

## Aspects からみる統辞法の自律性：併合理論からの再考

### The Autonomy of Syntax since *Aspects*: Revisited from a Merge-only Perspective

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- ▶ Statements are hierarchically numbered, with basic propositions at the primary level, with each sub-level being a comment on or elaboration of the statement at the next higher level (e.g., 1, 1.2, 1.2.1, etc.).

#### 1. None of the oft-heard pessimistic comments in (1)-(7) are well grounded.

- (1) “Theory changes, but data remain valid. So you had better prioritize data-finding over theory-tweaking. Otherwise you can’t write a paper.” (5, 6, 7, 8)
- (2) “Since the latest theories assume X (feature-checking, Agree, feature-inheritance,  $\varphi$ -features, phase-impenetrability, etc.), we have no way other than to start assuming X in your grammatical description.” (6, 7, 8)
- (3) “Syntax is a study of form, thus it must be confined to formal, clear-cut (un)grammaticality. If your data are obscure and acceptability varies in contexts, then you had better give them up to semantists/pragmaticists.” (3, 4, 7, 8)
- (4) “Given the current idea that syntax is an optimal solution to the interface conditions, we need to study semantics and phonology, much before syntax, to gain real understandings of the language faculty.” (2, 3, 4, 7, 8)
- (5) “Sound is for phonetics/phonology, meaning is for semantics, morphology deals with lexical paradigms, so only whatever is left by the three disciplines is for you, syntacticians.” (2, 3, 4, 7, 8)

- (6) “Minimalism was a massive failure as a research program, as opposed to P&P. It yields virtually no new discovery, and it has only made syntax uninteresting.” (5, 7, 8)
- (7) “We don’t care about minimalism. That’s only for Chomsky’s concern. We keep doing our own business without paying attention to stupid “economy” talks and “evolution” stories.” (3, 7, 8)

#### 2. Syntax is the most solid natural object of the human mind/brain that we can study scientifically.

- 2.1. *Aspects* is arguably one of the earliest and the clearest expositions of Chomsky’s scientific realism of syntax.
- 2.2. *Aspects* puts forward an nativist (hence biologically based) conception of UG (general linguistic theory; language acquisition device).
- 2.3. The existence of genetic endowment (the “first factor”; cf. Chomsky 2005, 2007, 2008) is evidenced by various “Poverty-of-Stimulus” arguments.
- 2.4. “[L]inguistic theory is mentalistic, since it is concerned with discovering a mental reality underlying actual behavior.<sup>1</sup>” (p.4) Note 1 says: “Mentalistic linguistics is simply theoretical linguistics that uses performance as data (along with other data, for example, the data provided by introspection) for the determination of competence, the latter being taken as the primary object of its investigation.” (note 1, Chapter 1, p.195)
- 2.5. “The mentalist [...] need make no assumptions about the possible physiological basis for the mental reality that he studies. In particular, he need not deny that there is such a basis. One would guess, rather, that it is the mentalistic studies that will ultimately be of greatest value for the investigation of neurophysiological mechanisms, since they alone are concerned with determining abstractly the properties that such mechanisms must exhibit and the functions they must perform.” (note 1, Chapter 1, p.195)
- 2.6. The term “grammar” ( $\approx$  syntax) is used with systematic ambiguity, (i) as the object that children are innately programmed to come to possess, and (ii) as the object of study for linguists (p.25).

- 2.7. The “autonomy of syntax” thesis can be understood as a way to avoid blurring syntax as a natural object. (= 4.1)
- 2.8. Chomskyan internalism (Chomsky 1995a, 2000b) is, in a certain sense, research methodology for the science of language (Lohndal and Narita 2009).
- 3. Formal semantics is, so long as we can construct a science of it, part of syntax broadly construed.**
- 3.1. The boundary between syntax and semantics is an open empirical matter, to be determined not by stipulation but by empirical investigation.
- 3.1.1. “In general, one should not expect to be able to delimit a large and complex domain before it has been thoroughly explored. A decision as to the boundary separating syntax and semantics (if there is one) is not a prerequisite for theoretical and descriptive study of syntactic and semantic rules. On the contrary, the problem of delimitation will clearly remain open until these fields are much better understood than they are today. Exactly the same can be said about the boundary separating semantic systems from systems of knowledge and belief. That these seem to interpenetrate in obscure ways has long been noted. One can hardly achieve significant understanding of this matter in advance of a deep analysis of systems of semantic rules, on the one hand, and systems of belief, on the other. Short of this, one can discuss only isolated examples within a theoretical vacuum. It is not surprising that nothing conclusive results from this.” (pp.159-160)
- 3.2. Formal semantics is a theory of mind-internal symbol manipulation, hence a branch of syntax.
- 3.2.1. “[T]here has been some work on meaning, in very recent years quite a lot, much of it highly illuminating. But it should really be regarded as syntax, much like phonology. It deals with symbol manipulation, hence syntax in the broad sense. Just as phonology is the part of general syntax that is oriented towards interpretation at the SM interface, so what is called “formal semantics” should be understood as the part of general syntax that is oriented towards interpretation by thought/action systems, the C-I interface.” (Chomsky 2012a:22)
- 3.3. Formal semantics gets “naturalized” to the extent that it becomes part of syntax (Hinzen 2006, Uriagereka 2008, Narita 2009).
- 3.4. Notions like “reference,” “denotation,” “truth-value (relative to some possible world)” are by their very nature externalist, and as such they cannot be placed within any internalist theory of syntax.
- 3.4.1. “[I]t is not at all clear that the theory of natural language and its use involves relations of “denotation”, “true of”, etc., in anything like the sense of the technical theory of meaning.” (Chomsky 1995a:25)
- 3.4.2. “As for semantics, insofar as we understand language use, the argument for a reference-based semantics (apart from an internalist syntactic version) seems to me weak.” (Chomsky 1995a:26)
- 3.5. It’s not clear if semantics can be meaningfully dissociated from pragmatics, a rigorous science of which is plainly out of reach.
- 3.5.1. “It is possible that natural language has only syntax and pragmatics; it has a “semantics” only in the sense of “the study of how this instrument, whose formal structure and potentialities of expression are the subject of syntactic investigation, is actually put to use in a speech community”, to quote the earliest formulation in generative grammar 40 years ago, influenced by Wittgenstein, Austin and others (Chomsky ([1955/1975], Preface), and Chomsky (1957, pp. 102-3).” (Chomsky 1995a:26-27)
- 3.5.2. “[G]eneral issues of intentionality, including those of language use, cannot reasonably be assumed to fall within naturalistic inquiry.” (Chomsky 1995a:27)
- 3.5.3. Wittgenstein’s use theory of meaning:  
People do not play a single game when using language; they do all sorts of things with it. And there does not appear to be a single most fundamental game such as describing the environment or “telling the truth,” one on which all others are parasitic (see Chomsky 2012b:221).
- 3.6. So long as the formal semantic component is part of syntax, one and the same set of minimalist questions should arise for every aspect of syntactic and formal-semantic mechanisms.

4. **Syntax is maximally autonomous, hence it constrains the neighboring systems (semantics, phonology, lexicon, etc.), not the other way round.**
- 4.1. The “autonomy of syntax” thesis can be understood as a way to avoid blurring syntax as a natural object. (= 2.7)
- 4.1.1. The contemporary conception of Merge becomes more and more “unconstrained.”
- 4.2. Syntax is not made to yield independently stipulated semantic entities.
- 4.2.1. Cf. 3.
- 4.2.2. Cf. Chomsky’s consistent opposition to Generative Semantics (cognitive grammar), semantic externalism of various forms (Putnam, Quine, Fodor, etc.), and syntax-external conceptions of model-theoretic semantics.
- 4.2.3. “Cartography is just a phantasm of Ross’s (1970) Performative Analysis.” (Fujita 2015)
- 4.2.4. Uriagereka (1999:275/2002:64) and Hinzen (2006:250) maintain that it is syntax that carves the path that semantics must blindly follow (Chomsky 2007:15).
- 4.3. The form of syntax is not constrained by communicative needs.
- 4.4. Linguistic theorizing is not conditioned by stipulated notions of “evolvability.” Cf. Fujita (2007, 2009), Narita and Fujita (2010).
- 4.5. The working of syntax is not determined by superficial word order, contra Kayne (1994 et seq.) and many other researchers of “antisymmetry” and “cartography”.
- 4.6. The working of syntax is not determined by features drawn from the Lexicon, contra the “feature-driven” model of Chomsky (1995b, 2000a, 2001 et seq.). Cf. Boeckx (2014).
- 4.6.1. “The problem is clear: in the absence of any realistic, grounded, cognitively sound, biologically plausible theory of what’s a possible feature, and a possible lexical entry (read: feature-bundle, or category), it is too easy to come up with a feature that will do the job. But it should be clear that features and the way we manipulate them syntactically are the problem, not the solution. It’s where the investigation should end, not where it should start.” (Boeckx 2014)
- 4.7. From a perspective of interface legibility, autonomous syntax is not “failure-proof” or “crash-free,” yielding various degrees of grammaticality and semantic deviance. Cf. Chomsky (2004:112), Ott (2010).
- 4.7.1. “[I]t is clear from such examples as [*who you met is John, a very walking person appeared*, etc.] that the notion “grammaticality” cannot be related to “interpretability” (ease, uniqueness, or uniformity of interpretation), in any simple way, at least. There are sentences [...] that are uniquely, uniformly, and immediately interpretable, no doubt, although they are paradigm examples of departure from well-formedness. On the other hand, there are also perfectly well-formed sentences that may pose great difficulties for interpretation, and may be subject to a variety of perhaps conflicting interpretations. More generally, it is clear that the intuitive notion of grammatical well-formedness is by no means a simple one and that an adequate explication of it will involve theoretical constructs of a highly abstract nature, just as it is clear that various diverse factors determine how and whether a sentence can be interpreted.” (p.151)
- 4.8. We may replace our functionalist conception of the Strong Minimalist Thesis (SMT) by a more neutral, simplified one (Narita 2009).
- (8) *Functional SMT:*  
Language is an optimal solution to the interface conditions.
- (9) *Simplified SMT:*  
Language is optimal in terms of the third factor.
5. **Aspects was a minimalist program for “rewrite systems” (i.e., phrase structure rules and transformations).**

5.1. Chapter 1 of *Aspects* was a milestone for the Galilean methodology for the (bio)linguistic science.

5.2. *Aspects* eliminates the notions of “T(ransformational)-markers” and “generalized transformations,” which then led to massive overgeneration.

5.3. *Aspects* eliminates the then-dominant stipulation in (10), thereby allowing recursion within the system of PSRs.

(10) The “initial symbol” S only appears on the left side of PSRs.

5.4. *Aspects* was the first attempt for structural definitions of grammatical functions. Functional notions like Subject, Predicate, Direct-Object-of, etc., are thereby safely excluded from the list of nonterminal symbols (§2.2).

- (11) a. Subject-of: [NP, S]  
 b. Predicate-of: [VP, S]  
 c. Direct-Object-of: [NP, VP]  
 d. Main-Verb-of: [V, VP] (p.72, (11))

5.5. The notion of “Lexicon” emerges in *Aspects* as a way to simplify the system of Phrase Structure Rules (PSRs).

5.5.1. PSRs such as (12) are replaced by the interplay of lexical transformations (Lexical Rule in (19)) and “contextual features” of lexical entries.

- (12) a. M → may  
 b. N → sincerity  
 c. N → boy  
 d. V → frighten  
 :

- (13) a. V → [+V, +Transitive] / — NP  
 b. V → [+V, -Transitive] / — #  
 :

- (14) a. [+V] → [+ [+Abstract]-Subject] Aux —  
 b. [+V] → — Det [+ [+Animate]-Object]

:

5.5.2. Contextual features (strict subcategorization features and selectional features):

In the *Aspects* system, certain features are designated in the form [X — Y], where X and Y are strings (perhaps null) of symbols. Such features are called “contextual features.”

5.5.3. An illustrative fragment of the base component contains (§3, Chapter 2):

Categorial Component:

- (15) branching rules  
 a. S → NP Predicate-Phrase  
 b. Predicate-Phrase → Aux VP (Place) (Time)  
 :

Lexicon:

- (16) Lexical entries:  
 a. (sincerity, [+N, +Det —, -Count, +Abstract, ...])  
 b. (boy, [+N, +Det —, +Count, +Animate, +Human, ...])  
 c. (may, [+M, ...])  
 d. (eat, [+V, + — NP])  
 e. (elapse, [+V, + — #])  
 f. (grow, [+V, + — NP, + — #, + — Adjective])  
 g. (become, [+V, + — Adjective, + — like Predicate-Nominal])  
 h. (seem, [+V, + — Adjective, + — like Predicate-Nominal])  
 i. (look, [+V, + — (Prepositional-Phrase) #, + — Adjective, + — like Predicate-Nominal])  
 j. (believe, [+V, + — NP, + — that S'])  
 k. (persuade, [+V, + — NP (of Det N) S'])  
 :

(17) subcategorization rules:

- a. strict subcategorization rules:

- (i)  $V \rightarrow CS$
- (ii)  $N \rightarrow CS$
- b. selectional rules:
  - (i)  $[+V] \rightarrow CS / \alpha \text{ Aux} - (\text{Det } \beta)$ , where  $\alpha$  is an N and  $\beta$  is an N.
  - (ii)  $\text{Adjective} \rightarrow CS / \alpha \dots -$ , where  $\alpha$  is an N and  $\beta$  is an N.

- (18) syntactic redundancy rules:
- a.  $[+\text{Det} -] \rightarrow [\pm\text{Count}]$
  - b.  $[+\text{Count}] \rightarrow [\pm\text{Animate}]$
  - c.  $[+\text{N}, + -] \rightarrow [\pm\text{Animate}]$
  - d.  $[+\text{Animate}] \rightarrow [\pm\text{Human}]$
  - e.  $[-\text{Count}] \rightarrow [\pm\text{Abstract}]$

Some universal rules:

- (19) Lexical Rule (as part of the definition of “derivation”; see pp.84-85):  
If Q is a complex symbol of a preterminal string and (D, C) is a lexical entry, where C is not distinct from Q, then Q can be replaced by D.
- (20) General Rule of Subcategorization (p.93):  
A Verb is positively specified with respect to the contextual feature associated with the context in which it occurs.

**6. The minimalist program in the 21st century differs from *Aspects* in that it centers around “unordered (set-)Merge.”**

$$(21) \quad \text{Merge}(\Sigma_1, \dots, \Sigma_n) = \{\Sigma_1, \dots, \Sigma_n\}$$

- 6.1. Given that Merge is “virtual conceptual necessity” (but see Kato et al. 2015), one aspect of the minimalist endeavor is to show that no other extra mechanism is necessary in the theory of narrow syntax (i.e., it is Merge-only).

- 6.2. While rewrite rules encapsulate the three kinds of information in (22a-c), Merge only deals with (22a), to the exclusion of (22b) and (22c).

- (22) a. Hierarchical organization  
b. Projection  
c. Left-to-right ordering

(23) Cf. Rewrite rules are of the form:  $A \rightarrow \Sigma_1 - \dots - \Sigma_n$

- 6.3. Projection plays no role in Merge-only syntax (see Chomsky 2000a, 2001, 2007, 2013, Narita 2011b, 2012, 2014a, Narita and Fukui 2014, 2015, forthcoming).

- 6.4. Linear order plays no role in Merge-only syntax (see Reinhart 1981, 1983, Berwick et al. 2011, Berwick and Chomsky 2011, Narita 2014a).

6.4.1. See 4.5.

6.4.2. Contextual features of the *Aspects* kind,  $[X - Y]$ , have no place in Merge-only syntax. See 7.10.

- 6.5. If narrow syntax is Merge-only, it does not assume any “deletion” or “tampering” operation.

6.5.1. Feature-erasure via checking (Chomsky 1995b) is a prototypical violation of the “No-tampering Condition” (NTC) (see Narita 2014a).

**7. Good answers/findings always require prior formulations of good questions, and the Merge-only thesis reopens many important questions, old and new.**

- 7.1. How can we simultaneously achieve the three levels (maybe more) of adequacy (Narita 2010, 2014a)?

(24) *Descriptive Adequacy:*  
A theory of the faculty of language (FL) meets the condition of *descriptive adequacy* if it provides an encompassing characterization of attainable I-languages (steady states of FL).

- (25) *Explanatory Adequacy*:  
A theory of FL meets the condition of *explanatory adequacy* if it provides an encompassing characterization of how factor (i) maps given sets of linguistic data (factor (ii)) to corresponding I-languages (steady states of FL) under the effect of factor (iii).
- (26) *Biological Adequacy* (Narita 2010, 2014a):  
A theory of FL meets the condition of *biological adequacy* if it provides an encompassing characterization of how biophysical constraints of the universe (factor (iii)) map the genetics of homo sapiens (factor (i)) to the attested design of FL.
- (27) *Three Factors in the Language Design* (Chomsky 2005):
- i. genetic endowment
  - ii. external stimulus/environment
  - iii. biological, physical and mathematical (“computational” in particular, in the case of digital computational systems like language) principles that are not specific to FL
- 7.2. How can we achieve a maximally autonomous theory of Merge-based syntax, without letting it constrained by neighboring systems (formal semantics, phonology, lexicon) or extrinsic considerations (externalism, communicative needs, neo-Darwinistic evolvability, etc.)?
- 7.2.1. See 4. In particular, the SMT should be simplified as in 4.8.
- 7.3. How can we capture the effect of endocentricity, without making recourse to projection?
- 7.3.1. *Optimal Compositionality Thesis* (Narita 2011b, 2014a):  
Endocentricity (head-detection) reduces to the minimized inspection of semantic/phonetic features of LIs relevant to compositional interpretation at SEM/PHON (hence irrelevant to narrow syntax).
- 7.4. What underlies the distinction between “endocentric” vs. “exocentric” structures, which certainly arises provided that Merge-only syntax is free from projection (Chomsky 2013, 2014, Narita and Fukui 2014, 2015, forthcoming)?
- 7.4.1. Therefore, we pretty much return to pre-X-bar-theoretic conceptions of phrase structure.
- 7.4.2. Narita and Fukui (2014, 2015, forthcoming) argue that syntax is essentially driven for structural symmetry.
- (28) *Featural symmetry* (cf. the notion of “ $\varphi$ -label” in Chomsky 2013, 2014):  
Given a formal feature F in a syntactic object (SO)  $\{\alpha, \beta\}$ , the SO is *symmetric with respect to F* (*F-symmetric*, or *in an F-equilibrium*) if  $\alpha$  and  $\beta$  share a matching formal feature F as the most prominent element within them.
- (29) *Dynamic Symmetrization Condition (DSC)*:  
Each formal feature F must form an F-equilibrium in the course of the derivation.
- (30) *Narita and Fukui’s Generalization*:
- |   |   |
|---|---|
| <p>a. F-asymmetry<br/>: introduced by EM<br/><br/>: exhibits endocentricity<br/><br/>: contributes to lexical, “d-structure” interpretation (predicate-argument structure, selection, etc.)</p> | <p>b. F-symmetry<br/>: achieved by IM (or head -movement) with agreement<br/>: exhibits no endocentricity (exocentric)<br/>: contributes to discourse-related, “s-structure” interpretation (quantificational, topic-focus, etc.)</p> |
|---|---|
- 7.5. How can we accommodate the effects of apparently “tampering” operations, such as Agree, feature-inheritance, Transfer-as-deletion, etc., in face of the No-tampering Condition? (see 6.5) Cf. Narita (2014a), Kato et al. (2014a,b, 2015).
- 7.6. How can we construct a theory of linearization without making recourse to projection? Cf. Narita (2014a,b).
- 7.7. Is Merge a primitive operation, or is it a composite of some more primitive components?
- 7.7.1. Kato et al. (2015) argue that Merge is actually a composite of two primitive operations, what they call *0-Search* and *0-Merge*.

7.8. How does syntax assemble the “atoms of Merge” (i.e., lexical items, LIs)?

7.8.1. So long as Merge is the only source of structure-embedding (Hauser et al. 2002, Fitch et al. 2005, Adger 2010), then there can be no Merge-based set-structure embedded within LIs/features.

7.9. What roles do features play in syntactic computation?

7.10. How does syntax derive the effect of *Aspects*-type “contextual features,” without involving structures within features/LIs?

7.10.1. It is a natural attempt to show that strict subcategorization and selection can be reduced to the interplay of various modules, such as Theta theory and Case theory.

7.10.1.1. Cf. Pesetsky’s (1982) approach to *ask* and *wonder* in terms of s-selection of *proposition* and Case-assignment. Pesetsky’s reductionist approach to c-selection is only partially successful (see Pollard and Sag 1987, Webelhuth 1992, Odijk 1997).

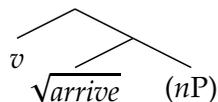
7.10.2. *Cat* is a “phrasal idiom” (Marantz 1996), i.e., a set/phrasal listeme  $\{n, \sqrt{\text{cat}}\}$ , stored somewhere in the “distributed” Lexicon (Narrow Lexicon, Vocabulary, or Encyclopedia within the Distributed Morphology framework) (Marantz 2007, Halle and Marantz 1993, 1994).

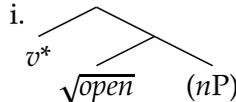
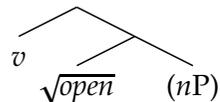
7.10.3. Then, why don’t we assume that verbs like *eat* are also phrasal listemes? Cf. Narita (2011a).

(31) a. (eat, [+V, + — NP])  
 b. 

(32) a. (dance, [+V, + — #])  
 b. 

(33) a. (arrive, [+V, + — #])

b. 

(34) a. (open, [+V, + — NP, + — #])  
 b. i.  ii. 

7.10.4. This approach must be supplemented by a theory of possible phrasal listemes.

7.11. How can we meaningfully deal with degrees of grammaticalness within a theory of Merge-only syntax?

7.11.1. Notice that contextual features (strict subcategorization features and selectional features) used to be primarily responsible for grading degrees of grammaticalness.

8. **We have to try to explain/describe the problem in the course of describing/explaining it.**

8.1. “It is not necessary to achieve descriptive adequacy before raising questions of explanatory adequacy.” (p.36)

8.2. “It is hardly necessary to add that the conditions that enter into principled explanation [...] are only partially understood: we have to learn about the conditions that set the problem in the course of trying to solve it. The research task is interactive: to clarify the nature of the interfaces and optimal computational principles through investigation of how language satisfies the conditions they impose—optimally, insofar as SMT holds. This familiar feature of empirical inquiry has long been taken for granted in the study of the sensory-motor interface (SM). Inquiry into acoustic and articulatory phonetics takes cues from what has been learned about phonological features and other such properties in I-language research and seeks SM correlates, and any discoveries then feed back to refine I-language inquiry. The same should hold, no less uncontroversially, at the semantic/conceptual-intentional interface (C-I). And it should also hold

for third factor properties. We do not know a priori, in more than general terms, what are the right ways to optimize, say, neural networks; empirical inquiry into such matters is interactive in the same ways.” (Chomsky 2008:135-136)

8.3. Fine-grained data are significant only to the extent that they are suggestive for theory-determination:

- (35) Various criteria for scientific data (only of secondary importance):
- a. objective
  - b. repeatable/reproducible
  - c. new/unnoticed/undiscussed
  - d. fine-grained
  - e. conformity to the latest theory

8.3.1. “In any event, at a given stage of investigation, one whose concern is for insight and understanding (rather than for objectivity as a goal in itself) must ask whether or to what extent a wider range and more exact description of phenomena is relevant to solving the problems that he faces. In linguistics, it seems to me that sharpening of the data by more objective tests is a matter of small importance for the problems at hand. One who disagrees with this estimate of the present situation in linguistics can justify his belief in the current importance of more objective operational tests by showing how they can lead to new and deeper understanding of linguistic structure. Perhaps the day will come when the kinds of data that we now can obtain in abundance will be insufficient to resolve deeper questions concerning the structure of language. However, many questions that can realistically and significantly be formulated today do not demand evidence of a kind that is unavailable or unattainable without significant improvements in objectivity of experimental technique.” (pp.20-21)

8.4. The most basic and clearest data-sets are still unresolved. “Even though few reliable operational procedures have been developed, the theoretical (that is, grammatical) investigation of the knowledge of the native speaker can proceed perfectly well. The critical problem for grammatical theory today is not a paucity of evidence but rather the

inadequacy of present theories of language to account for masses of evidence that are hardly open to serious question.” (pp.19-20)

## References

- Adger, David. 2010. A minimalist theory of feature structure. In *Features: Perspectives on a key notion in linguistics*, ed. Anna Kibort and Greville G. Corbett, 185–218. Oxford: Oxford University Press.
- Berwick, Robert C., and Noam Chomsky. 2011. The biolinguistic program: The current state of its evolution and development. In *The biolinguistic enterprise: New perspectives on the evolution and nature of the human language faculty*, ed. Anna Maria Di Sciullo and Cedric Boeckx, 19–41. Cambridge, MA: Oxford University Press.
- Berwick, Robert C., Paul Pietroski, Beracah Yankama, and Noam Chomsky. 2011. Poverty of the stimulus revisited. *Cognitive Science* 35:1207–1242.
- Boeckx, Cedric. 2014. *Elementary syntactic structures: Prospects of a feature-free syntax*. Cambridge: Cambridge University Press.
- Chomsky, Noam. 1955/1975. *The Logical Structure of Linguistic Theory*. ms. Harvard University, 1955. Published in part in 1975, New York: Plenum.
- Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton. 2nd edition, (2002).
- Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1995a. Language and nature. *Mind* 104. 413:1–61.
- Chomsky, Noam. 1995b. *The minimalist program*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000a. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000b. *New horizons in the study of language and mind*. Cambridge: Cambridge University Press.
- Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2004. Beyond explanatory adequacy. In *Structures and beyond: The cartography of syntactic structures*, ed. Adriana Belletti, 104–131. New York: Oxford University Press.

- Chomsky, Noam. 2005. Three factors in the language design. *Linguistic Inquiry* 36:1–22.
- Chomsky, Noam. 2007. Approaching UG from below. In *Interfaces + recursion = language?: Chomsky's minimalism and the view from semantics*, ed. Uli Sauerland and Hans-Martin Gärtner, 1–29. Berlin and New York: Mouton de Gruyter.
- Chomsky, Noam. 2008. On phases. In *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*, ed. Robert Freidin, Carlos Otero, and Maria Luisa Zubizarreta, 133–166. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2012a. Introduction. In *Gengokisoronshu [Foundations of biolinguistics: Selected writings]*, ed. Naoki Fukui, 17–26. Iwanami Shoten.
- Chomsky, Noam. 2012b. *The science of language: Interviews with James McGilvray*. Cambridge: Cambridge University Press.
- Chomsky, Noam. 2013. Problems of projection. *Lingua* 130:33–49.
- Chomsky, Noam. 2014. Problems of projection extension. ms. MIT.
- Fitch, W. Tecumseh, Marc D. Hauser, and Noam Chomsky. 2005. The evolution of the language faculty: Clarifications and implications. *Cognition* 97:179–210.
- Fujita, Koji. 2007. Facing the logical problem of language evolution. *English Linguistics* 24(1):78–108.
- Fujita, Koji. 2009. A prospect for evolutionary adequacy: Merge and the evolution and development of human language. *Biolinguistics* 3:128–153.
- Fujita, Koji. 2015. Seisei bunpoo to gengo shinka [generative grammar and language evolution]. Presented at the Keio University Linguistic Colloquium, Keio University, June 27th, 2015.
- Halle, Morris, and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*, ed. Ken Hale and Samuel J. Keyser, 111–176. Cambridge, MA: MIT Press.
- Halle, Morris, and Alec Marantz. 1994. Some key features of Distributed Morphology. *MIT Working Papers in Linguistics* 21:275–288.
- Hauser, Marc D., Noam Chomsky, and W. Tecumseh Fitch. 2002. The Faculty of Language: What is it, who has it, and how did it evolve? *Science* 298(5598):1569–1579.
- Hinzen, Wolfram. 2006. *Mind design and minimal syntax*. Oxford: Oxford University Press.
- Kato, Takaomi, Hironobu Kasai, Hiroki Narita, Mihoko Zushi, and Naoki Fukui. 2015. Feature-equilibria in syntax. In *The human language faculty and its biological basis: Advances in biolinguistics*, ed. Koji Fujita and Cedric Boeckx. London/New York: Routledge (forthcoming).
- Kato, Takaomi, Masakazu Kuno, Hiroki Narita, Mihoko Zushi, and Naoki Fukui. 2014a. Generalized search and cyclic derivation by phase: A preliminary study. *Sophia Linguistica* 61:203–222.
- Kato, Takaomi, Masakazu Kuno, Hiroki Narita, Mihoko Zushi, and Naoki Fukui. 2014b. Ippan tansa to sou no hashi [generalized search and the phase edge]. In *Gengo no sekkei, hattatsu, shinka: Seibutsugengogaku tankyu [The design, development and evolution of language: Explorations in biolinguistics]*, ed. Koji Fujita, chapter 6, 97–119. Tokyo: Kaitakusha.
- Kayne, Richard S. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
- Lohndal, Terje, and Hiroki Narita. 2009. Internalism as methodology. *Biolinguistics* 3:321–331.
- Marantz, Alec. 1996. ‘Cat’ as a phrasal idiom: Consequences of late insertion in Distributed Morphology. ms., MIT.
- Marantz, Alec. 2007. Phases and words. In *Phases in the theory of grammar*, ed. S.-H. Choe, 191–222. Seoul: Dong In.
- Narita, Hiroki. 2009. How syntax naturalizes semantics: A review of Uriagereka (2008). *Lingua* 119:1767–1775.
- Narita, Hiroki. 2010. The tension between explanatory and biological adequacy: Review of Fukui (2006). *Lingua* 120:1313–1323.
- Narita, Hiroki. 2011a. The H- $\alpha$  schema, the complementarity of ph(r)asal/head-movement, Takano’s generalization, and the distribution of free positions in phrasal idioms. Paper presented at GLOW in Asia: Workshop for Young Scholars, Mie University, September 7-8, 2011.
- Narita, Hiroki. 2011b. Phasing in Full Interpretation. Doctoral Dissertation, Harvard University. <<http://ling.auf.net/lingBuzz/001304>>.
- Narita, Hiroki. 2012. Phase cycles in service of projection-free syntax. In *Phases: Developing the framework*, ed. Ángel J. Gallego, 125–172. Mouton de Gruyter.
- Narita, Hiroki. 2014a. *Endocentric structuring of projection-free syntax*. Amsterdam/Philadelphia: John Benjamins.
- Narita, Hiroki. 2014b. Symmetric syntax, asymmetric linearization. Paper presented at the “On Label” workshop, the 32nd Annual Meeting of the English Linguistic Society of Japan, Gakushuin University, November 8th, 2014.
- Narita, Hiroki, and Koji Fujita. 2010. A naturalist reconstruction of minimalist and evolutionary biolinguistics. *Biolinguistics* 4:356–376.

- Narita, Hiroki, and Naoki Fukui. 2014. Toji kozo no naishinsei to taishosei ni tsuite [On the notions of endocentricity and symmetry in syntactic structures]. In *Gengo no sekkei, hattatsu, shinka: Seibutsugengogaku tankyu [The design, development and evolution of language: Explorations in biolinguistics]*, ed. Koji Fujita, Naoki Fukui, Noriaki Yusa, and Masayuki Ikeuchi, chapter 4, 37–65. Tokyo: Kaitakusha.
- Narita, Hiroki, and Naoki Fukui. 2015. Feature-equilibria in syntax. In *The human language faculty and its biological basis: Advances in biolinguistics*, ed. Koji Fujita and Cedric Boeckx. London/New York: Routledge (forthcoming).
- Narita, Hiroki, and Naoki Fukui. forthcoming. Symmetry-driven syntax. Routledge.
- Odijk, Jan. 1997. C-selection and s-selection. *Linguistic Inquiry* 28:365–371.
- Ott, Dennis. 2010. Grammaticality, interfaces, and UG. In *Exploring crash-proof grammars*, ed. Michael Putnam, 89–104. Amsterdam: John Benjamins.
- Pesetsky, David. 1982. Paths and categories. Doctoral Dissertation, MIT.
- Pollard, Carl, and Ivan A. Sag. 1987. *Information-based syntax and semantics*. CSLI/Stanford University.
- Reinhart, Tanya. 1981. Definite NP anaphora and c-command domains. *Linguistic Inquiry* 12:605–635.
- Reinhart, Tanya. 1983. *Anaphora and semantic interpretation*. London: Croom Helm.
- Ross, John Robert. 1970. On declarative sentences. In *Readings in English transformational grammar*, ed. Roderick A. Jacobs and Peter S. Rosenbaum, 222–272. Waltham, MA: Ginn.
- Uriagereka, Juan. 1999. Multiple Spell-Out. In *Working minimalism*, ed. Samuel David Epstein and Norbert Hornstein, 251–282. Cambridge, MA: MIT Press.
- Uriagereka, Juan. 2002. *Derivations: Exploring the dynamics of syntax*. London: Routledge.
- Uriagereka, Juan. 2008. *Syntactic anchors: On semantic structuring*. Cambridge: Cambridge University Press.
- Webelhuth, Gert. 1992. *Principles and parameters of syntactic saturation*. New York: Oxford University Press.
- Wittgenstein, Ludwig. 1922. *Tractatus logico-philosophicus*. London: Kegan Paul, Trench, Trubner & Co.