**Chomsky (2000): "Minimalist Inquiries: The Framework"** [MI] [3.1–3.3]

inquiries = tentative[89]; MP is programmatic, not a theory[92]

## 3.1 Background[89-93]

a. L is a device generating expressions EXP = <Phon, Sem>[91]

b. "how well is FL designed?"[92]

c. Methodological aspect of MP: heuristic, therapeutic value; distinguish genuine explanation from "engineering solutions"; preliminary solution, reformulations legitimate means for further inquiry; "elimination of descriptive technology yields results that are as good as, or even better than, before"[93]

d. Substantive aspect of MP: optimal design of L, 'perfect solution' to minimal design specifications[93]

## 3.2 Design Specifications[94-98]

a. Uncle Noam's story telling time: primate with human mental architecture and sensorimotor apparatus, but no language organ; has our modes of perceptual organisation, our propositional attitudes (beliefs, desires, hopes, fears, etc.), at best expressible by a Fodorian language of thought → some event reorganises brain, inserting FL; organ FL must meet **legibility conditions** (n. 16; MP's **bare output conditions**) → How good a solution is FL to meet these conditions?[94]

b: "a computation of an expression Exp *converges at an interface level IL* if Exp is legible at IL […]; otherwise it *crashes* at IL" → (un)interpretability; n. 19: **convergence** is an internal property of an Exp, defined in terms of properties of external systems[95] [*Uriagereka stresses that legibility is a far better term for what's at stake than interpretability is*]

c. Perfect solution to minimal design specifications = a system that satisfies a very narrow subset of empirical conditions in an optimal way turns out to satisfy all empirical conditions → **strongest minimalist thesis** (SMT)[96]

(1) *SMT*
Language is an optimal solution to legibility conditions.

d. "descriptive machinery must satisfy stringent conditions imposed by [the SMT]" → issues relating to interfaces are of central concern[96] → "The [SMT] replaces the obscure notion of 'linguistic evidence' by the meaningful notion: **satisfaction of interface conditions**."[97]

e. Our task: "construct an optimal device to satisfy just these conditions, and see how well it satisfies other empirical conditions. […] add 'imperfections' as required"[98] [*Uriagereka: "an empirical exercise on limits"*]

f. Inquiry into FL and external systems is a simultaneous task

## 3.3 Architecture[98-112]

a. L = recursive definition of a set of Exps = <PF, LF> → **weak derivational approach** → ILs, post-cyclic operations[98] [≠ strong derivational approach to L assuming dynamic interfacing [*cf. Epstein & Seely 2006*]; ≠ representational approach assuming L to be a direct definition of the set {Exp} [*cf. Brody 1995, 2003; Williams 2003*]]

b. **Economy** (least effort): ❶ **eliminate superfluous elements** in representations (Full Interpretation); ❷ **eliminate superfluous steps** in derivations (motivated operations) → economy conditions driven by interface considerations → operative complexity[99]:

- ➲ **operational economy**: bar PF-vacuous movement, limit effects on PF (Procrastinate), covert operations must have an effect on LF-interpretation;
- ➲ **locality economy**: ❶ reduction of search space (**minimal search**: "Shortest Movement/Attract", successive-cyclic movement (RM, subjacency), search restricted to c-command/minimal domains); ❷ **local determinability** (barring look-ahead, backtracking, comparison of derivations)

c. **UG**: universal? feature set F, computational procedure $C_{HL}$, (trivially) L, parameters excl.[100]

1. $F \xrightarrow{L} [F]$ *1-time selection of a language-specific subset from F*
2. $[F] \xrightarrow{L} Lex$ *1-time assembly of a lexicon*
3. $Lex \xrightarrow{C_{HL}}$ **LA** *1-time selection of a **lexical array***
4. $LA \xrightarrow{C_{HL}} LF(Exp)$ *narrow syntax computation (i.e. mapping to LF)*

Num of MP:§4 is a set of tokens, i.e. with indices.

- ➲ **LA**: "Suppose automobiles lacked fuel storage, so that each one had to carry along a petroleum-processing plant."[99f.]; "If the derivation accesses the lexicon at every point, it must carry along this huge beast, rather like cars that constantly have to replenish their fuel supply."[100f.] → **reduction of operative complexity**[101]

d. **operations**[101]

(2) *Merge*
Merge(α,β) → K(α,β)

(3) *Agree*
Agree(α,F) in a specific domain, α a LI

Uriagereka notes that Agree corresponds to Attract F of MP:§4.

(4) ***Move (= Agree + Merge)***
Move(P(F)*,Specα) = Agree(α,F) + Merge(P(F),αP) → $[_{\alpha P}\ P(F)\ \alpha\ [\ldots t_{P(F)}\ldots]\ ]$
*P(F) a phrase determined by F

- ➲ **A-movement** = Move(P,Spec**φ**); otherwise, **Ā-movement**
- ➲ Move = Agree, Merge, *and* determination of P(F) (generalised **pied-piping**; cf. MP:§4.4.4) → Move is a last resort; "**Preference for Agree over Move**" motivates Procrastinate[101f.]

e. **Lex**: substantive *vs*. functional categories [*lcats vs. fcats*][102]

(5) ***Core functional categories (CFCs, of the clausal system)***
a. C (force/mood)
b. T (tense/event structure*)
c. *v* (transitive light verb head)

*As also pointed out by Uriagereka, event structure is actually related to Outer and Inner aspect, and to Aktionsart (i.e. to Asp > *v*P).

➲ **CFCs contain uninterpretable φ-Fs** ([*u*φ]), T and *v* obligatorily [*C-agreement is rare*] → "core of the systems of (structural) Case agreement and 'dislocation' (Move)"[102]

The notation [*u*F]/[*i*F] is from Pesetsky & Torrego (2001). Where relevant, Chomsky uses [±F].

➲ n. 31: C and T are surrogates for richer systems → CFCs *vs*. Cartographies

e. **S-selection** [*Chomsky assumes c-selection/subcategorisation to be derivable from s-selection; cf. MP:§1.2*][102]

(6) *Selectional relations*
a. unselected root C (≠ T/*v*)
b. $X_{lcat} \rightarrow C$
c. $X_{fcat} \rightarrow v$
d. C → T[*u*φ] [*nondefective or φ-complete T; $T_{comp}$*]
e. **V → T[*u*φ$_{def(ective)}$]** *or* **T$_{def}$** [*T lacking [uφ], or a sub-feature thereof, [u*PERSON*]*]
f. T/*v* → verbal elements
g. *v* → nominal EA in [Spec, *v*]

(7) ***Extra Spec***[102] [*'extra' = beyond s-selection?*]
a. C → *wh*-phrase [*Top, etc.?*]
b. T → surface subject (EPP)
c. *v* → shifted object (OS)

} [EPP]-features of C/*v* determine positions not forced by Projection Principle[102]

f. Structural properties of CFCs[102f.]

(8) α = [XP [(EA) $H_{(CFC)}$ YP]] *abstract schema of CFC-structure*

(9) If H = *v*/C, XP is *not* purely merged (i.e. *v*/C allow no Expls)[102f.] [*Uriagereka: 'whether' = [Expl,SpecCP]?*]

➲ "**Pure Merge in θ-position is required of (and restricted to) arguments.**"[103] [*cf. IM vs. EM*]

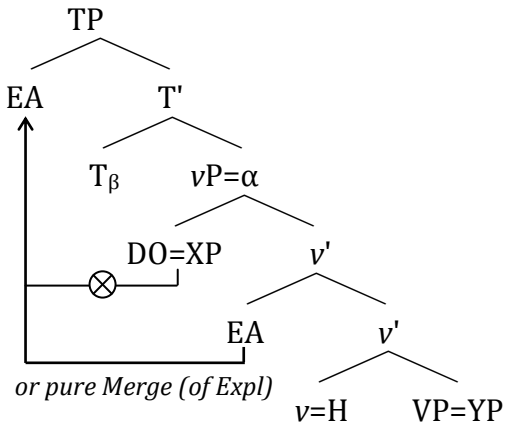
(10) [$_{\beta}$ $T_{\beta}$ … α], β minimal [*'minimal' = w/o Specs/adjoined elements?*]
a. if H = C, $T_{\beta}$ independent of α[102f.] [*Uriagereka: independence of embedded clauses*]

*no dependene ($T_{\beta}$,C)*

➲ there $T_{\beta}$ are questions about [$_{\alpha}$ what C [$_{TP}$ John read $t_{what}$] ][103]

*closed system (w.r.t. Case, φ, binding,…)*

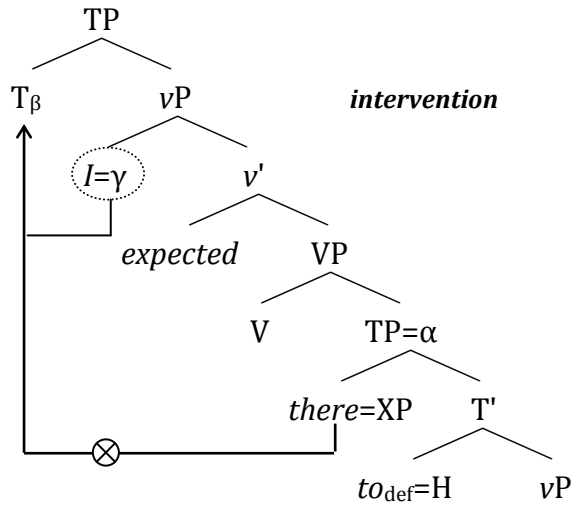
b. if H = *v*, Agree($T_\beta$,EA), EA may move, XP may not[103f.]



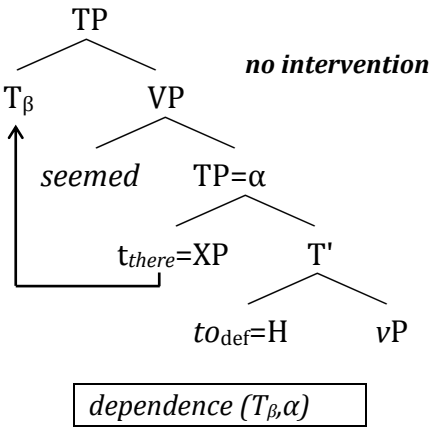

Old question (OS): DO and EA are equidistant to $T_\beta$, alright, so $T_\beta$ can choose, right? However, in (5bii) Chomsky explicitly states "XP [= *DO*] **cannot**". As far as I can see, it could…

*Many students read the book never.*
*There read the book never many students.*

c. if H = $T_{def}$, Move(XP,Spec$T_\beta$), if no γ **intervenes**: $T_\beta$…γ…[$_\alpha$ XP $T_{def}$…][103f.]




*I expected there to be a proof discovered.*




*There seemed tob e a proof discovered.*

g. **Merge-over-Move** (MoM) [*no principle, but a preference derived from more general complexity considerations*][104]

(11) *Icelandic **Object shift** (OS)*[103f.]

i. [$_\alpha$ read+*v* [$_{VP}$ $t_{read}$ [$_{DO}$ the book] ] ]

ii. [$_\alpha$ [$_{Subj}$ many students] read+*v* [$_{VP}$ $t_{read}$ [$_{DO}$ the book] ] ] *Merge EA*

iii. [$_\beta$ $T_\beta$ [$_\alpha$ [$_{DO}$ the book] [$_{Subj}$ many students] read+*v* [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Move DO*

iv. ✓[$_\beta$ [$_{Subj}$ many students] read [$_\alpha$ $t_{Subj}$ [$_{DO}$ the book] $t_{read}$ [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Move EA*

iv'. ✓[$_\beta$ there read [$_\alpha$ [$_{DO}$ the book] [$_{Subj}$ many students] $t_{read}$ [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Merge Expl*

**obeys MoM**

ii. [$_\alpha$ [$_{DO}$ the book] read+*v* [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Move DO*

iii. [$_\beta$ $T_\beta$ [$_\alpha$ [$_{Subj}$ many students] [$_{DO}$ the book] read+*v* [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Merge EA*

iv. ✓[$_\beta$ [$_{Subj}$ many students] read [$_\alpha$ $t_{Subj}$ [$_{DO}$ the book] $t_{read}$ [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Merge EA*

↯ iv'. *[$_\beta$ *there* read [$_\alpha$ [$_{Subj}$ many students] [$_{DO}$ the book] $t_{read}$ [$_{VP}$ $t_{read}$ $t_{DO}$] ] ] *Merge Expl*
*ungrammatical*
*word order*

**violates MoM**

(12) i. [$_{\alpha}$ $T_{def}$ [be a proof discovered] ]
ii. *there is likely [$_{\alpha}$ a proof to be discovered] *violates MoM*
iii. *I expected [$_{\alpha}$ $t_I$ to be a proof discovered] *violates θ-theory (cf. (9))*
iv. ✓I expected [$_{\alpha}$ a proof to be discovered]
v. ✓there is likely [ $t_{there}$ to be a proof discovered]
vi. ✓I expected [there to be a proof discovered][104]
vii. ✓[$_{TP}$ $me_{(dat)}$ [$_{VP}$ $t_{me}$ seem [$_{TP}$ several people to be in the room] ] ] *cf. (iv); Quirky Case*
vii. ✓[$_{TP}$ there [$_{VP}$ seem [$_{TP}$ [$_{Subj}$ several people] $t_{there}$ to be $t_{Subj}$ in the room] ] ][105] *TEC-MSC*

h. **Operative complexity** (cf. b, c)[104f.]

(13) a. Simple operations pre-empt more complex ones.
b. Search space is limited (locality).
c. Access to the feature set F is restricted by $[F \overset{L}{\rightarrow} [F]]$.
d. Computation is locally determined (no look-ahead).

i. **Control infinitivals**: structurally, finite clauses (CPs) with tense–modal structure and φ-complete T (i.e. $C \rightarrow T_{comp}$) (≠ raising/ECM : $V \rightarrow T_{def}$) [*Control infinitivals behave phase-like*][104f.]

➲ They ❶ can be moved/clefted (*It is [$_{CP}$ PRO to eat the zucchini] that $I_i$ promised* $t_{CP}$.); ❷ can occur as root clauses (*What $PRO_{arb}$ to do!?*; *$PRO_{arb}$ To go to Paris…!*); ❸ their PRO subject receives structural Case (null Case) from T – [*Uriagereka cites Rizzi's 1982 original Italian examples*]

j. **Lexical subarrays** ($LA_i$)[106]

(14) there is a possibility [$_{\alpha}$ that proofs will be discovered][103]

➲ If LA = {*proofs*, *there*,…}, why does *proofs* move in α instead of *there* being merged? [*i.e.* ***the Marantz/Romero puzzle****; of course the eventually resulting string would be deviant:* *Proofs are a possibility that there will be discovered *or* *Is/Are a possibility that there will be proofs discovered*; given <u>local</u> determination at α, however, this isn't relevant]*

<u>Revision/extension of (c)</u>:

1. $Lex \xrightarrow{C_{HL}} LA = \{LA_i, LA_j, \ldots\}$ *1-time selection of a lexical array*[1]
2. $\mathbf{LA} \xrightarrow{\mathbf{C_{HL}}} \mathbf{LA_i}$ *(multiple) extraction of $LA_i$ to active memory ('workspace')*
3. $LA_i \xrightarrow{C_{HL}} LF(Exp)$ *narrow syntax computation (i.e. mapping to $L_F$)*

(15) *Back to (14)…*
i. LA = {$LA_i$ = {*that*, *proof*,…}, $LA_j$ = {<u>*there*</u>, *be*,…}}
ii. [$_{\alpha}$ that proofs will be discovered] *exhaustion of* {there} ∈ $LA_i$ *at α*
iii. [$_{\beta}$ there is a possibility [$_{\alpha}$ that proofs will be discovered] *exhaustion of* {there} ∉ $LA_j$ *at β*

➲ **Criteria for $LA_i$**: should determine a 'natural SO' ("relatively independent in terms of interface properties"[106])

[1] So, is LA *pre-structured* into $LA_i$s (similar to DS; cf. Uriagereka)? What structures Las? A weakly computational mechanism? Chomsky explicitly excludes cyclic access of $C_{HL}$ to Lex in order to construct subarrays (n. 29, n. 41; his petroleum-plant metaphor).

I. LF: **propositionality** → *v*P with full θ-structure, CP incl. force and tense

['*Propositionality' as the identifier of phasehood has been called into question. A less problematic criterion might be (as also pointed out by Uriagereka) the notion of* ***minimal domain with a complete set of relevant Fs****; also cf. Chomsky's* ***closed system****[103])*]

II. PF: **isolability** → fronting, extraposition, pseudoclefting, response fragments,…

➲ $LA_i \ni \{C|v\}$ ('Each subarray must contain at least? one phase head, C or *v*.')

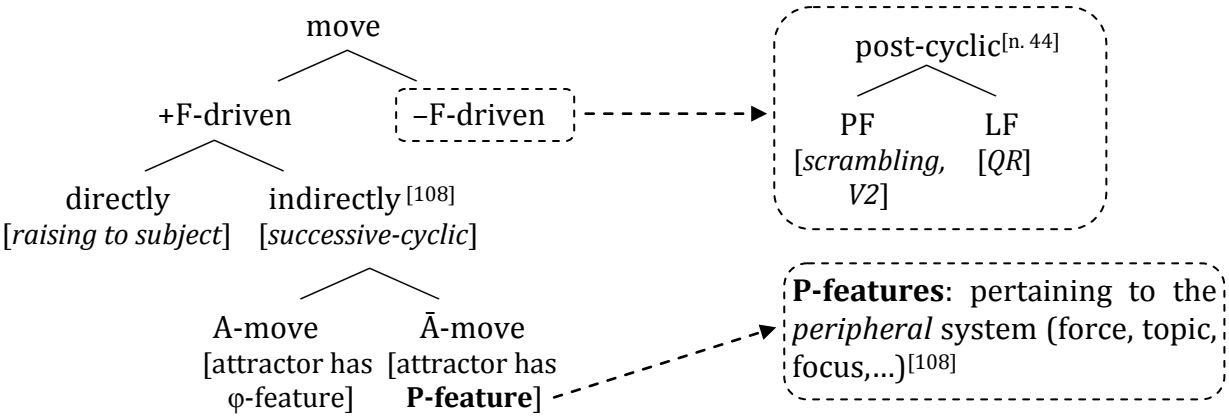
➲ Propositionality outdoes convergence as a defining property of $LA_i$: *wh*-elements carry a **strong uninterpretable** F as movement trigger (≠ MP:§4)[107]

(16) [Which article]$_{[uF]}$ $C_{[F]}$ is there $t_{wh}$ some hope [$_{\alpha}$ $t_{wh}$ that John will $t_{wh}$ read $t_{wh}$ ]?[103]
**CP-PH$_2$: convergent** → Delete([*u*F]) **CP-PH$_1$: 'non-convergent'**

k. **Phases**: "Take a *phase* of a derivation to be an SO derived in this way by choice of $LA_i$. A phase is **CP** or ***v*P**, but **not TP** or a verbal phrase headed by H lacking φ-features and therefore not entering into Case/agreement checking: **neither finite TP nor unaccusative/passive verbal phrase** is a phase."[106]

(17) *Cyclicity condition*[107] (to become *activeness condition*[123])
The head of a phase is "**inert**" after the phase is completed, triggering no further operations.

l. **Typology of movement** (M)[107f.]




➲ **Indirect feature-driven movement** (IFM): Why *indirect*? Movement triggered by φ/P occurs **successive-cyclically**, i.e. in several shorter movement steps. In the following configuration, where X = attractor and α = attractee, α cannot skip SpecYP, hence is *indirectly* triggered to stop over there:

*Agree(X,α)*
[$_{XP}$ $X_{[uF]}$ [$_{YP}$ Y [$_{ZP}$ $\alpha_{[+F]}$ WP ] ] ] → [$_{XP}$ $\alpha_{[+F]}$ $X_{[uF]}$ [$_{YP}$ $t_{\alpha}$ Y [$_{ZP}$ $t_{\alpha}$ WP ] ] ]
**IFM**
❷ ❶

➲ **[P] =** ***feature*** **driving successive-cyclic movement!**

[*How is <u>direct</u> feature-driven movement (raising to subject) different from A-IFM? Does [EPP] on T trigger subject raising, or [uφ]? A-movement of, say, EA from SpecvP to SpecTP (be it triggered by [EPP] or [uφ]) involves only one step, thusi is not successive-cyclic, nor indirect…?*]

m. **Phase-Impenetrability Condition** (PIC) → strong cyclicity condition[108]

(18) *Phase structure*
HP = [α [H β]]
β = **domain**(H) [= *internal domain of M:§4*]
α = **edge**(H) [= *a hierarchy of one or more Specs; checking domain of M:§4*]

(19) ***PIC***[108]
In phase α with head H, the domain of H is not accessible to operations outside α, **only H and its edge are accessible** to such operations.

➲ **[$_{PH2}$ $\alpha_2$ [$H_2$ [$_{PH1}$ $\alpha_1$ $H_1$** β ]]]
**by PIC**

➲ **IFM is motivated by the PIC**! Stuff that eventually ends up high in a structure needs to escape the PIC by (successive-cyclically) moving to the next edge available [*edges as escape hatches*]. Local (i.e. phasal) determination obviates questions of **look-ahead** w.r.t. IFM.[108]

n. **EPP**: asymmetry T *vs.* C/*v* → optionality, Expl,…[109]

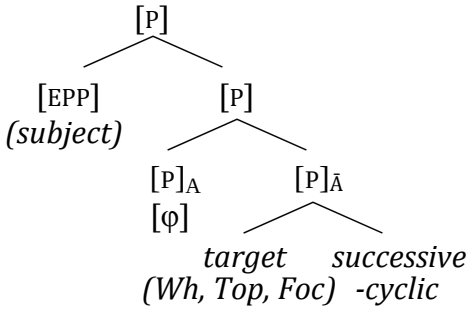
(20) The head H of phase Ph may be assigned an EPP-feature.[109]

➲ **The Marantz/Romero puzzle; solved**: If LA ∋ {Expl}, Move is always pre-empted. With subarrays. *after* exhaustion of $LA_i$, H may be (non-universally; cf. OS) assigned an [EPP] by (20) (for OS, Ā-movement, etc.). → This [EPP] can only be satisfied by *Move*, not by (pure) Merge (like T[EPP] can) , there being no LI (**incl. Expl**) left in $LA_i$!

➲ Chomsky speculates that 0 might ultimately be conditioned by specificity, information structure (n. 25: also cf. MP:294, 377)[109f.]

(21) $SpecC_{2[P]}$ … $Spec{v}_{2[P]}$ … $SpecC_{1[P]}$ … $Spec{v}_{1[EPP]}$ … XP [110]
*Ā-movement (*wh, *Top)* *A-movement (OS)*
Ā-chain ($SpecC_2$, $Spec{v}_2$, $SpecC_1$, $Spec{v}_1$)
A-chain ($Spec{v}_1$, XP)
**$Spec{v}_2$ = Ā-position** due to [P] assigned by 0 [*for improper movement cf. n. 35*]

➲ Re: **Typology of EPP-features** (cf. l): It seems (to me) that [P] is the hyperonym for the subject-[EPP] of T on the one hand (obligatory, allows pure Merge,…), and features driving successive-cyclic movement as well as the discourse-scope features (*Wh*, Top, Foc,…) at the target of successive-cyclic movement, on the other (call the latter $[P]_{\bar{A}}$). Then, there are also φ-features, apparently feeding A-movement (call those $[P]_A$).




I don't ge this (cross-) classification: What triggers subject raising, [EPP] or [*u*φ]? What if movement triggered by $[P]_{A/\bar{A}}$ involves only one step? Is this still IFM? And: subject raising (in e.g. raising constructions) can occurs successive-cyclically, in which case it would be indirect…

o. Once more: **computational complexity** (cf. b, c, h):[110f.]

(22) a. Computational complexity matters for cognitive systems.
b. The solution must be comprehensive, with a guarantee of "quick decision" for all derivations.
c. Complexity should not be allowed to grow "too fast."
d. Decisions in computation attend only to principles of UG.