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): ① eliminate superfluous elements in representations (Full Interpretation); ② 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**: ① reduction of search space (minimal search: “Shortest Movement/Attract”, successive-cyclic movement (RM, subjacency), search restricted to c-command/minimal domains); ② 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. \( F \overset{L}{\rightarrow} [F] \) 1-time selection of a language-specific subset from F
   2. \( [F] \overset{L}{\rightarrow} \text{Lex} \) 1-time assembly of a lexicon
   3. \( \text{Lex} \overset{C_{HL}}{\rightarrow} \text{LA} \) 1-time selection of a lexical array
   4. \( \text{LA} \overset{C_{HL}}{\rightarrow} \text{LF}(\text{Exp}) \) narrow syntax computation (i.e. mapping to LF)

   ✨ 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**
   
   \[ \text{Merge}(\alpha, \beta) \rightarrow K(\alpha, \beta) \]

   (3) **Agree**
   
   \[ \text{Agree}(\alpha, F) \text{ in a specific domain, } \alpha \text{ a LI} \]

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

   (4) **Move (= Agree + Merge)**
   
   \[ \text{Move}(P(F)^*, \text{Spec}\alpha) = \text{Agree}(\alpha, F) + \text{Merge}(P(F), \alpha P) \rightarrow [\_\_\_\_ P(F) \alpha [...t_{P(F)}...]] \]

   *P(F) a phrase determined by F

   ✨ **A-movement** = Move(P, Spec\( \varphi \)); otherwise, Ŵ-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]\(^ {102} \)

\[\text{(5) Core functional categories (CFCs, of the clausal system)}\]

a. C (force/mood)
b. T (tense/event structure\(^ *\))
c. v (transitive light verb head)

\(\text{CFCs contain uninterpretable } \varphi\)-Fs \([u\varphi]\), T and v obligatorily \([C-agreement is rare] \rightarrow \text{“core of the systems of (structural) Case agreement and ‘dislocation’ (Move)”}\)[\(^ {102} \)]

\(\text{n. 31: C and T are surrogates for richer systems} \rightarrow \text{CFCs vs. Cartographies}\)

f. Structural properties of CFCs\(^ {102f.} \)

\[\alpha = [XP [(EA) H(\text{FCF}) YP]] \quad \text{abstract schema of CFC-structure}\]

\(\text{(9) If } H = \nu/C, \text{ XP is not purely merged (i.e. } \nu/C \text{ allow no Explo)}\)[\(^ {102f.} \)] [Uriagereka: ‘whether’ = [Expl,SpecCP]?]

\(\text{“Pure Merge in } \theta\text{-position is required of (and restricted to) arguments.”}[\(^ {103} \)] [cf. IM vs. EM]

\(\beta\) minimal \([\text{‘minimal’} = \text{w/o Specs/adjoined elements?}]\)

a. if \(H = C\), \(T\) independent of \(\alpha\)[\(^ {102f.} \)] [Uriagereka: independence of embedded clauses]

\[\text{there } T\beta \text{ are questions about } [\text{a what C [TP John read twhat]}] \quad \text{[103]}\]
b. if $H = \nu$, 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 $H = T_{\text{def}}$, Move(XP, Spec$T_\beta$), if no $\gamma$ intervenes: $T_\beta \ldots \gamma \ldots [\alpha \text{ XP } T_{\text{def}} \ldots]^{[103f]}$

I expected there to be a proof discovered.
There seemed to be 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. $[\alpha \text{ read+ } [\nu \text{ t_read [do the book]]}]$

ii. $[\alpha \text{ [Subj many students] read+ } [\nu \text{ t_read [do the book]]}]$ Merge EA

iii. $[\beta T_\beta [\alpha \text{ do the book [Subj many students] read+ } [\nu \text{ t_read do] ]}]$ Move DO

iv. $[\beta T_\beta [\alpha \text{ do the book [Subj many students] read+ } [\nu \text{ t_read do] ]}]$ Move EA

iv'. $[\beta \text{ there read [ } \alpha \text{ do the book [Subj many students] t_read [ } \nu \text{ t_read do] ]}]$ Merge Expl

ii. $[\alpha \text{ [do the book] read+ } [\nu \text{ t_read do] ]}$ Move DO

iii. $[\beta T_\beta [\alpha \text{ do the book [Subj many students] read+ } [\nu \text{ t_read do] ]}]$ Merge EA

iv. $[\beta \text{ there read [ } \alpha \text{ do the book [Subj many students] t_read [ } \nu \text{ t_read do] ]}]$ Merge EA

iv'. $[\beta \text{ there read [ } \alpha \text{ do the book [Subj many students] t_read [ } \nu \text{ t_read do] ]}]$ Merge Expl ungrammatical word order
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 \[ F \to [F] \].
   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. \( C \to T_{comp} \)) (≠ raising/ECM : \( V \to T_{def} \)) \[ Control \ infinitivals \ behave \ phase-like \][104f]

\[ \text{They 1 can be moved/clefted (It is \([CP \text{ PRO to eat the zucchini}] \) that I \( i \) promised to CP.); 2 can occur as root clauses (What \( \text{PROarb to do!} \); \( \text{PROarb To go to Paris...!} \)); 3 their PRO subject receives structural Case (null Case) from T – [Uriagereka cites Rizzi’s 1982 original Italian examples] \]

j. Lexical subarrays (LA)[106]

(14) there is a possibility \[ \text{at that proofs will be discovered} \][103]

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

Revision/extension of (c):

1. \( \text{Lex} \xrightarrow{CHL} \text{LA} = \{ \text{LA}_i, \text{LA}_j, ... \} \) \[ 1\text{-time selection of a lexical array}\]
2. \( \text{LA} \xrightarrow{CHL} \text{LA}_i \) \[ \text{(multiple) extraction of } \text{LA}_i \text{ to active memory (‘workspace’)} \]
3. \( \text{LA}_i \xrightarrow{CHL} \text{LF(Exp)} \) \[ \text{narrow syntax computation (i.e. mapping to } \text{LF)} \]

(15) Back to (14)...

i. \( \text{LA} = \{ \text{LA}_i = \{ \text{that, proof,...} \}, \text{LA}_j = \{ \text{there, be,...} \} \} \)
ii. \[ \text{at that proofs will be discovered} \] exhaustion of \{there\} \( \in \text{LA}_i \) at \( \alpha \)
iii. \[ \beta \text{there is a possibility } \text{at that proofs will be discovered} \] exhaustion of \{there\} \( \notin \text{LA}_j \) at \( \beta \)

\[ \text{Criteria for } \text{LA}_i \text{ should determine a ‘natural SO’ (“relatively independent in terms of interface properties”)[106]} \]

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1. So, is LA pre-structured into LAs (similar to DS; cf. Uriagereka)? What structures LAs? A weakly computational mechanism? Chomsky explicitly excludes cyclic access of CHL to Lex in order to construct subarrays (n. 29, n. 41; his petroleum-plant metaphor).
I. LF: **propositionality** → vP 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,...

 País. LAi ∋ {C|v} ('Each subarray must contain at least one phase head, C or v.')

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

(16) [Which article][uF] C[F] is there some hope that John will read?

k. Phases: “Take a phase of a derivation to be an SO derived in this way by choice of LAi. A phase is CP or vP, 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/pasive 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 successfully-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:

\[
\text{Agree}(X, a) \\
[X \{uF\} Y \{zP \alpha_{i-F} \} WP ] ] \rightarrow [X \{uF\} Y \{zP t_\alpha Y \{zP t_\alpha WP \} ] ]
\]

**[p] = feature driving successive-cyclic movement!**

[How is direct 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, thus is not successive-cyclic, nor indirect...?]
m. **Phase-Impenetrability Condition** 
\[ (PIC) \rightarrow \text{strong cyclicity condition}^{[108]} \]

\[ \text{(18) Phase structure} \]
\[ \text{HP} = [\alpha \ [H \beta]] \]
\[ \beta = \text{domain}(H) \]
\[ \alpha = \text{edge}(H) \]

\[ \text{[} = \text{internal domain of M;§4] } \]

\[ \text{[} = \text{a hierarchy of one or more Specs; checking domain of M;§4] } \]

\[ \text{(19) PIC}\rfloor^{[108]} \]
\[ \text{In phase } \alpha \text{ with head } H, \text{ the domain of } H \text{ is not accessible to operations outside } \alpha, \text{ only } H \text{ and its edge are accessible to such operations.} \]

\[ \Rightarrow \ [PH2] \alpha_2 \begin{array}{c} [H2] \begin{array}{c} [PH1] \alpha_1 \ H_1 \end{array} \beta \end{array}] \]
by PIC

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

n. **EPP:** asymmetry T vs. C/ν → optionality, Expl,...\[^{[109]} \]

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

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

\[ \Rightarrow \text{Chomsky speculates that } 0 \text{ might ultimately be conditioned by specificity, information structure (n. 25: also cf. MP:294, 377)}^{[109]} \]

\[ \text{(21) SpecC}_2[P]\ldots \text{Specv}_2[P]\ldots \text{SpecC}_1[P]\ldots \text{Specv}_1[EPP]\ldots XP}^{[110]} \]

\[ \overset{\text{Ā-movement (wh, Top)}}{\overset{\text{Ā-movement (OS)}}{\overset{\text{A-movement (OS)}}{\overset{\text{A-movement (wh, Top)}}{\text{A-}}}}} \]

\[ \text{Ā-chain (SpecC}_2, \text{ Specv}_2, \text{ SpecC}_1, \text{ Specv}_1) \]
A-chain (Specv\_1, XP)

\[ \text{Specv}_2 = \text{Ā-position} \text{ due to } [P] \text{ assigned by } 0 \text{ [for improper movement cf. n. 35]} \]

\[ \Rightarrow \text{Re: Typology of EPP-features (cf. l): It seems (to me) that } [P] \text{ is the hyperonym for the subject-[EPP] of } T \text{ on the one hand (obligatory, allows pure Merge,...), and features driving successive-cyclic movement as well as the discourse-scope features (Wh, Top, Foc,...) at the target of successive-cyclic movement, on the other (call the latter [P]_A). Then, there are also } \phi \text{-features, apparently feeding A-movement (call those [P]_A).} \]
I don’t get this (cross-) classification: What triggers subject raising, [EPP] or [uφ]? What if movement triggered by [P]A/Ā involves only one step? Is this still IFM? And: subject raising (in e.g. raising constructions) can occur successively-cyclically, in which case it would be indirect...

- 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.