Chomsky (2001): "Derivation by Phase" [DbP] [pp. 1-15]

a. Guiding question: "to what extent is the human faculty of language FL an optimal solution to minimal design specifications [= *legibility conditions*]" → SMT[1]

b. Parametric variation, explanatory adequacy/learnability[2]

(1) *Uniformity Principle*
In the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances.

c. Design of CHL: interface levels, BPS, Inclusiveness Condition (IC)[2]

d. Operation Merge comes for free (indispensable to any recursive system)[3]

(2) *Merge*
Merge(α,β) → γ = {α, β}

(3) *Label*
LB(γ) = LB(α) or LB(β)

e. Relations[3]

(4) a. Merge → Immediately-Contain (IC) (= Is-a-Member-of)
b. Iterated Merge → Contain (= Term-of)
c. Merge(α,β) → Sister{α, β}
d. Transitive closure of Merge??? → c-command
e. Identity

f. Feature interpretability[5]
Interpretability is determined in **LEX** by UG; [*u*F]s (and only these) enter the derivation **unvalued** (i.e. [*u*F:]), while [F]s are **valued** (i.e. [F:val]):

(5) *Valuation/Interpretability Biconditional (cf. Pesetsky & Torrego 2007:3)*
A feature F is uninterpretable iff F is unvalued.

When deleted by Agree, [*u*F]s must be deleted from NS (otherwise LF couldn't distinguish between [*u*F] and [F]), but remain for PF (remember that **erasure** is gone[n. 7]).

Spell-Out must be able to determine which Fs are uninterpretable and to be removed; since after Agree the distinction between [*u*F] and [F] is lost (because of valuation), **Spell-Out must apply immediately after the [*u*F]s have been valued → Spell-Out is strongly cyclic → single cycle (no LF)!**

g. Imperfections[3]
The operation Agree and LF-uninterpretable [*u*F]s are '**imperfections**' (*prima facie*)

(6) *Match*[5]
= Identity (of F, independent of val[5])

Note: Here, Chomsky isn't precise enough: Both Adger (2003) and Uriagereka in his comments to DbP point out a three-fold terminology an **attribute/dimension** (i.e. [F]), a **value** (i.e. [val]), and the combination of both, a **feature** (= concrete property, i.e. [F:val]). "[G]rammar is sensitive to featural dimensions, not their specific values. That seems like a deep fact" (Uriagereka, p. 7).

(7) *Agree*[4, 5, 6, *et al.*]
P = Probe = [*u*F:], G= Goal = [F:val]
1. Match(P,G),
2. Agree(P,G) → Value(P)
3. Check(P)
4. Delete(P) (+ multiple, ancillary deletion)

It might be noted that Match, Delete, etc., are no operations proper; only Merge and Agree are.

(8) *[uF]s implementing displacment*
a. To select a target/probe P and determine what kind of category K it seeks [*Match* > *Agree*]
b. To determine whether P offers a position for movement [*EPP*]
c. To select the category K that is moved [*determination of category to be pied-piped*]

E.g. Subject movement: (*a*) T[*u*ϕ] selects DP[ϕ]; (*b*) T[EPP] determines a target for movement; (*c*) DP[*u*CASE] determines pied-piped category [*How?*].

➲ Agree and [*u*F]s yield 'displacement' – "uninterpretable features and the Agree relation are not true 'imperfections', despite appearances"[4]

h. Preconditions for Agree[6]
(9) a. Goal as well as probe must be **active** for Agree to apply.
b. α must have a complete set of ϕ-features (it must be **ϕ-*complete***) to delete uninterpretable features of the paired matching element β.

i. Demotion of Case[6]
"Structural Case is not a feature of the probes (T, *v*), but it is assigned a value under agreement, then removed by Spell-Out from the narrow syntax […]. Case itself is not matched, but deletes under matching of ϕ-features."[6] → Case is ancillary to ϕ-Agree

Q: If T → [NOM], and *v* → [ACC][6], how can [*u*CASE] of a DP 'know' what the provenance of his flat-mate's probe is (T *vs.* *v*)?

Note: In his comments (on MI and DbP), Uriagereka occasionally suggests that the (semantic?) function of structural Case is the differentiation of token Xs in a given domain. This is

how I understand this intriguing proposal: Imagine you have an LA_i = {*he*, *like*, *v*, *he*,…}, where *he* and *he* are distinguished by means of their [*u*CASE]…

j. Defectiveness[6]

A nondefective probe is ϕ-complete, a defective probe is ϕ-defective → the latter are unable to deactivate a matched element (e.g. participle-object constructions, raising, ECM[7])

"At this point, there are several ways to proceed"[7]

k. Alternative 1 (MI)[7f.]

① T[*u*ϕ:] … NP[ϕ:val, *u*CASE:] → T[~~*u*~~ϕ:val] … NP[ϕ:val, ~~*u*CASE~~:NOM][8]

② T_{def}[*u*PERSON:] … NP[ϕ:val, *u*CASE:] → T_{def}[~~*u*PERSON~~:val] … NP[ϕ:val, *u*CASE:]

③ Expl[*u*PERSON:3] T_{def}[*u*PERSON:] … → Expl[~~*u*PERSON~~:3] T_{def}[~~*u*PERSON~~:3] …

(10) C selects T_{comp}; V selects T_{def}[8]

a. C–T_{comp}: finite clauses, Control
b. V–T_{def}: raising, ECM

} Rizzi (1982)

Note: Uriagereka (p. 13f.) rightly points out that "it is slightly odd to say that the T of Control structures is 'as complete' as the T of regular complement sentences".

Alternative 2 [*apparently not any further pursued in DbP*][8ff.]

(11) **C is ϕ-complete; T is ϕ-complete only when necessary.**[8]

a. C_{comp}–T_{comp}
b. V–T_{def}

(a): selectional restriction: C[*u*ϕ:]…T[~~*u*~~ϕ:val] → C[~~*u*~~ϕ:val]…T[~~*u*~~ϕ:val]
Agree

Q: [*u*F]…[*u*F]? Deactivation of T? Deleted T? [EPP] obligatory or optional on ϕ-complete C? Can there exist C_{def} (cf. Wenger *in progress*) ☺?

l. EPP[9]

ϕ-completeness → **[EPP]** → **T_{def} cannot have an [EPP]** → no raising to [Spec, T_{def}], but in one fell swoop (cf. Epstein & Seely 1999)

(12) [CP C [TP *several prizes* are_{comp} *likely* [TP to_{def} [*be awarded* $t_{several\ prizes}$]]]][7]

m. ECM[9, n. 16]

ECM must be RtO, T_{def} being bereft of [EPP] now (cf. l)

(13) *v**–V_{comp} (*v** = v_{comp}[n. 8])

(14) *ECM as RtO (Koizumi 1995, Lasnik 1999a+b, Epstein & Seely 1999)*[n. 16]

a. ? [$_{vP}$ Subj V+v [$_{VP}$ DO t$_V$ t$_{DO}$] *violates anti-locality*

b. [$_{CP}$ C [$_{AgrP}$ Agr$_{[u\phi]}$ [$_{TP}$ T [$_{vP}$ v [$_{AgrP}$ DO Agr$_{[u\phi]}$ [$_{VP}$ V t$_{DO}$]]]]]] *wtf: Agr!?*

Q: "Second Merge of first-merged object of V makes little sense."[n. 16] Why? Furthermore, isn't DO *extracted*!? Why not [Spec, VP] then (a)? Moreover, on p. 9 Chomsky assumes exactly this for DO in regular transitive constructions! Going through p. 9, I feel that he *does* suggest an analysis along the lines of (a), but (so far) he hasn't been explicit on ECM.

n. Re: CFCs

(15) a. v_{def} – V_{def} – T_{def} *passive + ECM*

b. v^* – V_{comp} – T_{def} *passive + finite clause*

c. *v^* – V_{comp} – T_{comp} *missing C*

"**T should be construed as a substantive rather than a functional category**"[9] [cf. Richards 2007:570: only a sequence P – N – P – N ought to be allowed, P a phase head, N an Lcat]

o. Locus[9]

Where do Case/agreement/EPP reside? – Locus$_{T v^*}$ [*Whatever the relevance of the Locus may be, Chomsky also considers alternatives, e.g. Locus$_{C v^*}$, but for now, he goes with Locus$_{T v^*}$*]

p. Language[10f.]

1. **? $\overset{FL}{\rightarrow}$ F**

   F = universal feature set

   ? = ?

2. **F $\overset{L}{\rightarrow}$ [F$_L$]**

   [F$_L$] = one-time selection [language-specific]

   L = derivational procedure [C$_{HL}$?]

3. **[F$_L$] $\overset{L}{\rightarrow}$ Lex**

   a. Lex = {LIs}

   b. LI = unitary collection or distributed (DM; cf. Harley & Noyer 1999)

   c. Lex is a Bloomfieldian list of exceptions

   d. LI = {PFs, SFs, FFs} ["perhaps [*pre-derivationally*] structured": Hierarchies (e,g, θ)? F-stacks? Fseqs? If yes by what?]

   e. SFs and FFs intersect and are disjoint from PF [cf. single cycle, single Spell-Out]

   f. Subset of FFs ∉ SFs: [uF]s

4. **Lex $\overset{L}{\rightarrow}$ LA**

   LA = {LA$_i$, …, LA$_n$} = lexical array

5. **LA $\overset{L}{\rightarrow}$ LA$_i$**

LA_i = lexical subarray
dynamic access to Lex/LA more costly computationally[n. 22]

6. $\mathbf{LA}_i \xrightarrow{\mathbf{L}} \mathbf{\{Exp\}}$
   Exp = {PF, LF}
   {PF, LF} = interface representations
   a. $\mathbf{LA}_i \xrightarrow{\mathbf{L}} \mathbf{LF(Exp)}$
   b. $\mathbf{LA}_i \xrightarrow{\mathbf{Spell-Out}} \mathbf{PF(Exp)}$
7. *Repeat 5. to 6. until LA is exhausted.*

q. Phases[11f.]
"the derivation of Exp proceeds by *phase*"[11]

(16) *Criteria for phasehood*[12]
a. Propositionality: **CP** with force indicators, ***v*P** with full argument structure
b. Reconstruction sites
c. Phonetic independence (e.g. CP *vs.* TP)

(17) *Strong vs. weak phases*[12]
a. **Strong**: CP, *v**P → may have [EPP]
b. **Weak**: vP_{def}??? [*What's the rationale of calling a SO that is <u>not</u> spelled out a '<u>phase</u>'?*]

r. Cyclic Spell-Out[12]

(18) a. Takes place at the strong phase level
b. Allows earlier phases to be forgotten

(19) *Phase impenetrability condition (weak) [≠ MI:108]*[14]
The domain of [*strong*] H is not accessible to operations at [*strong*] ZP; only H and its *edge* are accessible to such operations.

Note: This is the **weak PIC**, where the domain YP of H can still be manipulated by operations outside of HP, until the next higher phase head is merged. The **strong PIC** (MI:108, DbP:13) closes YP already when H is merged. An example[14]: Under the weak PIC (as opposed to the strong version), TP can still operate on YP, but CP cannot.

(20) *Edge*[13]
Spec(s) or element(s) adjoined to HP.

(21) In [$_{ZP}$ Z … [$_{HP}$ α [H YP]]], α = edge, HP/ZP = strong phases, elements of HP are accessible to operations within the smallest strong ZP phase but not beyond.[13]

(22) H and its edge α belong to ZP for the purposes of Spell-Out, under the PIC; YP is spelled out at the level HP. [13]

(23) **Ph_1 is interpreted/evaluated at Ph_2.**[14]

Note: According to Chomsky (p. 14), the PIC also applies to pure Agree (LDA). However, as far as I know, this has pretty much been refuted by now (cf. e.g. Boškovič 2006). This means that Agree *must* be able to look into phases that have been closed for extraction, etc., the consequence being that phases must remain in the derivational workspace after all?…

s. Categorial features

No more categorial Fs in DbP (violates IC), but root structures + functional heads (cf. Marantz 1997)[n. 12]

(24) a. no "syntactic categories"[3]
b. "a framework that dispenses with categorial features"[7]
c. "[person plays the role formerly assigned to D- or N-features"[7]
d. "categorial features are eliminated from roots"[14]
e. "**phases** are configurations of the form **F–XP**, where XP is a substantive root projection, its **category** determined by the functional element F that selects it"[14] [cf. Richards 2007, above]
f. phases = functionally headed XPs

t. *Efficient computation principles*[15]

(25) a. **Earlyness principle** (cf. Pesetsky 1989): Perform computations as quickly as possible (*vs.* obsolete Procrastinate)
b. Maximize matching effects (e.g. no partial Agree).

Interim conclusion: Spell-Out (deletion of [*u*F]s) is determined quickly, under the PIC → 'almost efficient' computation (cf. crash-proof syntax by Frampton & Gutmann 1999)

u. *Semantic interpretation*[15]

(26) a. levels constructed by Phon can at best yield **very limited semantic interpretation**
b. displacement rules interspersed in Phon should have little semantic interpretation

(27) Surface semantic effects are restricted to narrow syntax.

Recurring question: I guess Chomsky's aiming at sth. related to information structure or another discourse-related system (as sketched by Vallduví 1990) – his 'stylistic rules'. Even if these *are* semantically more impoverished than 'genuine' LF-semantics, I still don't see by which module they should be interpreted in our Y-model if they are handled on the PF branch (not by S–M, that's for sure).