


## BOOK REVIEWS

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**Guglielmo Cinque**, *On linearization: Toward a restrictive theory* (Linguistic Inquiry Monographs). Cambridge, MA: MIT Press, 2023. Pp. vii + 182.

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The relation between hierarchical structure and linear order has been the subject of much discussion in the mainstream generative grammar since Kayne (1994) and Chomsky (1995). In the early phase of generative grammar, phrase structure rules encode both hierarchical structure and linear order; under the Principles and Parameters framework, universal hierarchical structures are determined by a limited number of general principles, and linear orders in a particular language are fixed by a set of parameters. Kayne's (1994) Linear Correspondence Axiom (LCA) tightly yokes hierarchical structure and linear order in that asymmetric c-command relations determine and adjust linear order, thus accounting for a wide range of asymmetries observed in cross-linguistic syntactic phenomena. Kayne (1994) is a milestone in the research program to understand the role of linear order in narrow syntax. Chomsky (1995) partially agrees with Kayne (1994) and 'takes the LCA to be a principle of the phonological component' (Chomsky 1995: 313). In subsequent studies, Chomsky (2007: 10) argues that the 'LCA can plausibly be interpreted as part of the mapping to the SM [sensorimotor] interface'. Berwick & Chomsky (2011) and Chomsky (2020) suggest that structures are created by the operation Merge in narrow syntax, and unordered structures are externalized in the sensorimotor system. That is, linear order is not a part of narrow syntax but a reflex of the sensorimotor system. So far, Kayne's LCA and Chomsky's view that linear order is a product of externalization have formed two camps of the theory of linear order.

Guglielmo Cinque, the author of the book under review, once claimed that the asymmetries of linear order fit directly into Kayne's LCA (Cinque 2005). In this monograph, he further argues that Chomsky's view of externalization cannot explain what mechanisms are responsible for the asymmetries of linear order. In particular, some meaningless movements have to exist for the correct derivation of linear order, but meaningless movements should be eliminated from narrow syntax by interface conditions. To provide a unified and comprehensive account of linear order, this book develops a restrictive theory of linearization that

adopts Kayne's LCA as a framework for linearizing derived structures. Cinque's theory assumes that only the head of each fine-grained (sub)hierarchy that underlies the clause and its phrases can move by itself or by pied piping some larger phrase containing it in the *whose-pictures* or the *pictures-of-whom* modes.

The theory explains the following four generalizations of linear order: (i) the systematic absence of certain orders, (ii) the left-right asymmetry found in every domain, (iii) the word order asymmetry falling under the final-over-final condition (FOFC), and (iv) the increasing rarity of certain attested orders. It provides a unified approach to analyze the bewildering cross-linguistic word order variation and to derive not just the ideal head-initial and head-final linear orders but also the mixed cases.

The book consists of six chapters in total, and it is framed by an introductory chapter (Chapter 1) and a summary chapter (Chapter 6). Chapter 1, 'Introduction,' briefly introduces the background of the research on derivation of linear order and presents the new proposal of the book. Chapter 6, 'Conclusion,' recaps the book. The remaining four chapters delineate the generalizations of linear order in the nominal extended projection and verbal extended projection, and discuss how a restrictive theory of linearization accounts for these generalizations.

Chapter 2, 'Nominal subprojections and their word orders' (9–22), investigates the attested subset of the mathematically possible orders of  $N$  elements in the nominal domain. It begins with the more complex case of the attested orders of the four elements, i.e. demonstrative, (cardinal) numeral, adjective, and noun. There are 14 attested orders out of 24 possible orders of the four elements, as suggested by Cinque (2005). Then, it deals with the attested orders of three elements, such as multiplier, base, and noun; noun for color, adjective of color, and noun. It is observed that triplets of nominal elements give rise to six potential orders, and of them, only four are attested. This chapter recognizes the complex articulation of nominal subprojections, which is a prerequisite for proposing a restrictive theory of linear order.

Chapter 3, 'Toward a restrictive theory of linear order' (23–58), postulates that 'the Head, and only the Head, of each (sub)projection (N(P), A(P), V(P), ...) can move within its projection' (23). It, therefore, assumes that 'only the constituent heading the subprojection can move in one of only three ways: by itself or by pied piping a phrase containing it via the *whose-pictures* and the *pictures-of-whom* modes,' (23–24). That only the head of each subprojection can move evidently reduces the number of attested orders, so only 14 orders of four elements and 4 orders of three elements of nominal subprojections are attested, as observed in Chapter 2.

The restrictive theory of linear order provides a robust account of the linear orders in the nominal extended projection of head-initial and head-final languages. The author proposes that the head-initial orders are derived via the movement of the heads in the *whose-pictures* pied piping mode and the head-final orders in the *pictures-of-whom* pied piping mode. The derivation process is as follows: for each substantive functional projection constituted by a head that selects its complement

in specifier position, a corresponding Agr(eement)P is merged above it; then its head is moved into the specifier of the AgrP by itself or via one of the two pied piping modes; and on top of the AgrP, a modifier projection associated with the substantive functional projection is merged; in the *whose-pictures* pied piping mode, the head pied-pipes along to its Spec-Agr constituents c-commanded by it, while in the *pictures-of-whom* pied piping mode, the head pied-pipes along to its Spec-Agr constituents that c-command it; finally, the derivation gives rise under LCA to a head-initial order or a head-final order. It is noted that the linear orders are derived via movement/internal merge rather than symmetric external merge, as the internal merge is more economical and sufficient, which is supported by empirical data, such as the derivation of the unmarked order of reason, manner, and directional prepositional phrases in head-final Dutch and head-initial/-medial Italian.

Chapter 4, 'Extending the analysis to the clause' (59–94), presents a simplified picture of the derivation of the attested orders of elements that compose the verbal extended projection. Like the derivation of linear orders of the nominal extended projection in rigid head-initial and rigid head-final languages, the linear orders of the verbal counterpart are derived by the movement of the head via a consistent *whose-pictures* pied piping and a consistent *pictures-of-whom* pied piping, respectively. However, it is observed that the linear orders in any one language are not always head-initial or head-final, and this requires mixing the three modes of movement to derive the linear orders. Concerning the choice of the mode of movement for derivation, it is correlated with the modifiers of the head's projection, which are classified as: (i) a single lexical item, (ii) a single adjectival subclass, (iii) a single category within an extended projection, and (iv) all categories within all extended projections.

This restrictive theory of linear order can also help to explain the derivation of puzzling and unsolved syntactic structures, such as the Germanic verb clusters. The syntax of Germanic verb clusters raises a challenge for any approach to linearization developed so far, as the verb clusters can display different orders, whereas the adverbial modifiers, the DPs and PPs in the same clause are always in head-final order. Cinque postulates that the different orders within the Germanic verb clusters and the rigid order of their respective dependents are derived separately. Take the attested orders of auxiliary, modal, and main verb within the verbal cluster for example. It is assumed that the five attested orders are derived by the movement of the head in one of the three available ways, and then their respective dependents are taken to be merged in a fixed position.

Chapter 5, 'The generalizations that characterize linear order and what they follow from' (95–106), briefly discusses four generalizations that characterize linear order. The first one is the absence of certain orders, which is argued to be attributed to the articulation of the subprojections of an extended projection and the restriction that only the head can move within each subprojection. The second one is the left-right asymmetry, which is the result of the way the head moves. The third one is the word order asymmetry falling under the FOFC, which is associated with the rule that the *pictures-of-whom* pied piping mode is more marked than the *whose-*

*pictures* pied piping mode. The fourth one is the rarity of certain orders, which results from a change in the way the head moves, from the less marked *whose-pictures* pied piping mode to the more marked *pictures-of-whom* pied piping mode. It is suggested that a unified account can be provided for the four generalizations under the LCA once we admit the existence of meaningless movement and the restriction that just the head of each (sub)projection can move.

For the program of linear order to make progress, in this book, Cinque suggests that researchers should explore the fine-grained structure of the subprojections of the clause and of its phrases, which is in accord with the aim of Syntactic Cartography (Cinque & Rizzi 2010). A more precise hierarchical structure will permit a more restrictive theory of word order variation, as suggested by Cinque (2021). This book is a step forward in this regard, as it puts forward such a restrictive theory which argues that the clause is composed of a number of highly articulated subprojections, making the derivations of the clause and its phrases simple and economical. The book also provides rich cross-linguistic data for future research on linear order, making it a valuable resource.

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