax of each language.

(62) a. Hans war **am** Schalter.
Hans was at-the counter
'Hans was by the counter.'

b. Suppletive forms:
am = an dem 'at/by the.MASC/Neuter.DAT'; ans = an das 'at/by the.Neuter.ACC'; aufs = auf das 'on the.Neuter.ACC'; auf'n = auf den 'on the.ACC'; auf'm = auf dem 'on the.DAT'; aus'm = aus dem 'out of the.DAT'; beim = be idem 'at the.DAT'; durchs = durch das 'through the.Neuter.ACC'; durch'n = durch den 'through the.MASC.ACC'; für'n = für den 'for the.MASC.ACC'; fürs = für das 'for the.Neuter.ACC'; im = in dem 'in the.DAT', ins = in das 'in the.Neuter.ACC'; mit'm = mit einem/dem 'with a/the.DAT'; seit'm = seit dem 'since the.DAT'; übers = über das 'about the.Neuter.ACC'; vom = von dem 'from the.DAT'; vorm = vor dem 'before the.DAT'; zur = zu der 'to the.FEM.DAT'; zum = zu dem 'to the.MASC/Neuter.DAT'.

(German: Law 2006: 646)

In (61a), the determiner *le* coalesces with its preceding preposition *de* into the suppletive form *du*. Similarly, in (62a), the determiner *dem* coalesces with its preceding preposition *an* to yield the suppletive form *am*.

Law (1998: 22; 2006: 647) and van Riemsdijk (1998: 651–667) propose that D-P coalescence is syntactically conditioned. Law's specific constraint to this effect is seen in (63).

(63) Syntactic Constraint on Suppletion (Law 1998: 22; Law 2006: 647)
Elements undergoing suppletive rules must form a syntactic unit X^0.

This constraint essentially states that determiners must incorporate in the syntax into their governing prepositions to be reanalyzed in the morphology as a suppletive element. One might notice that coalescence only holds for the two prepositions *de* and *à* in French: the overwhelmingly vast majority of prepositions are free from following determiners. However, the condition in (63) does not mean that a suppletive form must exist in every case where a determiner incorporates into the P. It is unlikely that general syntactic operations such as incorporation widespread across languages (Baker 1988) are constrained by this kind of language-specific gap. Furthermore, as shown in (62b) above, German has an extensive list of P-D combinations that undergo suppletion. For these reasons, I assume, following Law (2006: 647), that D-to-P incorporation occurs across the board in these two languages, irrespective of whether the effects of the incorporation are recognized transparently as in German (see van Riemsdijk 1998 for an extensive discussion on this point) or somewhat opaquely as in French. The effects are simply due to language-specific, syntax-external morphological idiosyncrasies.

Law and van Riemsdijk provide evidence that something like (63) is a necessary condition that must be satisfied in the syntax for coalescence to occur in the morphology. Consider (64) and (65a, b).

(64) Je lui ai demandé [$_{CP}$ **de le** /***du** lire].
I him have asked to it/to-it read
'I asked him to read it.'

(65) a. **von** [$_{DP}$ [$_{D}$e] [$_{AP}$ **dem** König true ergeben] [$_{N}$ Dienern]]
of the.DAT king faithfully devoted servant
'of the servant that is faithfully devoted to the king'

b. ***vom** König true ergeben Dienern
of-the.DAT king faithfully devoted servant
'of the servant that is faithfully devoted to the king'

(van Riemsdijk 1998: 655)

(64) illustrates that coalescence cannot occur between the prepositional-complementizer and the object clitic which is attached to the verb. The impossibility of coalescence here is what we expect under (63) because the incorporation of the clitic of the verb into the C head would constitute an instance of ex-corporation, which is generally considered to be impossible. On the other hand, if D-P coalescence were conditioned in purely phonological terms such as linear adjacency, it would be unclear why it is blocked in this example. The data in (65a, b) from German make the same case. In (65a), the preposition *von* 'of' selects the DP complement. Within this complement, the adjective *ergebenen* 'devoted' governs the dative DP complement *dem König* 'the king' to its left. If phonological adjacency were the only condition for D-P coalescence in German, we would predict that the contraction of *von* and *dem* would yield *vom*. This prediction, however, is incorrect, as shown in (65b). On the other hand, the failure of coalescence here naturally falls into place if we assume independently syntactic constraints such as Head Movement Constraint are in play. More specifically, the Head Movement Constraint correctly blocks the movement of the D from within the DP, crossing the AP that contains the DP and the DP that contains the AP. The examples in (64) and (65a, b), thus, support the view that D-P coalescence has its source in the syntax, even though its effects may be realized only in the morphology in the form of suppletion.

One might suspect that all the data mentioned here may be accounted for within the framework of Distributed Morphology (Halle & Marantz 1993, 1994; Bobaljik 1995) without requiring the actual syntactic head movement. For example, Bobaljik (1995) argues that inflection under T undergo Morphological Merger with verbs in the PF under weak adjacency. According to Bobaljik's analysis, the verb in (66a) is derived as in (66b) through the post-syntactic Merger of the tense inflection and the verb.

(66) a. John quickly bought the book.

b. [$_{TP}$ John [$_{VP}$ quickly buy + PAST the book]

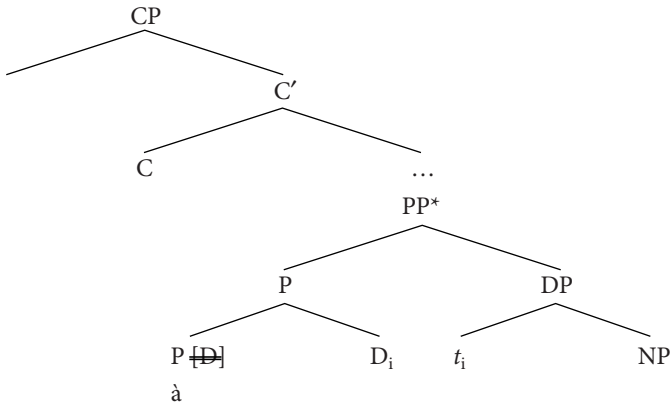
morphological merger/lowering

As already hinted above, however, I do not adopt this PF merger analysis because it is not clear how the coalescence is blocked in (64) and (65a, b) if the morphological merger were conditioned only under adjacency: in these cases, the preposition is linearly adjacent with the determiner but the morphological merger is still blocked.

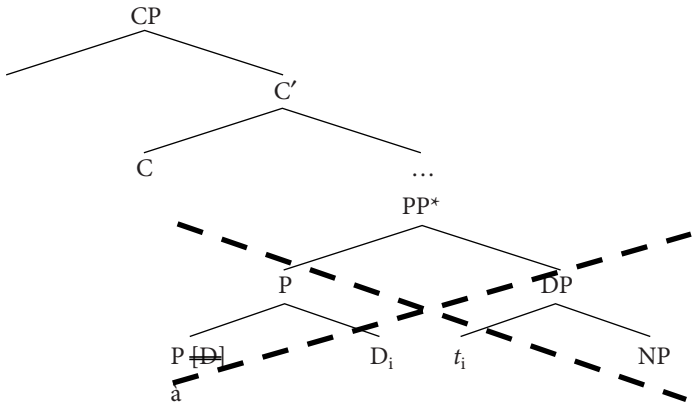
5.2 "Irreparable" computational violations

Let us now consider why P-stranding is not allowed under either *wh*-questions or sluicing in both French and German. The derivations for (57a) and the P-less version of (57c) are shown in (67) and (68), respectively.

(67)



(68)



(67) is a partial syntactic derivation for the P-stranding case under *wh*-movement. Let us assume that D-to-P incorporation is triggered by the strong D-feature of the

attracting P head. After this incorporation, the D and its erstwhile complement NP do not form a syntactic constituent. Thus, the extraction of the NP complement of P becomes impossible. Notice that the P-stranding pattern could potentially be derived if the incorporated D underwent incorporation to be attracted by the C head. However, this possibility is blocked; the excorporation would cause an Empty Category Principle-type violation (Chomsky 1986b) because the trace of the excorporating element could not be licensed. Another analytic possibility would be *wh*-fronting of the remnant DP after the D-to-P movement has taken place. Even though this movement would surface as indistinguishable from NP-fronting, I maintain that this option is excluded by the Proper Binding Condition (Fiengo 1974), which requires that each trace be c-commanded by its antecedent in the surface structure/final representation. At the final representation of such a derivation, the trace of the D contained within the fronted DP constituent would not be able to be bound by its antecedent within the P.

It is worthwhile to consider in this connection whether Law's theory can be captured under the more recent Copy Theory of Movement adopted in the current minimalist framework (Chomsky 1995). As is clear from the derivation in (67), Law's theory crucially depends on Trace Theory; as the moved head leaves a trace, the DP does not contain the D after incorporation. As a result, D and NP cannot move together, causing the P-stranding ban in French and German. Once the Copy Theory is adopted, however, it is not immediately obvious that this analysis is tenable since, at least in the syntax, the copy of D and NP do form a constituent which is accessible for movement. I propose that Law's analysis can be maintained essentially intact even under the Copy Theory of Movement. It is generally assumed that movement leaves a copy only in a position that c-commands its immediately lower copy due to the uniformly bottom-up nature of the syntactic derivation. If the DP moves into [Spec, CP] after the D-to-P incorporation in (67), the copy of the D within the P cannot c-command the lower copy of D within the DP. This configuration is correctly excluded if all but the highest copy of a nontrivial chain must be deleted for the purposes of the linearization based on Kayne's (1994) Linear Correspondence Axiom, as argued by Nunes (1995, 2004); if more than one copy were to remain, the derivation would crash at PF due to a contradictory linear ordering. In other words, the movement of the DP with the lower copy of the D after D-to-P incorporation causes practically the same problem, whether the movement is blocked by a syntactic condition (the Proper Binding Condition, as suggested above) or by a PF-based linearization algorithm (the Linear Correspondence Axiom).[8]

8. I thank Paul Law (personal communication, November 2009) for useful discussions on the question raised here.

The point being illustrated by the derivations in (67) and (68) is the following: whatever derivation would possibly yield the P-stranding configuration in French in (67) crashes because of the interaction of independently motivated *syntactic* conditions on D-to-P incorporation. The question now becomes why "repair by ellipsis" does not obtain in French in the derivation in (68), as opposed to Indonesian. The question is immediately answered once we take the nature of the violation in (67) seriously. When the derivation in (67) reaches the PF and undergoes TP deletion, as shown in (68), it is simply too late to attempt to repair violations within the PP because the violations in question are *within the syntax*.

The present analysis, thus, is suggesting that there is another parameter regarding D-to-P incorporation in addition to the parameter concerning feature percolation. French and German have this incorporation as an obligatory process of the syntactic derivation while Indonesian and English do not. The well-formedness of P-less sluices as well as the total lack of D-P coalescence in English means that this language does not have D-to-P incorporation. Most importantly, Indonesian is sufficiently different from French and German in allowing room for repair by ellipsis at PF. As we saw above, this is precisely because this language does not have D-to-P incorporation, as the complete lack of suppletion attests. Alternatively, D-to-P incorporation is not even an option since Indonesian may well lack the determiner system entirely (Chierchia 1998a, b; Chung 2000; see also Chapter 5 of the book).[9]

An important question that remains here is: why is it that the failure of D-to-P incorporation, but not the failure of feature percolation, so critical a mistake that

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9. The current analysis leads us to expect that French/German differ from Indonesian/English with respect to adverb placement. Specifically, the latter group of language should in principle allow adverbs to intervene between Ds and Ps whereas the former group of language should not. For Indonesian, this prediction is impossible to test for one of the two following reasons: (a) it presumably lacks the entire determiner system and (b) even if we took *itu* 'that' as a D head (see MacDonald 1976), Indonesian has the rigid P-N-D order, as shown in *kepada orang itu* 'to that person', making it impossible to create a configuration where an adverb could linearly intervene between P and D. For English, there is a class of adverbial-like expressions such as *exactly* that may occur as the first element of a nominal phrase (e.g. *after exactly one year*). Unfortunately, however, I have been unsuccessful at this point in finding cases where this type of adverb can occur between the P and a phrase that is headed by a D (not a numeral expression). For German, van Riemsdijk (1998: 663) provides (i) as a relevant case, but I am not sure whether *gut* 'well' is a genuine adverb or not.

(i) auf gut das Drittel
on well the third
'on a little more than one third'

the resulting string that contains the former violation is judged ungrammatical?[10] Let us suppose, following Boeckx and Lasnik (2006), that there are two types of violations. One is a strictly syntactic/derivational "violation" that cannot be simply created in the syntactic computation. To take D-to-P incorporation, this operation is conducted in the syntax immediately once the preposition is introduced into the workspace and serves as a probe to attract the D head within its minimal search domain (its complement domain); whatever uninterpretable/unvalued feature of the P (e.g. strong D-feature in languages with D-P coalescence) needs to be checked must be checked, since that is the sole driving force for mechanical computation. The failure of the D-to-P incorporation, therefore, is simply an impossible scenario in the minimalist vision of syntactic computation. Thus, it is fully expected that there is no sense in which the failure of D-to-P incorporation could ever be repaired at the PF interface. The situation could be different with the other type of violation such as interface violation. Failure of [+wh] feature percolation is a representational violation whose severity for linguistic computation could vary from language to language. Therefore, it is possible, in principle, that the failure of this percolation in languages with the obligatory value of this percolation mechanism as in Indonesian could be tolerated within syntax *per se* but rather is checked later at the PF interface. Under this view, syntactic representations that contain failures of percolation could still have chances to converge at the interface depending on what happens at this interface. If PF does not do anything about it, then this type of representation would persist at the interface: the representational constraint then applies to this representation and rules it out as ungrammatical. That was seen to be the case with P-stranding under *wh*-movement in Indonesian (5a). If PF does conduct its domain-specific operation to the otherwise ill-formed object by deleting the offending part of the representation, then the representational constraint has nothing to apply to. As a result, the derivation can still continue to converge, yielding a grammatical output at the PF component, as was seen to be the case with P-stranding under sluicing (*wh*-movement + TP deletion) in Indonesian (5c). Therefore, under this bipartite conception of violations, the contrast in "reparability" between the failure of D-to-P incorporation and the failure of feature percolation falls out naturally from the very architecture of the syntax–phonology interface assumed in the Minimalist Program.

10. I owe the exposition of the following answer to this question to the written suggestions provided by Heidi Harley (personal communication, May 2008) on an earlier draft of this chapter, which I paraphrase here.

Let us end this section by addressing one important question brought to my attention by an anonymous reviewer.[11] As is clear from the above exposition, my analysis crucially depends on two independent parameters: the *wh*-feature percolation and the D-to-P incorporation. The cross-classification of the two parameters predicts a fourth type of language where *wh*-feature percolation is optional as in English but D-to-P incorporation takes place as in French and German. The question arises regarding how such a language would look like. My analysis suggests that this hypothetical language should show the same P-stranding profile as French and German for the following reason. Even though the non-percolation option would potentially allow the *wh*-phrase to be directly accessible to the interrogative C as in English, P-stranding would still be independently blocked by the D-to-P incorporation as in French and German. In other words, the only convergent derivations would have the feature percolation with the D-to-P incorporation. Thus, in practice, this hypothetical grammar would produce a P-stranding pattern indistinguishable from the French/German pattern.[12]

In summary, the notion of "repair by ellipsis" plays a crucial role in my proposed analysis of the distinction between Indonesian and French/German with respect to P-stranding. The most important claim of the analysis is that the syntax-external phonological component can repair *some, but not all*, illicit configurations created in the syntax by deleting them; it cannot undo mistakes concerning

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11. Thanks to Heidi Harley (personal communication, April 2008) for independently raising the same question and for helping me understand the prediction of my analysis elaborated in this paragraph.

12. My analysis leads us to expect, of course, that the P-stranding violation cannot be saved in French or German by VP deletion either. Unfortunately, however, neither French nor German has pseudogapping constructions, as shown in (ia, b), respectively, making it impossible to test this prediction.

(i) a. *Jean a rencontré Mireille et François a Isabelle.
Jean has met Mireille and François has Isabelle
'Jean has met Mireille and François has Isabelle.'

b. *Der Hans wird die Maria auswaehlen und der Peter wird
the Hans will the Maria select and the Peter will
die Anna. (German)
the Anna
'Hans will select Maria and Peter will Anna.'

Thanks to Jozina Vander Klok (personal communication, November 2009) and Martina Wiltschko (personal communication, October 2009) for the French and German examples here, respectively.

incorporation that are syntactically conditioned. The present analysis, therefore, provides powerful empirical support for the idea that the phonological interface can conduct domain-specific operations to repair certain syntactic imperfections but only within the parametrically defined curve set by a particular language.

6. Conclusions

In this chapter, I have presented novel evidence that the P-stranding pattern in Indonesian presents a counterexample to Merchant's (2001) Preposition-Stranding Generalization as a language that disallows P-stranding under *wh*-questions but allows P-stranding under sluicing. I have also presented arguments against potential analyses based on clefts, resumption, and (PF) P-drop that would make the Indonesian pattern consistent with the generalization. I have argued that this apparently special pattern is naturally accounted for under the recent idea of repair by ellipsis. Specifically, I have proposed that the failure of percolation of the *wh*-feature is repaired by deletion in the PF, and provided independent evidence for this analysis from P-stranding under pseudogapping. I have also shown that P-stranding in French and German cannot be repaired since the violation in question is a syntactic one related to syntactic incorporation. Our investigation suggests a bifurcated view of violations (Boeckx & Lasnik 2006): representational violations pertaining to the syntax–phonology interface can be repaired whereas derivational violations pertaining to the syntactic computation cannot. A much broader implication of my analysis is that syntax is not entirely crash-proof (Frampton & Gutmann 1999, 2002); syntax could make a variety of "mistakes", so to speak, whose severity for linguistic computation varies depending on the parametrically defined curve set by a particular language. The analysis proposed in this chapter is one clear demonstration of how the thesis of minimalist interface works; interface components do whatever domain-specific operations they avail of to make them legible/usable for the language-independent sound system (A-P system in Chomsky's terms) but only within the range of options that is parametrically set by a particular language.

CHAPTER 5

The structure and denotation of bare nominals at the syntax–semantics interface

1. Introduction

This chapter discusses the issue of syntax–semantics interface with a case study in the relation between the denotation and morphosyntax of bare nominals in Indonesian and Javanese. Though the first part of this chapter is devoted to the descriptive analysis of bare nouns in these two languages, it ultimately becomes clear in the rest of the chapter that the primary goal of this chapter is to construct a general theory of the denotation of bare nouns within the Principles & Parameters approach to language variation (Chomsky 1986a, 1995).

Chierchia (1998a, 1998b) proposes a semantic parameter, known as the *Nominal Mapping Parameter*, which states that languages differ in terms of what they allow their bare nouns to denote in the syntax–semantics mapping, namely kinds ([+arg, –pred] languages), properties ([–arg, +pred] languages), or both ([+arg, +pred] languages) under certain conditions. Chierchia argues that setting of this parameter uniquely determines the morphosyntactic profile of bare nominals in a particular language with respect to the availability of bare arguments, the generalized classifier system, and plural morphology. This claim, therefore, includes a strong statement that all natural languages can be classified as one of three and only three languages with respect to the denotation of bare nominals.

In this chapter, I provide arguments, modeled after Chung (2000), that Indonesian and Javanese do not fit into any one of the three language types identified under Chierchia's semantic typology. I further argue that the very notion of "semantic parameter" as varying the nature of the mapping between the syntactic and semantic representation of a bare noun across languages is hardly groundable within the standard generative conception of the locus of parameter as restricted to properties of the lexicon (Chomsky 1995) or, more precisely, properties of functional categories (Borer 1984; Fukui 1986, 1995).

Based on these results, I propose an alternative, relativized parametric theory of the effects of the Nominal Mapping Parameter, whereby languages differ in terms of the complexity of nominal functional structures each language allows

(i.e. DP>QP>ClP>NumP>NP) and in terms of the possible set of values the Num Head in each language can take (i.e. {singular, plural} or {neutral, plural}). Neither of these ideas is new. The idea that languages differ in terms of the complexity of nominal structure has been proposed on various grounds in Grimshaw (1991, 2005), Massam (2001), Guilfoyle and Noonan (1992), and Vainikka (1993/1994). The observation that languages differ in their possible set of Num values has been made for the number system in Malay and Indonesian in Carson (2000) and Chung (2000). The results achieved in this chapter, therefore, provide further evidence for these proposals.

I also discuss the broader theoretical consequences of the proposed analysis by situating it within the context of the syntax–semantics interface, a central subject matter of this chapter. In particular, empircal findings in this chapter provide strong support for the notion of minimalist interfaces, whereby the syntactic computation provides a parametrically defined curve that the universal semantics interface blindly follows, without any extrinsically determined mapping between the syntax and semantics of a particular expression as in Chierchia's Parameter.

The proposed parametric theory of nominal denotation contrasts sharply from the recent proposal made by Gil (2005). Gil argues that Riau Indonesian, a variety of Indonesian spoken by local people in East-Central Sumatra, has no distinction between lexical and functional categories. He proposes that many correlates of this verb-initial language can be explained through the interaction of a single principle (i.e. heads precede modifiers) with iconicity and information flow. Although I argue that Standard Indonesian represents the simplest possible nominal structure (headed by the Num head), it is an SVO language, unlike Rian Indonesian and Toba Batak (see Chung 2008 for extensive arguments for this position). Furthermore, the theoretical framework Gil has developed on the basis of his extensive description and analysis of Riau Indonesian (Gil 1994, 2000, 2001, 2003, 2005, 2006) is so different in its goals and primitives from the Principles and Parameters framework within which my analysis is modeled that comparing the two would not be very useful and take us far afield from the primary objective of the monograph. Therefore, I will not delve into Gil's framework any further.

The present chapter is organized in the following manner. In the next section, I review in detail the idea behind the Nominal Mapping Parameter proposed by Chierchia (1998a, b). In Section 3, I turn to the denotation and morphosyntax of bare nominals in Indonesian and Javanese. The purpose of this section is empirical. I provide evidence that neither of these two languages fits into any one of the three language types under Chierchia's semantic classification. I go over Chung's (2000) analysis of Indonesian bare nouns in Section 3.1. Though Indonesian allows bare arguments and has plural morphology, I argue, against Chung, that Indonesian is not a classifier language. I turn to parallel facts in Javanese in Section 3.2, where I show that Javanese behaves as Indonesian in all relevant

respects; it allows bare arguments, has plural morphology, and lacks a generalized classifier system. These empirical findings indicate that the Nominal Mapping Parameter imposes too tight a mapping between the syntax and semantics of bare nouns in natural language and falsely exclude the morphosyntactic patterns of bare nominals in Indonesian and Javanese that are actually attested. These results lead us to pursue a different account of what Chierchia's Nominal Mapping Parameter is supposed to capture. In Section 4, starting with the observation that the notion of "semantic parameter" as constraining the mapping between the syntax and semantics of nominals is at odds with the standard view of the locus of parameter, I propose a relativized parametric theory of bare nominals across languages. According to this theory, languages differ in two dimensions: how high a language allows its bare noun to grow and which set of feature values each language allows its Num head to choose. I show that the morphosyntactic profile of bare nouns in languages such as Javanese, Indonesian, Japanese, English, and Italian is naturally derived from the combination of these two parameters. In Section 5, I summarize major theoretical implications of the parametric theory presented here as they relate to the theory of syntax–semantic interface.

2. Chierchia's (1998a, b) Nominal Mapping Parameter

The Nominal Mapping Parameter claims that languages differ in terms of what they let their bare nouns denote in the syntax–semantics mapping: kinds, properties, or both under certain conditions. Chierchia claims that the setting of this semantic parameter serves to uniquely identify syntactic and morphological properties of a bare noun in a given language. Chierchia's Nominal Mapping Parameter, which identifies three and only three language types, includes a strong statement that all languages should belong to one of them. In the first type of languages such as Chinese and Japanese, which he calls [+arg, –pred] languages, bare nouns are mapped onto kinds (type ⟨e⟩). A *kind* is defined by Chierchia (1998a: 349) as "function[s] from worlds (or situations) into pluralities, the sum of all instances of the kind." This has three morphosyntactic consequences. First, since a kind is saturated in the Fregean sense, this type of language allows bare nominal arguments. Second, languages of this type also lack plural morphology for the following reason. As Chierchia (1998a: 351) puts it, "Fido is as good an instance of the dog-kind as Fido and Barky are. This means that the property corresponding to a kind comes out as being mass." The notion of *mass*, in turn, is defined in Chierchia (1998a: 347) to "come out of the lexicon already pluralized… a mass noun, such as, say, *furniture*, will be true in an undifferentiated manner of singular pieces of furniture as well as of pluralities thereof… quite literally the neutralization of the singular/plural distinction." Since a kind is essentially mass in that it cannot differentiate

between singular and plural instances of a kind, [+arg, –pred] languages should not have plural morphology; mass terms, being "pre-pluralized", cannot be further pluralized. In other words, the extension of all bare nouns ends up being mass in this type of language. Third, [+arg, –pred] languages also develop a generalized classifier system. This is because kinds cannot be individuated and hence need an appropriate counting level for each bare noun. Note that all the three morphosyntactic characteristics of bare nouns observed here are the automatic consequence of the denotation of a bare noun as a name of a kind.

The second type of language is what Chierchia (1998a, b) calls [–arg, +pred] language such as Italian and French, where bare nouns are mapped onto properties (type ⟨e, t⟩). This type of language does not allow bare nominal arguments; they need to be combined with determiners (either covert or overt depending on the language) to be able to serve as a saturated argument of type ⟨e⟩.

The third type of language is termed [+arg, +pred] language, and Chierchia mentions English and Russian as examples that belong to this language type. As the setting [+arg, +pred] indicates, this type of language expectedly shows a mixed morphosyntactic profile. It behaves as Chinese and Japanese in that mass and bare plurals are mapped onto kinds (hence [+arg]) whereas it behaves as French and Italian in that count nouns are mapped onto properties (hence [+pred]).

Bare nouns must be mapped onto some semantic type, either kinds, properties, or both, under Chierchia's theory of a semantic parameter. The fourth possibility that bare nouns are not mapped onto any type (i.e. [–arg, –pred]) is excluded because such a type does not denote anything.

One important aspect of Chierchia's Nominal Mapping Parameter is that a particular setting of the denotation of a bare noun in a language uniquely predicts its morphosyntactic profile. In other words, Chierchia's theory imposes a rigid one-to-one mapping between the morphosyntax and the denotation of a bare noun in a given language. Thus, for example, if a language *L* develops a generalized classifier system, it must be the case that that language also allows bare nominal arguments and lacks plural morphology. This observation is emphasized by Chierchia (1998a: 354), who explicitly states that "for example, a language with the plural–singular contrast and a generalized classifier system is certainly logically conceivable; it could, in principle, exist. The point of view we are adopting offers a seemingly principled way for ruling it out."

3. The denotation and morphosyntax of bare nominals in Indonesian and Javanese

In this section, I show, based on evidence from Indonesian and Javanese, that these two languages do not fit into any one of the three language types that should

exhaust all natural languages under Chierchia's semantic theory. The arguments presented below are modeled on those developed by Chung (2000), who argues against the Nominal Mapping Parameter from facts in Indonesian. Chung shows that Indonesian is a language with bare nominal arguments and a generalized classifier system, but nonetheless does have plural morphology marked via full reduplication of the root. I review her analysis of Indonesian bare nouns below in Section 3.1. Though Indonesian does have generalized bare arguments and plural morphology, I argue against Chung (2000) that Indonesian is not a generalized classifier language. In Section 3.2, I turn to bare nominals and their morphosyntax in Javanese. I show that Javanese is identical to Indonesian in all criteria pertinent to Chierchia's Parameter; it allows bare nominals in all argument positions and has plural morphology marked by reduplication but lacks a generalized classifier system of the kind found in Japanese or Chinese.

3.1 Bare nominals in Indonesian

Let us review evidence from Chung (2000) that Indonesian runs counter to the predictions of the Nominal Mapping Parameter. Her basic argument is that, in Indonesian, bare nominal arguments occur freely and numeral classifiers are required under certain conditions like a [+arg, +pred] language, but bare nouns have a singular–plural contrast like a [–arg, +pred] language; this cluster of morphosyntactic characteristics, thus, would remain mysterious under Chierchia's semantic theory.

First of all, Chung notes that in Indonesian, bare nouns can occur as direct objects, object of prepositions and subjects, as in (1a–c). Notice that there are no elements in Indonesian that correspond to definite or indefinite articles, with the distinction being made by reference to contexts.

(1) a. Dia membeli buku. (direct object)
he buy book
'He bought a book.' (Dardjowidjojo 1978: 65; Chung 2000: 159)

b. Tutup-lah pintu dengan kunci. (oblique object)
lock-EMP door with key
'Lock the door with a key.' (MacDonald 1976: 128; Chung 2000: 159)

c. Rem depan, tanpa aku rem, mengerem sendiri. (subject)
brake.front without I brake put.on.brake itself
'The front brake, without being braked by me, braked itself.'
(Macdonald 1976: 149; Chung 2000: 160)

(1a–c) indicate that Indonesian is either a [+arg, –pred] such as Japanese or [+arg, +pred] language such as English. Suppose now that Indonesian is a [+arg, –pred] language for the sake of argument. Chung argues that Indonesian is a classifier language, in which numerals precede bare nouns and are immediately

followed by a classifier, consistent with the [+arg, –pred] language. Interestingly, though Dardjowidjojo (1978) notes that Indonesian has as many as sixty classifiers, only three of them are in frequent use in contemporary Indonesian, according to Chung (p. 162); *orang* 'person' for counting persons, *ekor* 'tail' for counting animals, birds and fish, and *buah* 'fruit' for counting other objects. Her evidence that Indonesian is a classifier language is two-fold. First, classifiers are obligatory with the numeral *se-* 'one' in Indonesian. She observes (p. 163) that *se-* 'one' must either be followed by a classifier or else occur in the fixed expression *s(u)atu*, in which it is combined with the obsolete classifier *watu* 'stone' (Hopper 1986: 311)". In the absence of a classifier, *se-* cannot occur. This is illustrated in (2a, b).

(2) a. Kemudian di-ambil-nya se-helai serbet kertas
later PASS-take-by.her one-CL napkin paper
yang baru. (*se* + classifier)
which new
'Then she got a new napkin.' (Purwo 1989: 318; Chung 2000: 163)

b. Kemudian di-ambil-nya kertas baru.
later PASS-take-by.her paper new
'Then she got a new napkin.' (Purwo 1989: 312; Chung 2000: 163)

Second, Chung notes (p. 164) that, at an earlier stage of the development of Indonesian, overt classifiers were more frequent than they are today after *dua* 'two' and higher numerals. To support this, she points out that "statistics reported in Hopper's 1986 careful study of classifier use in the 19th century Malay of the *Hikayat Abdullah*, an autobiography published in 1849, suggest that roughly 80% of the numerals that combine with NPs are accompanied by an overt classifier." The following examples illustrate this point.

(3) a. Maka di-tembak-lah dua-bělas puchok měriam di-bukit.
then PASS-fire-EMP twelve CL gun from-hill
'[A salute of] twelve guns was fired from the hill.'
(Abdullah 1963 [1849]: 222; Chung 2000: 164)

b. Ada pun takala měmbuat rumah itu tiga orang orang
as for when make house the three CL person
China kuli jatoh dari atas.
Chinese laborer fell from top
'In the course of its construction three of the Chinese workmen fell from the top.' (Abdullah 1963 [1849]: 222; Chung 2000: 164)

Granted that Indonesian is a classifier language with generalized bare arguments, the only setting that would account for these two properties under Chierchia's Nominal Mapping Parameter is a [+arg, –pred] type language. This setting, thus,

predicts that Indonesian should not have plural morphology. Chung (p. 164) shows that this prediction is false because Indonesian does have a way of expressing plurality via full reduplication of the root, as illustrated in (4).

(4) Buah-lah kalimat-kalimat berikut menjadi kalimat-kalimat negatif.
make-EMP sentence-RED following become sentence-RED negative
'Please make the following sentences negative.'
(Dardjowidjojo 1978: 27; Chung 2000: 16, with a slight modification on the gloss)

It is widely known in the literature on Indonesian (Dardjowidjojo 1978) that, though an unreduplicated bare noun can be constructed either as singular or plural, its reduplicated counterpart is necessarily interpreted as plural. This traditional observation becomes important in Section 4. The crucial point here is that, under Chierchia's system, a kind, by definition, cannot differentiate between singular and plural instance of that kind. The fact that reduplication has the function of denoting plurality, as in (4), thus, constitutes strong evidence that Indonesian cannot be a [+arg, –pred] language such as Japanese or Chinese.[1]

Chung further points out two problems that would arise with the alternative potential analysis of Indonesian as a [+arg, +pred] language such as English. The first problem concerns the scopelessness of bare nominal arguments in Indonesian. Following Carlson (1977), Chierchia (1998a: 368) observes that in English, bare plurals in object position behave as kinds in that they obligatorily take narrow scope with respect to negation and intensional operators whereas indefinite singulars can take wide scope over these scope-bearing elements. This contrast is shown in (5a, b) with respect to negation.

(5) a. I didn't see spots on the floor
→ Neg>Indefinite (narrow scope): I did not see any spot on the floor.
*Indefinite>Neg (wide scope): There is a spot/are certain spots that I failed to see on the floor.

1. In Indonesian, reduplication does not co-occur with numerals more than 2, as shown by the ungrammaticality of (i):

(i) *Esti mem-beli tiga buku-buku kemarin.
Esti AV-buy three book-RED yesterday
'Esti bought three books yesterday.'

One analysis is that the reduplicative process is blocked by numerals on the grounds of expressive economy. Since numerals more than 2 denotes a more specific function (e.g. 2, 3, 4, etc.) than nominal reduplication (n, n ≥ 2, defined in contexts), the use of a numeral independently blocks reduplication. This particular analysis, however, does not affect the content of this chapter. Thanks to Heidi Harley (personal communication) for useful discussion.

b. I didn't see a spot on the floor.
→ *Neg>Indefinite (narrow scope): I did not see any spot on the floor.
Indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.
(Chierchia 1998a: 368)

If Indonesian is a [+arg, +pred] language as in English, we predict that bare nominals should also be able to take scope over negation as do English indefinites, under their indefinite reading. This prediction is false, as evidenced by (6a, b), where the bare nouns *buku* 'book' and *perempuan* 'woman' must take narrow scope with respect to the negative element *tidak* 'not'. To express the wide scope reading of the bare nominal, a relative clause existential sentence must be used as in (6c).

(6) a. Ali tidak jadi membeli buku.
Ali NEG finished buy book
'Ali didn't buy any book(s).'/*'There was a book that All didn't buy.'
(Chung 2000: 161)

b. Ia tidak melihat perempuan.
he NEG see woman
'He saw no women.' (Purwo 1989: 303; Chung 2000: 161)

c. Ada sebuah buku yang Ali tidak jadi beli.
exist one book that Ali NEG finish buy
'There is a book that Ali didn't finish.'

The second problem concerns the lack of reduplicated forms for generic statements. Chierchia (1998a: 362–368) observes that bare nominals in English can be inflected for plural in generic statements as in (7).

(7) Dogs bark.
→ plural interpretation: There is more than one dog that barks/are barking.
generic interpretation: It is a general property of dogs that they bark.
(adopted from Chierchia 1998: 367)

We have seen above that Indonesian has a way of expressing plurality by full reduplication of the root, as shown in (4). Then, if Indonesian is a [+arg, +pred] language, we predict that reduplicated nominals in this language should also be able to feed generic interpretation. (8a), however, shows that this prediction is false, because the reduplicated counterpart of the root *anjing* 'dog' can yield only a plural interpretation (Sneddon 1996: 17). To express the generic interpretation, the unreduplicated bare noun must be used instead, as in (8b), which gives rise to both plural and generic interpretations.

(8) a. Anjing-anjing menggonggong.
dog-RED bark-RED
'Dogs bark/are barking.'

→ plural interpretation: There is more than one dog that barks/is barking.
*generic interpretation: It is a general property of dogs that they bark.

b. Anjing menggonggong.
dog bark
'Dogs bark/are barking.'

→ plural interpretation: There is more than one dog that barks/is barking.
generic interpretation: It is a general property of dogs that they bark.

Chung (p. 168) briefly considers the final analytic possibility compatible with the Nominal Mapping Parameter whereby Indonesian is currently in the transition stage from a [+arg, –pred] language to a [+arg, +pred] language. Chung rejects this analysis on the ground that it would lead us to "expect the singular–plural contrast to be less in evidence at earlier stages of the language, when overt classifiers were more frequent." Chung argues that this prediction is not borne out by the 19th century Malay from *Hikayat Abdullah*, because examples as in (9) that contain nouns with overt plural inflection occur frequently.

(9) Maka tukang-tukang kayu pun mĕnarah-lah akan sĕgala pĕrkakas
then worker-RED wood also smooth-EMP for all part
rumah itu.
house that
'Carpenters started shaping planks of wood for various parts of the building.'
(Abdullah 1963 [1849]: 221; Chung 2000: 169)

To test Chung's prediction, one would need a translation of the same autobiography in the contemporary Indonesian so that we can compare the number of reduplicated nouns in the 17th century Malay with that of the corresponding nouns in the contemporary Indonesian. This prediction, however, is impossible to test for the moment due to the absence of the Indonesian translation of the text to date. Thus, I leave the fourth analysis of Indonesian aside in this chapter.

To sum up, Indonesian does not fit into any one of the three language types under Chierchia's (1998a, b) semantic typology. The free occurrence of determinerless, bare arguments shows that Indonesian is not a [–arg, +pred] language. The presence of plural morphology marked by full reduplication shows that this language is also not a [+arg, –pred] language. The obligatory narrow scope reading of bare nominals with respect to negation and the lack of the reduplicated form of a bare noun for generic statements means that Indonesian is also not a [+arg, +pred] language.

Although Chung's argument against the Nominal Mapping Parameter from Indonesian is clear and I develop similar arguments against it based on parallel facts from Javanese in the next subsection, I point out here that it is problematic to analyze Indonesian as a (generalized) classifier language, as Chung does. In fact, Chung (p. 162–164) presents two facts suggesting that Indonesian is not a classifier language. First, she observes (p. 162) that classifiers in Indonesian are more often than not omitted in colloquial Indonesian after *dua* 'two' and some number greater than two (Dardjowidjojo 1978: 64, 65; MacDonald 1976: 82, 83; Sneddon 1996: 134, 135). Second, she points out that "even in formal registers of the contemporary language, an overt classifier need not occur after *dua* 'two' or higher numerals." An example to illustrate these points is given in (10), which is "excerpted from Indonesian translations of English-language articles on Indonesian syntax" (p. 163).

(10) Muda-mudahan makalah ini telah memenuhi dua tujuan
hopefully then this already fulfill two goal
pokok-nya.
principal-its
'Hopefully, this paper has fulfilled its two major goals.'
(Purwo 1989: 333, Chung 2000: 163)

How about the two arguments made by Chung based on the obligatory presence of a classifier with the numeral *se-* 'one' and the classifier use in the 19th century Malay of the *Hikayat Abdullah*? The obligatory presence of a classifier with the numeral can be accounted for independently because the numeral *se-* 'one' is a clitic that needs a classifier as a host. Indeed, the non-clitic free morpheme meaning 'one', *satu*, can occur without any classifier, as the comparison between (2a) and (11) shows.

(11) Kemudian di-ambil-nya satu serbet kertas
later PASS-take-by.her one napkin paper
yang baru. (*satu* + no classifier)
which new
'Then she got a new napkin.'

Chung's second argument that Indonesian is a classifier language came from her observation that overt classifiers were more frequent than they are today after *dua* 'two' and higher numerals. We have seen above that this is supported by Hopper's 1986 careful study of classifier use in the 19th century Malay of the *Hikayat Abdullah*. This argument seems hard to evaluate at present for two reasons. First, there is no translation of the relevant autobiography in modern standard Indonesian to see whether this argument is still substantiated. Second, granted that we will have such a translation at hand, it is still not clear whether the comparison of the

17th century Malay and the contemporary Indonesian versions of the same text can yield a meaningful result. Given a variety of differences between the contemporary Malay and Indonesian that pose a formidable obstacle to field linguists working on dialects of Malay/Indonesian, it is possible that there would be even more dramatic differences between 17th century Malay and contemporary Indonesian.

At any rate, Chung (p. 164) concludes, based on the two arguments made above, that "when NP combines with a numeral, a classifier must be syntactically present even though it need not be phonetically overt." This final conclusion, however, seems not to be supported by facts from other [+arg, –pred] languages, which have a bona-fide classifier system. In Japanese, for example, when a noun combines with a numeral, a classifier must be overtly expressed. This is shown by the contrast between (12a) and (12b).

(12) a. Taro-ga san-nin-no gakusei-o mita.
Taro-NOM 3-CL-LINK student-ACC saw
'Taro saw three students.'

b. *Taro-ga san-(no) gakusei-o mita.
Taro-NOM 3-LINK student-ACC saw
'Taro saw three students.'

As we will see in the next section, there is clear evidence that Javanese is not a classifier system. Given the large-scale linguistic and social interaction between Indonesian and Javanese in the Java island of Indonesia (Poedjosoedarmo 1982: 84; see also Chung 2000: 163), one likely scenario, compatible with the all the facts noted above, is that contemporary Indonesian has lost a classifier system due to the linguistic influence from Javanese. Based on the considerations above, I assume that Indonesian is a non-classifier language like Javanese, contra Chung (2000).

3.2 Bare nominals in Javanese

In this subsection, I develop a similar argument as made by Chung from Indonesian against the Nominal Mapping Parameter from Javanese. Javanese behaves like Indonesian in all relevant respects. Specifically, the free occurrence of bare nominal arguments shows that Javanese cannot be a [–arg, +pred] language under Chierchia's system; it must be either a [+arg, –pred] language or a [+arg, +pred] language. I reject the first possibility on the ground that Javanese has plural morphology marked via reduplication and lacks a generalized classifier system. I reject the second possibility based on the obligatory narrow scope of bare nominals under their indefinite interpretation as well as the lack of reduplicated forms of bare nouns for generic statements. These results, therefore, show that Javanese presents itself as another counterexample to the predictions of Chierchia's theory.

Like Indonesian, Javanese permits bare, determinerless arguments to occur rather freely in any argument position, as illustrated in (13a–d).

(13) a. Buku larang.
book expensive
'A book/the book/books {is/are} expensive.'

b. Esti tuku buku.
Esti buy book
'Esti bought a book/the book/books.'

c. Esti nukokke uwong buku.
Esti buy man book
'Esti bought a man/the man/men a book/the book/books.'

d. Esti entuk informasi seko buku.
Esti get information from book
'Esti got information from a book/the book/books.'

In these examples, the bare noun *buku* 'book' occurs as the subject (13a), the direct object (13b), the indirect object (13c), and the object of preposition (13d). The free occurrence of bare arguments in Javanese, thus, shows that this language cannot be a [–arg, +pred] language. In other words, it should be either a [+arg, –pred] language or a [+arg, +pred] language. However, I demonstrate, following Chung's (2000) argument based on Indonesian, that Javanese does not fit into either one of the language types.

Let us consider first the analysis whereby Javanese is a [+arg, –pred] language. Recall that, under Chierchia's semantic theory, [+arg, –pred] languages should have three morphosyntactic properties due to the specification of bare nouns as denoting a kind; a bare nominal argument, a generalized classifier system, and no plural morphology. Thus, if Javanese is a [+arg, –pred] language, this language (a) should have a generalized classifier system and (b) should have no plural morphology. Both of these predictions are falsified by (14a, b) and (15a, b).

(14) a. Esti tuku buku telu.
Esti buy book three
'Esti bought three books.'

b. Esti mangan pelem loro.
Esti eat mango two
'Esti ate two mangos.'

(15) a. Esti tuku buku-buku.
Esti buy book-RED
'Esti bought books.'

b. Esti nata meja-meja.
Esti arranged table-RED
'Esti arranged tables.'

(14a, b) show that Javanese is not a classifier language (Poedjosoedarmo 1982; Robson 2002). This utter lack of a classifier system is in contrast with the optionality of classifiers in Indonesian as we have seen in the previous Section. (15a, b) show that Javanese marks plurality via full reduplication of the root. These two facts indicate that Javanese is not a [+arg, –pred] language.

Let us next consider another analysis whereby Javanese is a [+arg, +pred] language. Again applying the two arguments developed by Chung to bare nominals

in Javanese, we can see that this analysis is incorrect. The first argument concerns the scopelessness of bare nouns in Javanese under their indefinite interpretation. Recall Carlson's (1977)/Chierchia's (1998a: 368) observation from the last subsection that bare plurals in English behave as kinds and obligatorily take narrow scope with respect to negation. This is not the case with indefinite singular nouns which can take wide scope over negation. The relevant contrast was illustrated in (5a, b). Now, if Javanese is a [+arg, +pred] language, a bare nominal argument in this language should also allow a wide scope reading of the argument with respect to negation on its indefinite singular interpretation, as do English indefinites. This prediction is incorrect, as shown by (16a): a relative clause sentence is used as in (16b) to express the wide scope reading.

(16) a. Aku ora weruh kotoran ning jubin.
I NEG see spot on floor
'I did not see spots on the floor.'
→ Neg>Indefinite (narrow scope): I did not see any spot on the floor.
*Indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.

b. Ana kotoran sing aku ora weruh ning jubin.
exist spot that I NEG see in floor
'There is a spot on the floor that I failed to see.'
→ *Neg>Indefinite (narrow scope): I did not see any spot on the floor.
Indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.

The second argument against the classification of Javanese as a [+arg, +pred] language concerns the absence of reduplicated forms in Javanese for the generic use of bare nouns. We have seen above that bare nominals in English can be inflected for plural in generic statements as in (7a, b). If Javanese is a [+arg, +pred] language, then the prediction is that bare nominal arguments in Javanese should also be able to reduplicated when interpreted as generic. This prediction is also incorrect, as shown in (17a).

(17) a. Asu-asu njegug.
dog-RED bark
'Dogs are barking.'
→ plural interpretation: There is more than one dog that barks/are barking.
*generic interpretation: It is a general property of dogs that they bark.

b. Asu njegug.
dog bark
'A dog/the dog/dogs bark.'
→ plural interpretation: There is more than one dog that barks/are barking.
generic interpretation: It is a general property of dogs that they bark.

In (17a), the reduplicated noun *asu-asu* 'dogs' only allows plural interpretation. Instead, the non-reduplicated bare nominal is used for generic statements in Javanese, as in (17b). True, this fact is naturally accounted for if Javanese is a [+arg, –pred] language as in Japanese because kinds are known to yield a universal reading (Chierchia 1998: 363a) but we have seen that this analytic possibility is incorrect in light of the lack of a generalized classifier system and the presence of plural morphology marked by reduplication. Thus, Javanese cannot be a [+arg, +pred] language.

To summarize this section, I have shown, using the arguments developed by Chung (2000), that neither Indonesian nor Javanese can classified as any one of the three language types that should serve to categorize all human languages under Chierchia's Nominal Mapping Parameter. This result is important because it raises important questions about the extent to which the morphosyntactic properties of a bare noun in a language are predictable from its denotation and vice versa. In particular, the descriptive results achieved here clearly suggest that the Nominal Mapping Parameter imposes too tight a mapping between the denotation and morphosyntax of NPs.

4. A relativized parametric theory of nominal denotation: From Indonesia to the world

In this section, I develop a purely syntactic account for the effects of the Nominal Mapping Parameter. I start by pointing out a conceptual problem with Chierchia's notion of semantic parameter. I show that this view of parameters is hardly groundable within the standard conception of the locus of parameters within the Principles & Parameters approach to language variation. Resolution of this problem leads us to seek an alternative explanation in the realm of the morphosyntactic variation of the lexicon in each language, which is an unreducible source of linguistic variation (Borer 1984; Fukui 1986, 1995; Chomsky 1995). I propose a relativized parametric theory of nominal denotation, whereby languages differ in terms of (a) the height/complexity of the functional super-structure above bare nominals and (b) the possible set of Number values. Point (a) has been independently argued for by Grimshaw (1991, 2005), Massam (2001), Guilfoyle and Noonan (1992), and Vainikka (1993/1994). Point (b) is independently supported by the study of the number system in Malay and Indonesian in Carson (2000) and Chung (2000), respectively. The proposed analysis provides further evidence for these claims.[2]

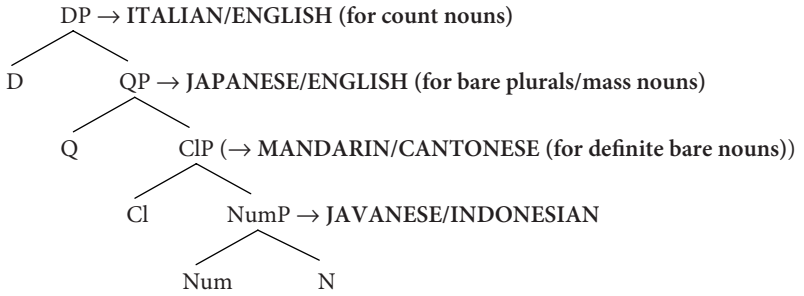
2. Thanks to Heidi Harley (personal communication) for suggesting the idea of "growth of bare nominals" and to Andrew Carnie (personal communication) for bringing my attention to several important works such as those cited here that independently proposed such an idea.

4.1 A relativized parametric theory of nominal denotation and morphosyntax

Let us start by pointing out a conceptual problem with Chierchia's notion of "semantic parameter". The Nominal Mapping Parameter entails that parameters can be postulated within the mapping between syntactic and semantic/LF representations. This proposal, however, is clearly at odds with the standard conception of the locus of the parameter as in the Principles & Parameters approach to language variation as outlined in Chomsky (1995). Instead, this approach takes it as a fundamental heuristic that parametric variation is be restricted to the properties of the lexicon (Chomsky 1995) or, more specifically, functional categories alone (Borer 1984; Fukui 1986, 1995). A natural approach then should be one that derives crosslinguistic variation in the denotation and morphosyntax of bare nominals from independently motivated variation in the makeup of the lexicon in each language.

I propose that languages differ in two dimensions: (a) how high a bare nominal can "grow" across languages and (b) what set of the binary values the Num head in each language selects. I propose the universal nominal morphosyntactic hierarchy DP>QP>ClP>NumP>NP, from which languages set the appropriate height of nominal projections for their bare nouns. Specifically, Javanese and Indonesian project up to NumP; Japanese projects up to QP; languages such as Italian project up to DP. Finally, English projects either up to QP like Japanese or DP like Italian, depending on the nature of a noun inserted into the N head in a manner to be explained below. This proposal is summarized in (18).[3]

(18) The Universal Nominal Morphosyntactic Hierarchy



I further propose that there are two possible sets of values for the Num P; {singular, plural} or {neutral, plural}. Languages such as English and Italian select

3. A question arises as to whether there are languages which instantiate the ClP option. Evidence from Cheng and Sybesyma (1999) suggests that definite bare nouns in Cantonese and Mandarin may instantiate this option, but I leave further examination of this possibility for another occasion. Thanks to Heidi Harley (personal communication) for this question.

{singular, plural} or {neutral, plural} values whereas languages like Japanese, Javanese, and Indonesian select {neutral, plural} values. There is independent evidence that the possible values for the number slot in Italian and English are significantly different from those for the same slot in Indonesian, Javanese, and Japanese. Thus, Carson (2000) shows that bare nouns in Malay are ***neutral*** with respect to number unless reduplication tells us otherwise, and concludes that Malay chooses {neutral, plural} values for the Number head. For example, a (unreduplicated) bare nominal can denote either a singular or plural instance of the entity denoted by that nominal whereas its reduplicated form specifically denotes more than one instance of the same entity. The same argument was independently made by Chung (2000: 165, 167) for Indonesian. Consider (19a) (= (4)) and (19b).[4]

(19) a. Buat-lah kalimat-kalimat berikut menjadi
make-EMP sentence-RED following become
kalimat-kalimat negatif.
sentence-RED negative
'Please make the following sentences negative.'
(Dardjowidjojo 1978: 27; Chung 2000: 165)

b. Kalimat Dasar.
sentence basic
'Basic sentence(s)' (Wolff et al., 1992: 21; Chung 2000: 166)

In (19a), *kalimat-kalimat* 'sentences' must be construed as 'more than one sentences' whereas, in (19b), *kalimat* 'sentence(s)' can be construed either as a singular or plural. These examples thus illustrate that a bare nominal in Indonesian takes {neutral, plural} values for the Num head as in Malay.

There is evidence that Japanese and Javanese also select the {neutral, plural} values for the Num head as in Indonesian though dominant morphological processes to denote plurality seem to be different between Japanese (*tachi*-suffixation) and Javanese/Indonesian (reduplication). Consider examples in (20a, b) from Javanese and (21a, b) from Japanese.

(20) a. Jaran lagi mangan.
horse PROG eat
'A horse is eating./Horses are eating.'

b. Jaran-jaran lagi mangan.
horse-RED PROG eat
'*A horse is eating.'/Horses are eating.'

(21) a. Uma-ga hasitteiru.
horse-NOM play
'A horse is running./
Horses are running.'

b. Uma-tachi-ga hasitteiru.
horse-PL-NOM run
'*A horse is running./
Horses are running.'

4. The translation for (19b) is slightly modified to reflect the fact that *kalimat* can be interpreted either as singular or plural, a judgment confirmed by my native language consultant.

In (20a), *jaran* 'horse(s)' can denote either singular or plural instances of the horse. Its reduplicated correspondent *jaran-jaran* 'horses' specifically denotes plural, as shown by the English translation for (20b). The same observation holds for (21a, b), where *uma* 'horse(s)' can be construed as singular or plural depending on non-linguistic contexts but must denote plural once it is suffixed with *-tachi*. (22a, b) from Javanese and (23a, b) from Japanese make the same point.

(22) a. Callie lan Tisa kuwi kucing.
Callie and Tisa COP cat
'Callie and Tisa are cats.'

b. Callie kucing
Callie cat
'Callie is a cat.'

(23) a. Callie to Tisa-wa neko-da.
Callie and Tisa-TOP cat-COP
'Callie and Tisa are cats.'

b. Callie-wa neko-da.
Callie-TOP cat-COP
'Callie is a cat.'

Notice that there is no morpheme in Indonesian/Javanese/Japanese that specifically denotes singularity. As stated above, these languages make the distinction between singularity and plurality of a noun only based on contexts in which it is found. I take this to suggest that there is no grammaticalized notion of singularity in these languages.

The number system in English and Italian exhibits a different picture. In English, there is a purely grammatical distinction between mass and count nouns that seems not predictable from their conceptual structures, though I could not make a similar argument for the number system in Italian due to the unavailability of the data. Consider the pair of words, *wheat* and *oat*, in English. (24a, b) and (25a, b) show that *wheat* is a mass noun whereas *oat* is a count noun, even though they both denote "a grain of cereal".[5]

(24) a. David did not eat many oats.
b. *David did not eat much oat.

(25) a. *David did not eat many wheat(s).
b. David did not eat much wheat.

(24a, b) show that the word *oat* can go only with the determiner (many) that requires a count noun. (25a, b) show that the word *wheat* can go only with the determiner (much) that requires a mass noun. These examples, thus, suggest that the count-mass distinction in English is grammaticalized in certain pairs of words such as *oat* and *wheat*. Based on this consideration, I assume that English and

5. Many thanks to Heidi Harley for (24a, b) and (25a, b) and very useful discussion. (25b) is acceptable if many wheat is interpreted as "many types of wheat".

Italian can take one of the following three values for the Num head: singular, plural, and neuter.[6]

With all the results discussed thus far in place, the proposed relativized parametric theory of nominal denotation can be summarized as in Table 3.

Table 3. A Relativized Parametric Theory of Nominal Denotation (preliminary version)

Languages	Height of Nominal Projections	Possible Sets of Num Values
Indonesian/Javanese	NumP	{neutral, plural}
Japanese	QP	{neutral, plural}
Italian	DP	{singular, plural, neuter}
English	DP or QP	{singular, plural, neuter}

Three assumptions are in order here before we move onto the actual structural analysis of bare nominals across languages. First, I assume that the N in the universal nominal morphosyntactic hierarchy in (18) is underspecified with respect to its denotation (cf. Distributed Morphology; see, for example, Marantz 1997 and Harley & Noyer 1999). Second, I assume the economy of projection as proposed on various conceptual and empirical grounds in Chomsky (1995), Fukui (1986, 1995), Fukui and Speas (1986), Radford (1990), Law (1991), Grimshaw (1993), Safir (1993). Speas (1994), and Bošković (1997). Specifically, if a language like Italian and French selects the {singular, plural} set for the Num head, the Cl(assifier) P does not project on the ground of expressive economy. The individuation function encoded by the singular value of the {singular, plural} set has the same function as that encoded by the classifier. Under the theory that semantic composition is computed in the bottom up fashion in a strictly local manner, the projection of the NumP with the relevant value makes the projection of the dominating ClP redundant. Finally, I assume that there is a feature checking/valuation relation of some sort between the Num head and its complement N. To be precise, the Num head with the {singular, plural} set values its complement as a count noun while the Num head with the {neutral, plural} set values it as a mass noun.

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6. As Heidi Harley (personal communication) notes, an intriguing issue remains with the English number system. Borer (2005) claims that the alleged English plural morpheme *-s* is a kind of classifier. One argument for this claim comes from the fact that the proposition in (i) is true even if only one dog is removed; if *-s* denoted a plurality of the noun it attaches to, (i) should come out as a false statement.

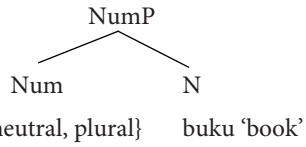
(i) Any dogs will be removed.

I would like to address this issue in my future work.

4.2 Deriving the denotation and morphosyntax of bare nominals across languages

Let us consider first the nominal syntax of bare nouns in Javanese and Indonesian. We have seen that these two languages exhibit the following four morphosyntactic characteristics: (i) they allow bare nominal arguments, (ii) they lack a generalized classifier system, (iii) all nouns are a type of mass nouns, and (iv) they allow only narrow scope of bare nominals. All these properties straightforwardly follow if bare nominals in Javanese and Indonesian project up to NumP with the set {neutral, plural}, as shown in (26).

(26) The Nominal Structure of Bare Nouns in Indonesian and Javanese



First, the two languages allow bare nominal arguments because there is no DP. Second, they lack a generalized classifier system because they project only up to NumP for bare nominals. Third, the extension of all nouns is mass for the following reason. If the Num value is specified as neutral, the denotation of the NumP is a kind because it does not differentiate between singular and plural instances of the NumP. If the Num value is plural, the denotation of the Num P still comes out as a bare plural, which is also a kind under Carlson's (1977)/Chierchia's (1998a, b) theory. Thus, whichever value the Num head selects yields a kind, hence mass interpretation to the NumP. Finally, the obligatory narrow scope reading of bare nouns with respect to negation follows from the kind-denoting requirement (or whatever principle blocks the wide scope reading of such nouns). In this way, the clustering of the morphosyntactic properties observed in Javanese and Indonesian, which was shown to be unpredictable under Chierchia's theory, naturally follows from the interaction of the Num P structure and the {neutral, plural} set for the Num head.

One potential problem with the proposed analysis is how to accommodate simple Javanese and Indonesian expressions as in (27a, b) and (28a, b), respectively.[7]

(27) Indonesian

a.	tiga	buku.	b.	buku	ini
	three	book		book	this
	'three books'			'this book'	

7. This question was raised by Andrew Carnie (personal communication) and Heidi Harley (personal communication).

(28) Javanese

a.	telung	buku.	b.	buku	iki.
	three	book		book	this
	'three books'			'this book'	

The issue here is that expressions as in (27a, b) and (28a, b), which include numerals and demonstratives, might be incorrectly ruled out under present assumptions because of the lack of the QP or DP that would host the numeral and demonstrative words as their head in languages such as English and Italian. The claim that demonstratives are semantically functioning as determiners at least in the contemporary Indonesian has been made by MacDonald (1976: 85), who observes that the demonstrative *itu* 'that' is "coming to fulfill a function very much like that of the definite article." A related question, of course, comes from our earlier observation that a bare noun in Indonesian/Javanese can have a singular indefinite reading, as in (6a, b) and (16a). Notice that these two questions, in fact, are two special cases of the more general problem of how a bare noun, which otherwise would denote a mass extension, is also able to denote singularity in Indonesian or Javanese.

I maintain, however, that this question receives a principled answer once we recall our earlier assumption that the singularity of a noun is not encoded in the grammar; rather, it is determined by contexts in which it appears. Consider first the issue raised by demonstratives. Fukui (1986, 1995) and Fukui and Speas (1986) argue that Japanese entirely lacks functional categories such as C, T, and D of the English-kind, or at best has a quite impoverished system of these function items, with elements such as subjects and modifiers all being attached to lexical projections as an X′ adjunct. If this analysis can be extended to Indonesian and Javanese, numerals and demonstratives are also modifiers of lexical projections such as NPs in these languages. There is independent evidence that demonstratives in Indonesian and Javanese are not D heads but instead modifiers of NPs. The evidence concerns the iterativity of such expressions. It is well known that lexical heads such as nouns do not impose any structural limit on iterating modifiers as long as they can be semantically interpreted and licensed. This is illustrated in (29a–c) from English.

(29) a. a big balloon.
b. a red big balloon
c. a red big expensive balloon

Demonstrative words in English such as *this* and *that*, by contrast, are instances of the D head, not modifiers of an NP, by the same criteria. This is shown by the contrast between (30a, b) and (30c), where *this*/*that* can never co-occur with other functional D elements such as *John's*.

(30) a. this/that book
b. John's book
c. *this/that John's book

Importantly, demonstratives in Indonesian and Javanese pattern with modifiers of the NP rather than D heads since they can co-occur with other possessor elements, as in (31c) and (32c).[8]

(31) Indonesian

a.	b.	c.
buku ini	buku John	buku John ini
book this	book John	book John this
'this book'	'John's book'	'this John's book'

(32) Javanese

a.	b.	c.
buku iki	buku-ne John	buku John iki
book this	buku-POSS John	book John this
'this book'	'John's book'	'this John's book'

This contrast between (31c)/(32c) and (30c), therefore, provides support that there is no D in Javanese and Indonesian and that demonstratives in these languages are modifiers of a lexical projection.

More generally, it may well be that natural language uses whatever syntactic resources that are independently available to them to express the same meanings that other languages would express with a different (more articulated) syntactic structure.[9] The fact that a bare nominal can, in principle, occur with numerals despite the fact that it denotes a mass extension also follows from the lack of the grammatical encoding of the singularity in Indonesian/Javanese. Syntax simply makes the denotation of a bare nominal underdetermined. It is the semantic interface that actually determines whether that particular instance of bare nominal denotes a count or mass extension. If a bare nominal occurs with numerals such as 2, 3, 4, etc, then the interface coerces its otherwise mass denotation into count denotation so it may be compatible with a specific numeral; if contexts in which a bare nominal X is found make it clear that it is intended to denote a singularity, then it will come out as denoting one instance of X at the semantic interface. This observation is supported from the fact that once coupled with a numeral, a bare noun triggers scope interaction with negation, as in English. This is illustrated by

8. (31c) is not acceptable under the following reading: There are several people named John and the speaker talks about the book owned by one of them in contrast to the other. The only reading available to this phrase is roughly "this (deictic) book which belongs to John."

9. The idea in this paragraph owes a great deal to my discussion with Heidi Harley (personal communication).

examples in (33) and (34), which minimally contrast with (6a) and (16a) in that the bare nominals are accompanied with a numeral.

(33) Ali tidak jadi membeli tiga buku.
Ali NEG finished buy three book
→ Neg>Indefinite (narrow scope): Ali did not buy three books.
Indefinite>Neg (wide scope): There are three books that Ali failed to buy.

(34) Aku ora weruh telung kotoran ning jubin.
I NEG see three spot on floor
→ Neg>Indefinite (narrow scope): I did not find three spots on the floor.
Indefinite>Neg (wide scope): There are three spots that I failed to find.

This observation, thus, provides important support for the idea behind the thesis of minimalist interface that the semantic component is endowed with domain-specific operations (i.e. type shifting, syntax-based coercion in light of world knowledge) to yield an appropriate semantic interpretation to an otherwise underdetermined denotation of a particular noun. Notice also that this underdetermined interface theory of nominal denotation predicts that there should not be any noun in Indonesian or Javanese whose count/mass denotation cannot be computed solely from its (prototypical) conceptual manifestation in the real world. This prediction seems to be borne out from the fact that Indonesian does not have pairs of words such as *oat* and *wheat* in English, though I must leave comprehensive examination of this prediction for my future research.[10]

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10. Another important issue that the proposed analysis does not fully resolve is what restrictions are imposed on recursion. For example, it is impossible to freely concatenative more than one numeral in Indonesian, as in (i).

(i) #Esti mem-beli tujuh buku kurang satu.
Esti AV-buy seven book minus one
'Esti bought seven minus one books.'

I believe that the impossibility of this type of recursion violates certain general semantic or pragmatic constraints such as expressive economy and Gricean Maxims. In terms of expressive economy, *enam* 'six' is a more economical way of denoting 6 than seven minus one. The same word also satisfies the Maxim of Quantity better than 7–1 because it is more concise. This question leads us to a new comparative analysis of the syntax–semantics interface with respect to complex cardinals. The comprehensive discussion of the cross-linguistic typology of number systems goes beyond the scope of paper. See Ionin and Matushansky (2006), though, for one promising compositional approach to the present issue. I thank Heidi Harley (personal communication) for useful discussion on the question raised here.

Let us now turn to the nominal syntax of bare nouns in Japanese. Japanese has the following morphosyntactic characteristics; (i) bare arguments, (ii) the generalized classifier system, (iii) the mass extension of all nouns and (iv) the obligatory narrow scope of bare nouns with respect to negation. The first three properties were noted by Chierchia (1998a, b); the last property is illustrated in the contrast between examples in (35a, b).

(35) a. John-ga yuka-de yogore-o mituke-naka-tta (koto)
John-NOM floor-LOC dirt-ACC find-NEG-PAST (fact)
'(The fact that) John did not find a spot/any spot/spots on the floor.'

→ Neg>indefinite (narrow scope): I did not see any spot on the floor.'
*indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.'

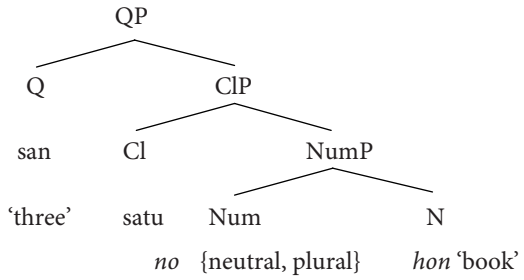
b. John-ga yuka-de mituke-naka-tta yogore-ga aru (koto).
John floor-LOC find-NEG-PAST dirt-NOM exist
'(The fact that) There is a spot that John did not find on the floor.'

→ *Neg>indefinite (narrow scope): I did not see any spot on the floor.'
indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.'

The bare noun *yogore* 'dirt' cannot take scope over the negative morpheme *nai* 'not' as shown in (35a). The wide scope reading is expressed by the relative clause structure, as illustrated in (35b).

I propose that the nominal structure in Japanese is as shown in (36) where bare nominals project up to QP with the Num specification being {neutral, plural}, as in Javanese and Indonesian.

(36) The Nominal Structure of Bare Nouns in Japanese



I assume, following Kitagawa and Ross (1982) and Watanabe (2006) (see also Saito and Murasugi 1990 for relevant discussion), that what otherwise looks like a genitive case marker *no* in the expression *san satu-no hon* 'three-Cl books' that

intervenes between the classifier and the head noun is a linker that is inserted post-syntactically after any non-clausal pre-nominal element.[11]

The above-noted morphosyntactic profile of nominals in Japanese directly follows. First, Japanese allows bare nominals in any argument position because there is no DP projection. Second, Japanese has a generalized classifier system due to the projection up to QP which dominates the ClP. Third, the extension of all nouns is mass for the same reason that the extension of all nouns is mass in Javanese and Indonesia: whichever value the Num head takes, the denotation of the NumP is a kind, which is mass. Finally, bare nominals in Japanese can only take narrow scope with respect to negation due to their kind-denoting requirement that is independently known to block wide scope readings. Notice that the proposed analysis of nominal structure in Japanese predicts that there are no grammaticalized mass-count distinctions in nominals, as exhibited by the *oat* vs. *wheat* pair, that is not solely computable from its conceptual realization. This prediction receives support from the observation that English mass nouns such as *furniture* is a count noun because it represents a conceptually identifiable discrete object such as couch, chair, and so on in the lexicon of Japanese speakers. The proposed analysis also predicts that bare nominals in Japanese should be able to exhibit scope interaction with negation if we introduce numerals. (37) shows that this prediction is confirmed.

(37) John-ga yuka-de mittu-no yogore-o mituke-naka-tta (koto)
John-NOM floor-LOC three-LINK dirt-ACC find-NEG-PAST (fact)
'(The fact that) John did not find a spot/any spot/spots on the floor.'
→ Neg>indefinite (narrow scope): I did not see three spots on the floor.'
indefinite>Neg (wide scope): There are three spots that I failed to see on the floor.'

---

11. Evidence for this assumption is that this morphological treatment is able to capture the distributional properties of *no* better than a purely syntactic treatment. Specifically, Kitagawa and Ross (1982) make the generalization that the marker *no* is attached to a non-clausal pre-nominal element of any kind. Watanabe (p. 256) also notes that this marker "can even iterate after every such non-clausal element", as shown in (ia, b):

(i) a. san-satsu-**no** Chomsky-nitsuite-**no** hon
3-Class-GEN Chomsky-about-GEN book
'three books about Chomsky'

b. tsugi-**no** suugaku-**no** mondai
next-GEN math-GEN problem
'(the) next math problem' (Watanabe 2006: 256)

These examples indicate that it is difficult, if not impossible, to specify a *unique structural* position for *no*-insertion in Japanese grammar. Rather, the distribution of this maker is better captured by stating that it is inserted after any non-clausal element in the post-syntactic morphological component.

The idea that Japanese does not have anything like D heads in English has been a traditional one within generative research on this language since the seminal work by Fukui (1986, 1995) and Fukui and Speas (1986). Noguchi (1997) provides further arguments in favor of this position based on the contrast between English and Japanese with respect to the availability of variable binding for pronouns. One potential candidate for the D head in Japanese is a class of demonstratives such as *kono* 'this' and *ano* 'that'. However, the iterativity test we introduced above in our discussion of Indonesian and Javanese shows that these elements are not D heads but instead modifiers of some other projection such as NP or the whole QP because, as Fukui (1986, 1995) notes, these elements can co-occur with other possessor or pronominal adjectives, as illustrated in (38c).

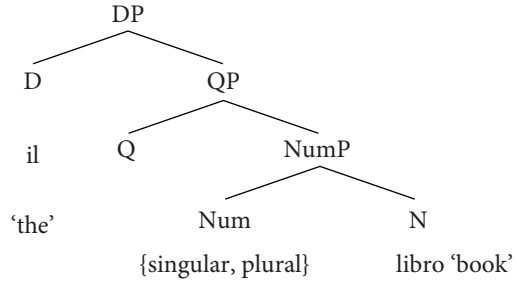
(38) a. ano kuruma
that car
'that car'

b. John-no ano kuruma
John-GEN that car
'*John's that car'

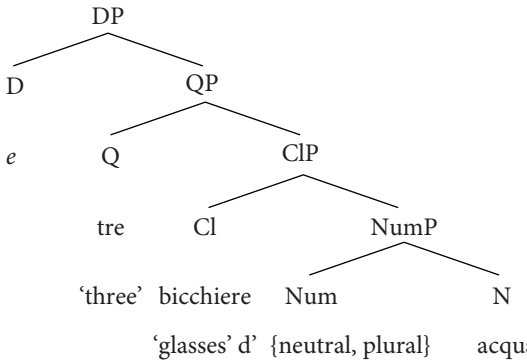
c. ookina John-no ano kuruma
big John-GEN that car
'*big John's that car' (Fukui 1995: 106, 107)

Let us now consider the nominal syntax of bare nouns in Italian. Italian, being one of the examples of the [+arg, –pred] language under Chierchia's Parameter, does not allow bare arguments. The unavailability of bare nominal arguments in this language directly follows if we assume that Italian nouns must always project up to DPs, hence instantiate the maximally complex nominal structure among languages of the world. We have also seen that languages such as Italian can take either {singular, plural} or {neutral, plural} for the Num value. The structure for Italian nominals, thus, will be as in (39) or (40), depending on whether the Num value is specified either as {singular, plural} or {neutral, plural}. Note that nominals in Italian project up to DP in both cases. I assume that *de* 'of' in the structure in (40) is inserted post-syntactically as a linker.

(39) The Nominal Structure of Bare Nouns in Italian (for count nouns)



(40) The Nominal Structure of Bare Nouns in Italian (for mass nouns)



Italian disallows bare nominal arguments. This property falls out because Italian nominals always project up to the DP.

Evidence that Italian nominals always project up to DPs comes from the subject–object asymmetry in Italian noted by Chierchia (1998a: 356), who observes that bare nominal arguments are allowed in direct object positions in certain cases but never permitted in subject positions, as illustrated by the contrast between (41a) and (41b). The same observation is also made by Longobardi (1994: 616), who points out the contrast between (42a) and (42b, c).

(41) a. *Bambini sono venuti da noi.
kids be come by us
'Kids came by us.'

b. Ho preso bicotti con il mio latte.
I-have taken cookie with the my milk
'I ate cookies with my milk.'

(42) a. *Acqua viene giù dalle colline.
water comes down from the-hills
'Water comes down from the hills.'

b. Viene giù acqua dalle colline.
comes down water from the-hills
'Down from the hills comes water.'

c. Ho presco acqua dalla soregente.
I took water from the-spring
'I took water from the spring.' (Longobardi 1994: 616)

The subject–object asymmetry observed here follows if Italian nouns always project up to a DP with an empty head. One standard assumption in the generative framework has been that empty heads must be properly licensed by appropriate heads (Chomsky 1981, 1986a, b; Rizzi 1990). Under this assumption, the null D head in (41b) that dominates the bare noun *bicotti* 'cookie' is correctly licensed by the verbal

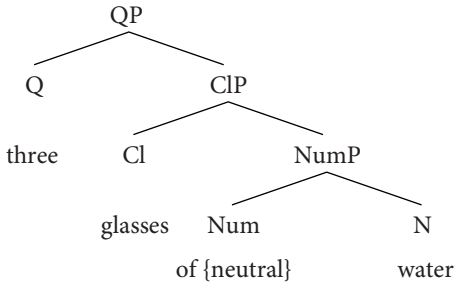
head *preso* 'take'. This licensing option is unavailable for the empty D head that dominates *bambini* 'kids' in (41a). A similar story holds for the contrast between (42a) and (42b, c). Thus, the subject object asymmetry provides support for the DP structure for Italian nominals. Alternatively, nominals in Italian themselves do not project to DP but the specifier position of TP requires a D head for EPP reasons. Accordingly, nominals in subject position must be headed by a D head whereas nominals in object projects need not (hence cannot) be headed by a D head.[12]

Consider finally the syntax of bare nominals in English. English belongs to the [+arg, +pred] language type. This means that this language behaves as Japanese and Chinese in that the extension of its bare plural and mass nouns is a kind (hence [+arg]) whereas behaving as Italian and French in that it prohibits count nouns from occurring without determiners (hence [+pred]). I propose that this dual behavior of English nouns is exactly what we predict under the proposed analysis if English can choose the Japanese-type QP-structure or the Italian-type DP structure. Consider first the Japanese-type structure assigned to English when bare plurals and mass nouns are involved. In this case, English allows bare arguments, requires a classifier system, and does not have plural morphology, as in (43a–c). These properties mirror exactly those observed in Japanese.

(43) a. I drank water.
b. I drank three glasses of water.
c. *I drank waters.

Thus, I propose the nominal structure for bare plurals and mass nouns as shown in (44), which is the Japanese-type nominal structure; it projects up to QP with the Num value being chosen from the {neutral, plural} set. I assume that the preposition *of* is inserted in the post-syntactic morphological component between classifiers and their nominal heads as in *three glasses **of** water*.

(44) The Nominal Structure in English (for bare plurals and mass nouns)



12. Many thanks to Andrew Carnie (personal communication) for suggesting this alternative.

The three morphosyntactic properties of bare plurals and mass nouns in English noted above are derived automatically by virtue of the fact that English has the Japanese-type QP structure in this context. The bare nominal option is possible because there is no DP on top of the QP. The Num specification in (44) requires that the denotation of the NumP be a kind. Thus, a certain set of classifier-like expressions such as *glass, cup*, and *piece* is required for nouns in (51) to set up an appropriate counting level for each noun, as in Indonesian, Javanese, and Japanese. There is no plural morphology observed in bare plurals or mass nouns because they are true in an undifferentiated manner of a singular or plural instance of the entity denoted by this type of noun. [13]

If English is like Japanese, the proposed analysis also leads us to the prediction that bare plurals and mass nouns cannot take wide scope over negation due to their kind-denoting requirement. This prediction is indeed confirmed by (5a), repeated here as (45).

(45) I didn't see spots on the floor.

→ Neg>Indefinite (narrow scope): I did not see any spot on the floor.
*Indefinite>Neg (wide scope): There is a spot/are certain spots that I failed to see on the floor.

Consider now the structure for count nouns in English. When count nouns are involved, English does not allow bare nominal arguments (46a, b), lacks any classifier (46c), has plural morphology (46d), a cluster of properties that we have seen to characterize nominals in Italian.

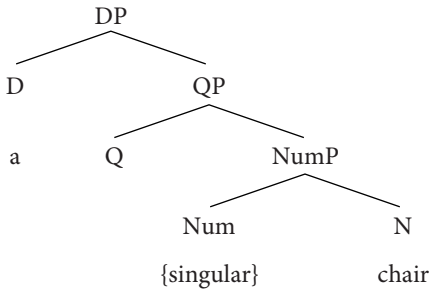
(46) a. I bought a pen.
b. *I bought pen.
c. *I bought a piece of pen.
d. I bought pens.

Thus, English takes the Italian-type nominal functional structure shown in (47).

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13. I have no good answer at this point of research for what wound be wrong with using the null varieties of Q, Cl, and the Num heads in (44) if D could be phonologically unrealized in Italian. This question is one special case of the broader question of why there are certain tendencies in natural language for a particular value (such as third person, not first or second person) to be null rather than overt. One might find clues to this question from learnability, but this is a speculation.

(47) The Nominal Structure in English (for count nouns)



I assume that the indefinite article *a* is base-generated under the D head. Alternatively, *a* realizes the Q head (that is raised to the D head), since it denotes a singular instance of a discrete, countable entity. The determiner-less bare option for count nouns is impossible for count nouns because the nominal structure projects up to the DP. When the singular value is selected for the Num head, the denotation of the NumP is a singular instance of the chair, which is compatible with the function of the indefinite article *a*. When the plural value is selected instead, the denotation of the NumP is bare plurals, which is a name of kind, as argued for in Carlson and Chierchia.

There are two potential problems with the proposed analysis for nominal syntax in English. The first problem concerns the selectional relation between the Num head and its N complement.[14] The question is, why it is that only bare plurals and mass nouns are inserted in (44) whereas only count nouns are inserted in (47)? What blocks count nouns and bare plurals/mass nouns from being inserted in the structures in (44) and (47), in that order? I maintain that there is actually nothing wrong with this choice *as far as syntax is concerned*; the syntax-external component interprets whatever syntactic object the narrow syntax creates and sends out. This position is related to what Hinzen (2006) calls *Semantic Blindness*; "as if syntax carved the path interpretation must blindly follow" (Uriagereka 2002: 275, as quoted in Hinzen 2006: 250). In other words, "the human language faculty provides forms that a possible human structured meaning may have, leaving a residue of non-structured meanings (concepts)." (Hinzen 2006: 235). It has been widely known that, when the meaning of an open class nominal element clashes with that of determiners, it is always determiners whose interpretation molds that of nouns

14. I thank Heidi Harley (personal communication) and Vicki Carstens (personal communication) for this question and useful discussion on how to address this question.

(Harley & Noyer 2000: Harley 2006: 213–214). For example, mass nouns could occur with determiners that specifically select count nouns; thus, not only (48a) but also (48b) is possible in English.

(48) a. I don't drink much coffee.
b. I bought two coffees this morning.

(49) a. I had a cookie for breakfast.
b. That baby has cookie all over his face.

((48a, b), (49a) from Harley 2006: 213)

With an appropriate context, *two coffees* in (48b) can be interpreted as packaged coffees in cups or bags. Similarly, we can use count nouns together with determiners that specifically select mass nouns. In (49b), the bare nominal *cookie* is not interpreted as a discrete entity but instead as amorphous substance that cookies are generally made of. These examples illustrate that the meaning of the noun is always bent to be compatible with the semantic contribution of the determiner with which it co-occurs, not the other way around. In other words, there is no *ungrammatical* combination of nouns and functional elements within syntax *per se*, with the semantics trying its best to get a felicitous interpretation that is compatible with world knowledge. Thus, when we have sentences like (50), to which no stretch of our encyclopedic knowledge can assign any reasonable interpretation, they are anomalous but this is solely due to our syntax-external criteria.

(50) #I had three oxygens in the kitchen. (Harley & Noyer 2000: 21)

The second potential problem with the proposed analysis concerns the modifiability of elements like *glasses, cups* and *pieces*, which I have thus far analyzed as a classifier on a par with Japanese classifiers.[15] This unified treatment appears to be incorrect, given that the former may be modified by adjectives while the latter may not, as the contrast between (51a) and (51b) shows.

(51) a. three big cups of coffee
b. *__ni__ ookina __hai__-no kohii
two big Class-GEN coffee
'two big cups of coffee'

15. As pointed out by Jaeshil Kim (personal communication) when I presented material in this chapter at the Mid-America Linguistic Conference held at the University of Kansas, Lawrence in October 2007.

c. ookina **ni**-**hai**-no kohii
big two-Class-GEN coffee
'two big cups of coffee'

d. *ookina kohii
big coffee
'big coffee'

The contrast between (51a) and (51b) receives a natural treatment in prosodic terms. We saw in Section 3.1 that the numeral *se-* 'one' in Indonesian needs an overt classifier on its right due to its clitic/boundedness requirement. Following this line of thinking, (51b) is ungrammatical because the adjacency between the numeral *ni-* 'two' to the classifier *hon* is blocked by the intervening adjective *ookina* 'big' (cf. Bobaljik's (1995) Morphological Merger under Adjacency). Thus, if we change the relative order of the adjective and numeral so that the two elements are phonologically adjacent, the result is grammatical, as in (51c). Notice that the adjective *ookina* 'big' modifies the classifier, not the head noun *kohii* 'coffee', in (51c), since the same adjective cannot co-occur with the same noun without the classifier *hai*, as in (51d).

To sum up this section, I have proposed a novel, relativized parametric theory of the morphosyntax and denotation of bare nominals across languages whereby different morphosyntactic profiles exhibited by nominals in different languages are derivable from the interaction of two independently morphosyntactic/morphosemantic parameters: how high each language allows its bare nominal to grow and what set of Numb values each language can choose. The proposed analysis does not require any rigid mapping between the syntax and semantics of bare nominals, as in Chierchia's (1998a, b) Nominal Mapping Parameter but captures its effects through independently motivated observations about the available set of functional items and of the possible number values in each language, in a way that is compatible with the standard generative assumption about the locus of parameters.

5. Conclusions

In this chapter, I have discussed the issue of syntax–semantics interface with reference to the denotation and morphosyntax of bare nominals in several languages, in particular, Indonesian and Javanese. I have shown that these two languages do not fit into any one of the three language types predicted by Chierchia's (1998a, b) Nominal Mapping Parameter. First, the free occurrence of bare arguments in Indonesian and Javanese shows that these languages are not [–arg, +pred]

languages such as Italian. Second, the absence of a generalized classifier system and the presence of plural morphology marked by reduplication of a root argue against categorizing the two languages as [+arg, –pred] languages such as Japanese and Chinese. Finally, the obligatory narrow scope of bare nominals with respect to negation and the lack of pluralized/reduplicated forms for generic statements suggests that Indonesian and Javanese are also not [+arg, +pred] languages such as English. This result casts serious doubts on the the rigid mapping between the syntax and semantics of bare nominals of the kind assumed in Chierchia's Nominal Mapping Parameter.

Following the standard conception of the locus of parameters in the Principles-&-Parameters approach to language variation (Borer 1984; Fukui 1986, 1995; Chomsky 1981, 1986b, 1995), I have proposed a relatived parametric theory of nominal denotation that derives different morphosyntactic profiles of bare nominals in different languages from the relative complexity of nominal functional structures and the possible set of Num values that are available in each language.

The case study reported here highlights the importance of under-studied languages as in Indonesian and Javanese because generalizations concerning these languages often deviate from those that have been found among relatively well-studied languages such as English, Romance, and East Asian languages, hence reveal crucial gaps that otherwise would go unnoticed in modern syntactic theorizing. I hope to have demonstrated here that detailed examination of these languages is instructive in informing a more "balanced" parametric theory of human language syntax, a desidaratum in the current generative enterprise.

The proposed analysis has several imporant implications for the proper theory of syntax–semantics interface. First of all, it provides support for a certain conception on the economy of derivation and projection at the syntax–semantics interface: the syntax-external interpretive component employs whatever syntatic recourses are available to the language to express the same denotation that other languages would express with a more complex nominal functional structures. This was seen, for example, in the treatment of demonstratives and numerals as adjuncts/modifiers of lexical projections such as NPs in Indonesian, Javanese and Japanese, which would consitute D and Q heads in languages such as English and Italian. We also have noted that various denotations assigned to a particular nominal element (kind, predicate, indefinite, etc.) are nothing but particular interpretive outcomes of the semantics component that interpretes a different height of the nominal functional projection and of the Num values. Similarly, when the functional requirement of a determiner clashes with the conceptual structure of its complement nouns (mass vs. count), it is always the former that prevails, forcing the semantic interpretive component to interpret the output of syntax in every way compatible with our knowledge of whether particular nouns can be conceptualized

as discreet individualizable objects or amorphous mass. These results provide strong support for the notion of minimalist interfaces, whereby the syntactic computation provides a parametrically defined curve that the conceptual/semantic interfaces must blindly follow, without any extrinsically determined mapping between the syntax and semantics of a particular expression as in Chierchia's Nominal Mapping Parameter. The manner in which the syntactic representation is mapped onto the semantic representation is language-invariant. The narrow syntactic computation will do whatever it can within a parametrically chosen set of morphosyntactic features and their projections in each language, and the universal semantics will just come up with an interpretation that is compatible with our conceptual knowledge of how things are represented in the external world.

Second, the proposed parametric theory of bare nominals argues against the common assumption in the generative liteature (e.g. Higginbotham 1985; Stowell 1989; Szabolcsi 1987, 1994; Longobardi 1994; Heim & Kratzer 1998) that it is only DPs that can serve as arguments. This assumption is understandable, given that NPs denote ⟨e, t⟩ whereas DPs denote a type ⟨e⟩; as a result, a NP must combine with a D to be saturated and computed as type ⟨e⟩. This assumption also makes sense if D can be considered to have the function of mapping the set of enitities denoted by the N-set to a specific/definite entity thereof. To the extent that my analysis is correct, however, it provides strong evidence against this commonly held view.

I conclude this chapter with the following important question, which the presnet analysis would bring to light if it is on the right track. As stated above, the proposed theory claims that the denotation of a functional catgeory is language-invariant. For languages like Italian and English (in certain cases) whose nominals always project to DP, the syntax–semantics mapping is strictly compositional, for the reason stated above. Then, a question arises in those languages which I have argued to lack a D as to how a determiner-less nominal can denote an inidvidual in the same way that a determiner-headed nominal does. To put in a more informal way, how can humans express information such as definiteness and specificity in languages without D heads that other languages with D heads will express in fully syntactic ways given that those pieces of information are syntatically represented?[16] I believe that the present thesis of minimalist interfaces provides an interesting answer to this question. It is possible that some sort of repair takes place at LF in just as much as at PF (Chapter 4). Under the present case, the

16. Thanks to Andrew Carnie (personal communication) and Simin Karimi (personal communication) for raising this question and useful discussion/suggestions.

linguistic semantic component may well develop general type-shifting operations to solve a type mismatch problem that necessarily arises in D-less languages. In fact, this is the tack that Chierchia (1998a) develops to account for the morpho-syntactic behavior of Russian. More generally, given that all languages have some or other ways to express a particular thought/message, D-less languages will activate certain domain-specific operations that would remain unused in D-languages to express the same thought, whether via demonstratives that seem to have a similar function as D, general type-shifting operations, or even extra-linguistic contexts that impose the definite/specificity on a D-less noun. Of course, one could imagine that there should be certain restrictions on the kind of operations that the semantic component performs to remedy the crude syntactic representation.

The investgation conducted in this chapter is construed as a case for the minimalist interface guideline; the semantic component is subservient to the needs of the syntax, assigning whatever reasonable interpretation it can to the output of the syntax with several domain-specific operations in hand (type-shifting, contexts, pragmatics) but only within the parametrically defined carve set up by syntactic computation.

CHAPTER 6

Conclusion

In this final chapter, I summarize the high points of the contents of my investigation in the previous chapters and identify potentially significant conclusions to be drawn on the interface between syntax and its neighboring phonological, morphological and semantic interfaces.

1. Summary of the chapters

The leading idea in this book has been that of *minimalist interfaces*, namely, that the syntax-external linguistic components conduct a handful of modular-specific operations to arrange complex objects created by general principles of syntax to be usable for language-independent AP and CI systems. All the apparently disparate phenomena drawn from the sizable portion of the grammars of Indonesian and Javanese analyzed in the preceding chapters support this notion. This idea has been instantiated in a variety of ways. My investigation of nominal vs. verbal reduplication (Chapter 2) suggests that the post-syntactic morphological phonological component is fundamentally interpretive, doing whatever operations it can to mirror the way syntactic derivation proceeds, but within the range of options set up by syntax, such as c-command, locality, cyclic assignment of phonological features and so on. The active voice deletion caused by the movement of an NP (Chapter 3) is one clear case where the post-syntactic morphology closely mirrors the local computation of syntax as required by local syntactic computation. P-stranding under sluicing in Indonesian (Chapter 4) constitutes one case where the role of the phonological component is at play: certain violations created by syntax such as percolation failure can be repaired at the interface by deletion. At the same time, other violations such as the failure of D-to-P incorporation in the syntax cannot be repaired at the interface. This analysis, if correct, is a natural outcome of the proposed thesis of minimalist interfaces: interfaces can conduct operations to legitimatize otherwise illegitimate syntactic objects but only within the narrow range of options admitted by language-particular parameters combined with syntactic principles. The denotation and morphosyntax of bare nominals in Indonesian and Javanese as well as several other languages (Chapter 5) led to a

relativized parametric theory of nominals, namely, that there is only one semantic interpretation that can be conducted at the semantic interface; what differs lies in the height of functional structures above the lexical projection and the possible set of values that the Num feature can take in each language. The cross-classification of these two parameters yields different outcomes at the semantic interface. This result shows that what the semantic interface can do is to accept whatever objects syntax sends off and give an interpretation to the objects in a way that is compatible with our encyclopedic/world knowledge of how nouns are conceptualized.

2. Minimalist interfaces: Their nature, origin and evolution

The thesis of minimalist interface leads to a particular understanding of the way syntax interfaces with its neighboring linguistic components, semantics and phonology. One crucial character of this view of linguistic interfaces, a recurrent theme throughout this book, is that syntax is not entirely crash-proof; it could make certain derivational mistakes; some of them can be repaired by domain-specific operations at the interfaces. What is crash-proof, then, is the linguistic system as a whole including the syntactic computation plus the linguistic interfaces.

The present model of linguistic interface driven by considerations of minimalist interfaces may suggest a partial return to the earlier model of grammar as in the Government and Binding Theory (Chomsky 1981; Chomsky & Lasnik 1977; Lasnik & Saito 1992; see also Prince & Smolensky 1993). Under this "massive overgeneration + filter" approach, the syntactic computation itself creates a multitude of syntactic objects and all ungrammatical sentences are filtered out by domain-/level-specific conditions such as government, binding, case theory, control theory, and bounding theory. The present model, however, is conceptually quite different from this earlier conception in that the role of interfaces is not to constrain the forms of objects created by the syntactic derivation; they work instead to *improve* them so that they become legible to the language-independent thought and production modules.

The thesis of minimalist interfaces serves not only as a hypothesis about the way syntactic computation networks with its neighboring linguistic interfaces but also opens a new line of inquiry on the proper understanding of the nature of syntactic derivation. For example, recall that we have adopted the view that syntax is a functionally blind combinatorial system (Uriagereka 1998, 2002; Hinzen 2006; Chomsky 2004) that cannot know about the fate of its own generated objects; they may or may not be convergent derivations. This means that it is the task of linguistic interfaces to determine the status of such objects in terms of usability on the part of language-external sound and concept systems and do whatever they

can to modify/ornament/repair/remedy them so that they may become legible and usable on the part of the A-P/C-I systems. This view of convergence yields a new insight on the current debate on what syntactic objects constitute a phase domain. As stated in Chapter 3, it has been currently proposed in Chomsky (2000, 2001, 2004) that certain syntactic objects such as *v*Ps and CPs form a phase head; once these objects have been arranged in syntax, the complements of the phase heads *v* and C undergo cyclic Spell-Out to the linguistic interfaces for semantic and phonological interpretation. Chomsky draws on considerations of computational efficiency in support of the phasehood of these functional heads; syntactic derivation can forget about what was constructed in the past if derivation works in this way. Under this conceptual view of phase theory, then, specific syntactic objects have privileged status in that they serve as a unit of objects not only for syntax but also for purposes of phonological and semantic interpretation.

The present thesis of minimalist interface, however, leads us to the view quite different from the one just mentioned: it is a property of the linguistics interfaces that requires these syntactic objects to be chunked into phases. This is because syntax is just about combining a subset of morphosyntactic features culled into numeration via the recursive process of Merge and creating a hierarchical object out of them. There is nothing within syntax *per se* to tell us why *v*Ps and CPs are phases, not others (see Epstein & Seely 2002 for critical discussion of Chomsky's view of phases). Then, we naturally expect that interfaces are "invasive": they actively participate in linguistic computation in such a way that *v*Ps and CPs turn out to behave as phases; in this way, *v*Ps and CPs do not need to be arbitrarily identified as phases, but rather the fact that they are phases falls out as an epiphenomenon of the interface computations. This interface-driven view has also been recently argued for in a different context by Boeckx (2007), who proposes to let interfaces determine the convergence of objects created by syntax. This view is conceptually natural, as mentioned several times in this book, in the light of the fact that what actually directly interacts with the language-independent sound and conceptual modules are semantic and phonological interfaces; to put it differently, by virtue of its place in the grammatical architecture, syntax cannot worry about what will happen in the "negotiation" between these components and the A-P/C-I systems. It is in this respect that Chomsky's characterization of these objects in terms of interface properties is correct. *v*Ps and CPs are not inherent phases in the sense that their construction automatically entails Spell-Out; rather, they are determined as phases contextually by the syntax-external semantic interface because they instantiate what have been variously characterized as having "full argument structure" (Chomsky 2000, 2001, 2004), "complete functional complex" (Chomsky 1986b), or "propositional content"; they happen to create good reconstruction sites that are necessary for proper interpretation of binding relations at

the interface (Legate 2003). The same story holds for the other phonological interface: *v*Ps and CPs are phases not by virtue of their inherent privilege within the syntax but by virtue of the fact that they happen to demarcate possible domains for phonological rules such as pauses and parentheticals (Uriagereka 1999), phonological phrasing (Dobashi 2003) and nuclear sentence stress (Bresnan 1971; Legate 2003; Kahnemuyipour 2004; Wagner 2005). They also happen to provide good escape hatches for various sorts of agreement such as WH-agreement in Chamorro (Chung 1982, 1994, 1998), the realis/irrealis alternation in Palauan (Georgopoulos 1985, 1991), the voice-movement interaction in Tagalog and Malagasy (Rackowski & Richards 2005; Pearson 2001, 2005), the active voice deletion in Indonesian/Javanese (Chapter 3) and many other related phenomena.

The present interface-based approach to determination of phasal constituents, of course, also opens a new possibility that other syntactic objects than *v*Ps and CPs can be phases depending on external requirements from linguistic interfaces. For example, the current minimalist interface is expected to derive the recent claim that DPs are one such candidate, as argued for independently in Svenonius (2004) and Hiraiwa (2005), because certain types of DPs (action nominals, for example) could encode the same amount of information as their verbal counterparts in terms of argument structure. Other categories such as TP may well be strong phases given that the information contained within *v*Ps forms a proper subset of that contained by TPs. Category-defining derivational morphemes such as *-al*, *-ous*, *-ful* and many others also may form phase heads, as proposed by Marantz (2008) within the framework of Distributed Morphology (see also Arad 2003 for potential arguments from the denominal verb formation in Hebrew), because the determination of syntactic category has direct relevance on the linguistic interfaces, as evidenced by categorial selection (*#John broke black*) and category-sensitive stress contours ($\text{PROduce}_{\text{N}}$ vs. $\text{proDUCE}_{\text{V}}$). This line of thought, of course, does not take into consideration the recent argument made by Richards (2007) for the phasehood of *v*Ps and CPs based on computational efficiency and feature inheritance. The issue, however, is still on the jury.

One could maintain a slightly different view of the connection between syntax and its linguistic interfaces. For example, Chomsky (2008) argues that CI considerations take priority; optimization is to the CI interface, not to the AP interface (see also Boeckx 2007).[1] Chomsky illustrates this primary of the CI interface from the way natural language deals with Internal Merge. The initial copy of an item

1. The primacy of the C-I interface in language design, expressed in the present paragraph, is also shared by Heidi Harley (personal communication, May 1, 2008), though in a different context related to the phasehood of particular syntactic objects. The comments that follow

is created by External Merge whereas all other copies of the same item are created by Internal Merge. Studies on reconstruction (e.g. Legate 2003) show that all these copies play a role in semantic interpretation at the C-I interface. This state of affairs does not obtain at the A-P interface because in normal cases, all the copies except the highest one are deleted when the derivation is externalized at the interface. However, as is well known, this deletion pattern at the phonological interface causes serious problems in language processing (e.g. garden paths), a difficulty that would be easily overcome if all copies were pronounced at the interface. Chomsky takes this conflict between computational efficiency and communicative needs to support the primacy of the semantic interface in language design over the phonological interface. This primary of the C-I interface in language design may also be reflected in the phasehood of *v*Ps and CPs. Recall that Chomsky (2000, 2001, 2004) proposes that these particular objects constitute a natural characterization in terms of "full argument structure", "proposition", and other conceptual-semantic notions. In other words, this particular chunking receives independent justification in terms of what little is known about the way meaning is calculated in natural language. This characterization is not easy to come by at the phonological interface because there is nothing inherently special about these particular syntactic objects in terms of phonology that warrant their special treatment; other chunks such as AspP, TP, and VP may well count as phases as are CPs and TPs. True, one could make a case for the independent role of the phonological interface in the determination of phasehood of *v*Ps and CPs by their relative phonological isolability such as VP-fronting, pseudoclefting, intonational boundary, fragments, etc. (Chomsky 2004; see Bošković (2001) for a critical discussion on this point) but this behavior of these particular chunks may well be an epiphenomenon that arises from the fact that CPs and *v*Ps have conceptually identifiable propositional/argument-structural properties that are intrinsic to the way semantic computation works in parallel with narrow syntactic computation.

A similar interface-driven approach also sheds a new light on the status of the PIC discussed in Chapter 3.[2] Chomsky's only argument for this condition is computational complexity, namely, that this condition allows syntax to "forget about" material it deals with at earlier cycles of the syntactic derivation. A natural question to ask is, why do we need to worry about whether syntax forgets about material if Phase Theory is intended to be an abstraction of syntactic computation?

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after my exposition of Chomsky's (2008) position are based on my interpretation of her written comments on an earlier draft of this chapter.

2. I am grateful to Heidi Harley (personal communication) and Mosa Hulden (personal communication) for sharing their perspectives on the content of this paragraph with me.

Of course, one could devise an argument for this particular condition on theory-internal grounds. The reductionist approach to syntax entailed by the minimalist interface thesis actually forces us to take a different approach to this condition: it is deeply rooted in the way parsers work. Let us suppose that human language parsers are top-down local parsers in that they cannot wait too long to calculate filler-gap dependencies. Let us also suppose with a leap of faith that "too long" means a filler-gap dependency that crosses either a *v*P and CP. Then, the local movement of a phrase required by Phase Theory could receive a principled syntax-external motivation in terms of local processing; the parser must locate as fast as possible where the real gap is. If the filler-gap dependency is created by one-fell-swoop movement in a tri-clausal environment, parsers are unable to process this dependency. This is essentially the idea by Givón (1979). In a similar vein, developing a comprehensive principle-based approach, Pritchett (1991: 302) argues that island violations are not ungrammatical but rather "exceed the capacity of the human sentence processor to perform certain structural analyses during parsing." This potential worry on the part of human language processor is easily eliminated if the edge serves to provide a local signal (either morphological or semantic) in a step-wise fashion that the real gap is still to be expected down below in a more deeply embedded clause. To take the distribution of the active voice morphology in Indonesian and Javanese, the PIC dictates that the movement is phase-dependent, with its reflexes manifested in these languages in the form of the *meN-/ng* deletion. This analysis is couched in the syntax–phonology interaction. However, a deeper motivation for why this phase-based derivation is enforced in the computational component of human language might lie elsewhere; it is a good solution provided by the formal architecture of the interface to the local parser. If this speculation is real, the computational constraint such as the PIC might turn out to provide quite an important intersection for theoretical syntacticians and psycholinguists alike.

The present reductionist approach goes even deeper. Consider the notions of *phrase* and *word*. These notions have been considered as primitives of syntax since the advent of generative grammar. The current framework of Minimalist Program also seems to implicitly adopt this premise. Though the Bare Phrase Structure Theory of Chomsky (1995) and Speas (1990) have contributed to a substantial simplification of the phrase structure in the syntax, the X^{Max} = phrase/X^{Min} = word equations are still assumed in much of the current research, at least tacitly. Carnie (1995, 2000) argues that the notions of XP/phrase and X/word are not primitives of syntax; rather, they behave as such because of the properties they exhibit in various components of grammar and their interactions. Under this view, the verb *kick*, for example, is specified as what we normally call an X element not because it is inserted into a terminal node in syntactic derivation but because the other components of grammar require such a particular status for various (language-particular)

reasons related to θ-marking, tense and agreement features, complement selection, reference, among many others. Carnie's theory of phrasality, thus, is quite interface-oriented in that it proposes to reduce the alleged phrasality in syntax to independently necessary conditions to be satisfied at the PF and LF components. This theory, therefore, allows for linguistic interfaces to choose and specify the status of an object that is left phrasally ambiguous within the syntax.

3. Questions for future research and conjectures about linguistic interfaces

I conclude this chapter by mentioning several important theoretical questions the model of linguistic interfaces in this book brings to light. First, given the view adopted in this model that syntax is, as it were, a functionally blind computational system solely consisting of abstract processes such as Internal/External Merge, Agree, Spell-Out that apply to a language-particular set of morphosyntactic features, then at what point do we know whether a particular syntactic object created by syntax converges or not? The proposed model suggests that it is the task of linguistic interfaces to make sure that they will be legible to their neighboring C-I and A-P systems. This position seems natural under the particular conception of syntax as a generative system which does not care about the fate of its own syntactic objects. This conception is relatively easy to support at the syntax–semantics interface from numerous cases, some of them discussed in Chapter 5, where semantics tries to give a reasonable interpretation (sometimes a coarse interpretation) to whatever objects syntax send off to the interface. Evidence for the comparable position at the syntax–phonology interface is not easy to come by due to the ill-understood nature of the phonological interface at this point, but my guess is that this interface takes the form of syntactic representation just as the syntactic structure is because we have seen that domain-specific operations such as deletion can target only syntactic constituents such as TPs and *v*Ps.

The second question is what type of operations the syntax-external linguistic interfaces can conduct to repair syntactic failures. I have discussed only one such operations, deletion, as a candidate that these interfaces employ to save syntax. The thesis of minimalist interface should at least lead us to find many other operations. Several operations on the phonological side of interface immediately come to mind: resumption (Sells 1984; Aoun & Li 2003; Boeckx & Lasnik 2006), copy spell-out (Bošković 2001; Landau 2007), focus intonation (Neeleman & Reinhart 1998; Reinhart 1995, 2006), and phonological restructuring (Dobashi 2003). Some candidates for the other side of interface that might serve the role of repair for the purposes of communicative needs from the C-I system include topic-focus

articulation (Kiss 1998; Reinhart 1995, 2006), metaphors (cf. Chomsky 2004), type-shifting (Chierchia 1998a), and so on. Detailed investigation of what other linguistic phenomena can be brought to bear on the ameliorating role of linguistic interfaces is an important task to undertake in future research.

The third question is what determines that a particular object, that is created by syntax and passed through domain-specific operations of its neighboring interface to the A-P/CI systems, is grammatical or not? Under one standard view of the Minimalist Program (Chomsky 1991, 1995), syntax never makes superfluous derivational steps (Economy of Derivation) or creates unnecessary representations (Economy of Representation); derivations and representations that involve mistakes are deemed simply underivable, hence ungrammatical. Under another view of the syntactic derivation, as in the Crash-Proof Syntax of Frampton and Guttmann (1999, 2002), syntax is so constructed that every object generated by this perfect component is geared to be grammatical at the A-P and C-I systems. We have seen that this view seems untenable to the extent that my analysis of the P-stranding under sluicing presented in Chapter 4 is on the right track. The minimalist interface thesis, of course, forces the conclusion that the convergence of a particular syntactic object is entirely for the A-P and C-I systems to decide because these and only these components use the object for purposes of communication but we have quite a limited understanding of what is in these systems. We do have some intuitive ideas about both of these domains such as the two dimensional nature of sound strings, world knowledge, how things are naturally categorized and our understanding seems more clear in the C-I system than the A-P system. For example, we have seen a bit about how our C-I systems are supposed to work in Chapter 5 where the denotation of a bare noun is sometimes coerced in service of the denotation of a functional element that goes with it or in contexts that force definite interpretation to the bare noun in languages such as Indonesian, Javanese, and Japanese that arguably lack DP projections. A similar characterization may hold for the other system. For example, why is the failure of D-to-P incorporation, but not the failure of feature percolation, so critical a mistake so that the resulting string that contains the former violation is judged ungrammatical? As stated at the end of Chapter 4, the minimalist interface thesis could allow us to answer this question as follows. There are two types of violations in the syntax–phonology interface. One is a strictly syntactic/derivational "violation" that cannot be simply created in the syntactic computation. To take D-to-P incorporation, this operation is conducted in the syntax immediately once the preposition is introduced into the workspace and serves as a probe to attract the D head within its minimal search domain (its complement domain); whatever uninterpretable/unvalued feature of the P (e.g. strong D-feature in languages with D-P coalescence) needs to be checked must be checked, since that is the sole driving force for mechanical computation.

The failure of the D-to-P incorporation, therefore, is simply an impossible scenario in the minimalist vision of syntactic computation. Thus, there is no sense in which the failure of D-to-P incorporation could ever be repaired at the PF interface. The situation is different with the other type of violation, interface violation. To take [+wh] feature percolation, failure of this process is a representational violation whose severity for linguistic computation could vary from language to language. Therefore, it is possible, in principle, that the failure of this percolation in languages with the obligatory value of this percolation mechanism could be tolerated within syntax *per se* but rather is checked later at the PF interface. Under this view, syntactic representations that contain failures of percolation could still have chances to converge at the interface depending on what happens at this interface. If PF does not do anything about it, then this type of representation would persist at the interface: the representational constraint then applies to this representation and rules it out as ungrammatical. That was seen to be the case with P-stranding under *wh*-movement in Indonesian. If PF does conduct its domain-specific operation to the otherwise ill-formed object by deleting the offending part of the representation, then the representational constraint has nothing to apply to. As a result, the derivation can still continue to converge to yield a grammatical output at the A-P system.

In a similar vein, our present thesis also allows us to reach a better understanding of the distinction between *grammaticality* and *acceptability* in a way that the parsimonious (Chomsky 1995, 2000, 2001, 2004, 2007, 2008)/crash-proof view (Frampton & Guttmann 1999, 2002) of the minimalist syntax cannot achieve. To take one example, it has been widely known (see Chomsky 1986b; Lasnik & Saito 1984, 1992; Chomsky & Lasnik 1993, and many references cited therein) that there is a contrast between extraction of an argument and that of an adjunct from a syntactic island. Many papers have been written that attempt to come up with technical mechanisms to capture this such as gamma-marking, star-marking convention, and so on. The thesis of minimalist interfaces leads us to expect that this line of inquiry is misguided; rather, this contrast has nothing to do with syntactic mechanisms (in fact, a possibility that cannot be entertained anymore due to the Inclusiveness Condition) but tells us something about the way the CI system independently works. One might entertain the idea that an inherently referential nominal object (such as *who, what*) is easier to retrieve than adjunct expressions (such as *why* and *how*), which do not have independent reference. This possibility, in turn, invites another idea that often-varying degrees of unacceptability among speakers for island-violating examples are not a matter of syntax but of language-independent considerations about reference, basic templates for conversation, frequency of forms, contexts of utterance, and many related semantic factors. Thus, the present thesis may even provide quite a unique interdisciplinary

corroboration between pure theoretical linguists, psycholinguists, and philosophers/external semanticists.

The final and the most important question that the present book brought to light is perhaps, why would language be organized in the way suggested in this book? Why would a language not be a truly "perfect" system?[3] I have argued in several places of the book that the objects created by the core syntactic computation are quite imperfect and need to be remedied/modified/repaired to be legible and usable on the part of the language-external A-P and C-I systems. One possible answer may be sought in the recent observation, made within the context of the Minimalist Program, that recursivity, the fundamental property of natural language ensured by the combinatorial process of Merge, is not a language-specific computational procedure; its workings could be seen in other human activities such as mathematics (number quantification), music, tools, spatial navigation, foraging, tracking, social interaction, among other relevant abilities (Hauser et al. 2002). This observation suggests that the general recursive system has been recruited into language, in much the same way it has been into other aspects of human activity such as those just mentioned above. Thus, it is reasonable to expect that this general system is not well adapted/fine-tuned to the particular way natural language should work in its actual use as communicative tool, even though this is the primary purpose of language, viewed from the perspective of the A-P and C-I systems. Once Merge has been wired into the faculty of language, however, the functionally blind purely mechanical combinatorial machine got connected to the A-P and C-I systems. The objects created by this component are so crude, hence are not tailored for the A-P and C-I systems to use. At the same time, those language-external systems are not general enough to be able to create representations solely based on the objects created by syntactic derivation. I conjecture that the linguistic interfaces PF and LF are developed in the language faculty, as broadly construed (including the sensory-motor and conceptual-intentional system) to solve this two-way discrepancy and to connect the syntax and the A-P/C-I modules ***in the best possible and most economical way***. (See Hauser et al. (2002) for the distinction between the *FLB,* the Faculty of Language in the Broad sense, and the *FLN,* the Faculty of Language in the Narrow sense.) Specifically, if syntax creates an object that requires a minimum amount of work, then the PF/LF adds a correspondingly minimum amount of modification to send it off to the A-P/C-I systems. This was the case in the proposed analysis of reduplication

3. I thank Andrew Carnie (personal communication) for asking this question and Dave Medeiros (personal communication) for useful comments. See also Uriagereka (1998, 2002), Hinzen (2006), and other references cited therein for relevant discussion.

asymmetries between nominal and verbal affixes in Indonesian (Chapter 2), of the distribution of active voice morphology in Indonesian and Javanese (Chapter 3), and of the denotation and morphosyntax of bare nominals across languages (Chapter 5). If syntax creates an object that requires substantive modification for legibility, on the other hand, then the PF and LF conduct a handful of domain-specific operations such as deletion to the object to make it usable for the external systems. This was the case in the proposed analysis of the P-stranding pattern under sluicing in Indonesian (Chapter 4). This conjecture leads us to adopt a particular minimalist vision of linguistic interfaces: PF and LF do only a minimum amount of work to enable the connection between the purely mechanical computation and the language-external A-P/C-I systems for convergence in a most efficient and economical way. Whence came ***Minimalist Interfaces***, the title of this book.

The view of the language design expressed in the previous paragraph depends on a certain conception of "perfect language", as used in Chomsky's minimalist writings (Chomsky 1995, 2000, 2001, 2004, 2007, 2008).[4] One of the important agendas of the minimalist inquiry since its inception (Chomsky 1995) has been to clarify and substantiate the question of "how well-designed/perfect language could be". If we take "perfect language" to mean "how well-designed language could be *for interfaces*", then the answer would be in the negative because the syntax is poorly designed for the purposes of actual language use. This is the view expressed in the last paragraph. In addition to this interface-based conception of language design, however, there is another sense of "perfect language" in which minimalist researchers ask "how well-designed language is *in terms of computational elegance, mathematical beauty, and simplicity*." This seems to be the view that many minimalist/biolinguistic researchers (Medeiros 2008), including Chomsky himself, currently adopt. Under this conception of "perfect language", then, one could say that all imperfections actually lie in the linguistic interfaces, not within syntax. The AP and CI interfaces are so biologically specialized for the purposes of actual communication, parsing/processing, etc., that the objects created by such a mathematically elegant syntax would be too perfect to be usable for externalization at all. Resolution of conflicts between the two competing conjectures of language design, of course, requires a large-scale corroboration in comparative research, neuroscience, psycholinguistic, and related fields.

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4. I am very grateful to Heidi Harley (personal communication, May 1, 2008) for extensive written comments on the content of this paragraph and clarifying two interrelated notions of "perfect language" here. The content in this paragraph is based on my understanding of her comments on an earlier draft of this chapter.

What has been said in this chapter is all interesting but quite premature. However, the results of the earlier chapters suggest that this view of linguistic interfaces is not terribly a wrong idea. Whether the minimalist interface guideline turns out to be a good heuristic of the further exploration of linguistic interfaces and their networking with the A-P and C-I systems, of course, only time will tell.

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