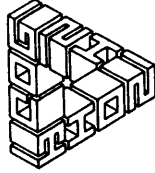


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Ever since language and learning:
afterthoughts on the Piaget–Chomsky
debate

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Ever since language and learning: afterthoughts on the Piaget–Chomsky debate

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Abstract

The central arguments and counter-arguments presented by several participants during the debate between Piaget and Chomsky at the Royaumont Abbey in October 1975 are here reconstructed in a particularly concise chronological and “logical” sequence. Once the essential points of this important exchange are thus clearly laid out, it is easy to witness that recent developments in generative grammar, as well as new data on language acquisition, especially in the acquisition of pronouns by the congenitally deaf child, corroborate the “language specificity” thesis defended by Chomsky. By the same token these data and these new theoretical refinements refute the Piagetian hypothesis that language is constructed

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I am in debt to Thomas Roeper for his invitation to give a talk on the Piaget–Chomsky debate to the undergraduates in linguistics and psychology, at the University of Massachusetts at Amherst, in April 1989. The idea of transforming it into a paper came from the good feedback I received during that talk, and from a suggestion by my friend and colleague Paul Horwich, a philosopher of science, who had attended. Steven Pinker reinforced that suggestion, assuming that such a paper could be of some use also to the undergraduates at MIT. Noam Chomsky carefully read the first draft, and made many useful suggestions in the letter from which I have quoted some passages here. Paul Horwich, Morris Halle and David Pesetsky also offered valuable comments and critiques. Jerry Fodor stressed the slack that has intervened in the meantime between his present position and Chomsky’s, inducing me to revise sections of the first draft (perhaps the revisions are not as extensive as he would have liked). The ideas expressed here owe a lot to a lot of people, and it shows. I wish to single out, however, my special indebtedness to Noam Chomsky, Jerry Fodor, Jacques Mehler, Jim Higginbotham, Luigi Rizzi, Ken Wexler, Laura-Ann Petitto, Lila Gleitman, Steve Gould and Dick Lewontin. The work I have done during these years has been generously supported by the Alfred P. Sloan Foundation, the Kapor Family Foundation, the MIT Center for Cognitive Science, Olivetti Italy and the Cognitive Science Society. I am especially indebted to Eric Wanner for initial funding.

upon abstractions from sensorimotor schemata. Moreover, in the light of modern evolutionary theory, Piaget's basic assumptions on the biological roots of cognition, language and learning turn out to be unfounded. In hindsight, all this accrues to the validity of Fodor's seemingly "paradoxical" argument against "learning" as a transition from "less" powerful to "more" powerful conceptual systems.

1. Introduction

This issue of *Cognition* offers a rare and most welcome invitation to rethink the whole field in depth, and in perspective. A fresh reassessment of the important Royauumont debate (October 1975) between Piaget and Chomsky may be of interest in this context. After all, the book has by now been published in ten languages, and it has been stated (Gardner, 1980) that the debate is "certainly a strong contender . . . as the initial milestone in the emergence of this field" (i.e., cognitive science). It is not for the co-organizer, with Jacques Monod, of that meeting, or for the editor of the proceedings (Piattelli-Palmarini, 1980) to say how strong the contender is. It is a fact, however, that many of us have witnessed over the years many impromptu re-enactments of arguments and counter-arguments presented in that debate, and that if one still wants to raise today the same kind of objections to the central ideas of generative grammar as Piaget, Cellérier, Papert, Inhelder, and Putnam raised at the time, one cannot possibly do a better job than the one they did. Moreover, the most effective counters to those objections are still basically the same that Chomsky and Fodor offered at Royauumont. That debate also foreshadowed, for reasons that I shall come back to, much of the later debate on the foundations of connectionism (Pinker & Mehler, 1988; Fodor & Pylyshyn, 1988). What I will attempt to do here is support the Chomsky–Fodor line with further evidence that has become available in the meantime. In fact, as time goes by, it is increasingly clear that the pendulum is presently swinging towards the innatist research program in linguistics presented at Royauumont by Chomsky (and endorsed by Mehler with data on acquisition), and away from even the basic, and allegedly most "innocent", assumptions of the constructivist Piagetian program. Lifting, at long last, the self-imposed neutrality I considered it my duty to adopt while editing the book, I say here explicitly, and at times forcefully, what I studiously avoided to say there and then. I also wish to highlight some recent developments in linguistics and language acquisition that bear clear consequences on the main issues raised during the debate.

2. The debates within the debate

In hindsight, it is important to realize that there were at least four distinct Royauumont debates eventually collapsing into one, a bit like a swarm of virtual

particles collapsing into a single visible track in modern high-energy laboratories: the event that actually happened; the one which we, the organizers, thought would happen; the one Jean Piaget hoped would happen, and the one that Chomsky urged everyone not to let happen.

Let me digress for a moment and sketch also these other “virtual” debates. Piaget assumed that he and Chomsky were bound to agree in all important matters. It was his original wording that there had to be a “*compromis*” between him and Chomsky. In fact, this term is recurrent throughout the debate. During the preparatory phase, Piaget made it clear that it had been his long-standing desire to meet with Chomsky at great length, and witness the “inevitable” convergence of their respective views. As Piaget states in his “invitation” paper,¹ he thought there were powerful reasons supporting his assumption. I will outline these reasons in a simple sketch.

Reasons for the “compromise”

Piaget’s assessment of the main points of convergence between him and Chomsky

- Anti-empiricism (in particular anti-behaviorism)
- Rationalism and uncompromising mentalism
- Constructivism and/or generativism (both assigning a central role to the subject’s own internal activity)
- Emphasis on rules, principles and formal constraints
- Emphasis on logic and deductive algorithms
- Emphasis on actual experimentation (vs. armchair theorizing)
- A dynamic perspective (development and acquisition studied in real time, with real children)

Piaget’s proposal was one of a “division of labour”, he being mostly concerned with conceptual contents and semantics, Chomsky being (allegedly) mostly concerned with content-independent rules of syntactic well-formedness across different languages. Piaget considered that the potentially divisive issue of innatism was, at bottom, a non-issue (or at least not a divisive one) because he also agreed that there is a “fixed nucleus” (*noyaux fixe*) underlying all mental activities, language included, and that this nucleus is accounted for by human biology. The only issue, therefore was to assess the exact nature of this fixed nucleus and the degree of its specificity.

The suggestion, voiced by Cellérier and Toulmin, was to consider two “complementary” strategies: the Piagetian one, which consisted of a *minimization*

¹In *Language and Learning: The Debate between Jean Piaget and Noam Chomsky* (hereinafter abbreviated as LL), pp. 23–24.

of the role of innate factors, and the Chomskian one, consisting of a *maximization* of these factors – once more, a sort of division of labor.

It was interesting for all participants, and certainly unexpected to Piaget, to witness that, during the debate proper, the constant focus of the discussions was on what Piaget considered perfectly “obvious” (“*allant de soi*”): the nature and origin of this “fixed nucleus”. He was heading for severe criticism from the molecular biologists present at the debate (especially from Jacob and Changeux) concerning his views on the origins of the fixed nucleus. And he was heading for major disagreements with Chomsky concerning the specificity of this nucleus.

It can be safely stated that, while Piaget hoped for a reconciliatory settlement with the Massachusetts Institute of Technology (MIT) contingent about particular hypotheses and particular mechanisms concerning language and learning (and, in particular, the learning of language), he found himself, unexpectedly, facing insuperable disagreement about those very assumptions he hardly considered worth discussing, and which he believed were the common starting point – more on these in a moment.

Piaget’s imperception of these fundamental differences was, in essence, responsible for the vast gap between the debate he actually participated in, and the virtual debate he expected to be able to mastermind. One had the impression that, to the very end, Piaget was still convinced he had been misunderstood by Chomsky and Fodor. In Piaget’s opinion, had they really understood his position, then it would have been unthinkable that the disagreement could still persist. One of Piaget’s secrets was his deep reliance on the intuitive, unshakeable truth of his *hypothèses directrices* (guiding hypotheses). These were such that no reasonable person could possibly reject them – not if he or she actually understood what they meant. One could single out the most fundamental of Piaget’s assumptions (Piaget, 1974) in words that are not his own, but which may well reflect the essence of what he believed:

Piaget’s guiding hypothesis (hypothèse directrice)

- Life is a continuum
- Cognition is an aspect of life
therefore
- Cognition is a continuum

This is a somewhat blunt rendition, but it is close enough to Piaget’s core message. Some of his former collaborators in the Geneva group, in 1985, expressed basic agreement that this was “a fair rendition” of Piaget’s *hypothèse directrice* (as expressed, for instance in his 1967 book *Biologie et Connaissance*).²

²Bärbel Inhelder, personal communication.

As any historian of medieval logic could testify, if literally taken this version is a well-known logical fallacy (compare with the following):

- New York is a major metropolis
- Central Park is part of New York
therefore
- Central Park is a major metropolis

Decidedly, one does not want to impute to Piaget and his co-workers assent to a logical fallacy. Thus stated, it cannot pass as a “fair” reformulation. That would be too devious. A better reformulation, one that passes the logical test, would be the following:

A better heuristic version of Piaget’s core hypothesis

- Life is (basically) auto-organization and self-stabilization in the presence of novelty
- Cognition is one of life’s signal devices to attain auto-organization and self-stabilization
therefore
- Cognition is best understood as auto-organization and self-stabilization in the presence of novelty

This much seemed to Piaget to be untendentious and uncontroversial, but also very important. He declared, in fact, that this central hypothesis had guided almost everything he had done in psychology. In order better to understand where the force of the hypothesis lies, one must remember that he unreservedly embraced other complementary hypotheses and other strictly related assumptions. Here they are (again in a succinct and clear-cut reformulation):

Piaget’s additional assumptions

- I Auto organization and self-stabilization are not just empty metaphors, but deep universal scientific principles captured by precise logico-mathematical schemes.
- II There is a necessary, universal and invariable sequence of stepwise transitions between qualitatively different, fixed stages of increasing self-stabilization.
- III The “logic” of these stages is captured by a progressive hierarchy of

inclusion between ascending levels of abstraction and generalization (each stage contains the previous one as a sub-set).

IV The necessary and invariant nature of these transitions cannot be captured by the Darwinian process of random mutation plus selection.

Corollary

V Another theory of biological evolution is needed (Piaget's "third way", differing both from Darwin's and Lamarck's).

Piaget believed that there is a kind of evolution that is "unique to man", and which grants the "necessity" of the mental maturational stages.³ These are what they are, and could not be anything else; moreover they follow one another in a strict unalterable sequence. The random process of standard Darwinian evolution is unable in principle (not just as a temporary matter of fact, due to the present state of biology) to explain this strict "logical" necessity.

One the last two points the biologists, obviously, had their say, as we will see in a moment.

Within this grand framework, it is useful to emphasize what were Piaget's specific assumptions concerning learning and language:

Piaget's crucial assumptions about learning

The transitions (between one stage and the next) are formally constrained by "logical necessity" (*fermeture logique*) and actually, "dynamically", take place through the subject's active effort to generalize, equilibrate, unify and systematize a wide variety of different problem-solving activities.

The transition is epitomized by the acquisition of more powerful concepts and schemes, which subsume as particular instances the concepts and schemes of the previous stage.

Piaget's crucial assumptions about language

The basic structure of language is continuous with, and is a generalization-abstraction from, various sensorimotor schemata.

The sensorimotor schemata are a developmental pre-condition for the emergence of language, and also constitute the logical premise of linguistic

³LL, p. 59.

structures (word order, the subject/verb/object construction, the agent/patient/instrument relation, and so on).

Conceptual links and semantic relations are the prime movers of language acquisition. Syntax is derivative from (and a “mirror” of) these.

It was inevitable that Piaget should meet strong opposition on each of these assumptions, on their alleged joint force and on the overall structure of his argument. In a sense, the whole debate turned only on these assumptions, with Piaget growing increasingly impatient to pass onto more important and more technical matters, but failing to do so, on account of the insurmountable problems presented by his core tenets. Chomsky and Fodor kept mercilessly shooting down even the most “obvious” and the most “innocent” reformulations of the basic assumptions of the Piagetian scheme, notably in their many spirited exchanges with Seymour Papert, who boldly undertook the task of systematically defending Piaget against the onslaught.

The debate was not the one Piaget had anticipated, and it became clear to everyone, except possibly to Piaget himself (see his “Afterthoughts”),⁴ that no compromise could possibly be found.

3. Another virtual debate: the one the organizers thought they were organizing

There was, as I said, another virtual debate, the one which the organizers – molecular biologists with a mere superficial acquaintance of cognitive psychology and linguistics – believed they were organizing. It was closer to what Piaget had in mind than to the debate that actually took place, because they too anticipated some kind of convergence.

How could that be? How could we, the biologists in the group, believe for a moment that some form of compromise could be reached? The simple answer to this, in retrospect, is: ignorance. What we thought we knew about the two systems was simple and basic. I think I can faithfully reconstruct it in a few sentences:

What we (the biologists) thought we knew

About Piaget:

- There is a stepwise development of human thought, from infancy to adulthood, through fixed, qualitatively different stages that are common to all cultures, though some cultures may fail to attain the top stages.
- Not everything that appears logical and necessarily true to us adults is so

⁴LL, pp. 278–284.

judged by a child, and vice versa. Suitable experiments show where the differences lie.

- Constructivism, a variant of structuralism, is the best theoretical framework to explain the precise patterns of cognitive development. Unlike behaviorism, constructivism stresses the active participation of the child and the role of logical deduction.
- Set theory and propositional calculus are (somehow) central components of the theory.

About Chomsky:

- There are linguistic universals, common to all the different languages the world over.
- These are not superficial, but constitute a “deep structure”.[†]
- This deep structure is innate, not learned, and is unique to our species.
- Formal logic and species-specific computational rules are (somehow) involved in determining deep syntactic structures.
- Syntax is autonomous (independent of semantics and of generic conceptual contents).
- There are syntactic transformations (from active to passive, from declarative to interrogative, etc.) that “preserve” the deep structure of related sentences. Semantics “links up” with syntax essentially at this deep level.
- Behaviorism is bad, while innatism and mentalism are OK.
- The expression “mind/brain” is OK. Linguistics and psychology are, at bottom, part of biology.

The organizers, in fact, knew very little, but they liked what they knew, on both sides. There was every reason (in our opinion) to expect that these two schools of thought should find a compromise, and that this grand unified meta-theory would fit well within modern molecular biology and the neurosciences. Both systems relied heavily on “deeper” structures, on universals, on precise logico-mathematical schemes, on general biological assumptions. This was music to a biologist’s ears.

All in all, it was assumed that the debate would catalyze a “natural” scientific merger, one potentially rich in interesting convergences and compromises.

4. Chomsky’s plea for an exchange, not a “debate”

Commenting on a previous version of the present paper, Chomsky has insisted that he, for one, had always been adamant in not wanting a debate, but rather an

[†]There was at the time some confusion among non-experts between the terms “deep structure” and “universal grammar”.

open and frank discussion, devoid of pre-determined positions and pre-set frontiers: “I am a little uneasy about presenting the whole thing as a ‘Chomsky–Piaget debate’. That’s not the way I understood it, at least, and I thought that Piaget didn’t either, though I may be wrong. As far as I understood, and the only way I would have even agreed to participate, there was a conference (not debate) on a range of controversial issues, which was opened by two papers, a paper by Piaget and my reaction to it, simply in order to put forward issues and to open the discussion.”⁵

Chomsky then adds: “Debates are an utterly irrational institution, which shouldn’t exist in a reasonable world. In a debate, the assumption is that each participant has a position, and must keep to this position whatever eventuates in the interchange. In a debate, it is an institutional impossibility (i.e., if it happened, it would no longer be a debate) for one person to say to the other: that’s a good argument, I will have to change my views accordingly. But the latter option is the essence of any interchange among rational people. So calling it a debate is wrong to start with and contributes to ways of thinking and behaving that should be abandoned.”

After pointing out that, as is to be expected in any ongoing scientific activity, his views are constantly changing and are not frozen into any immutable position, Chomsky insists that neither he, nor Fodor, nor the enterprise of generative grammar as a whole, are in any sense an institution, in the sense in which in Europe Marxism, Freudianism, and to some extent Piagetism, are institutions. The following also deserves to be quoted verbatim from his letter: “There is, thank God, no ‘Chomskyan’ view of the world, or of psychology, or of language. Somehow, I think it should be made clear that as far as I was concerned at least, I was participating by helping open the discussion, not representing a world view”.

These excerpts from Chomsky’s letter should make it very clear what his attitude was. But it is well beyond anyone’s powers now to un-debate that debate, partly because it is the very subtitle of the book (“The debate between Jean Piaget and Noam Chomsky”), and partly because the community at large has been referring to the event in exactly those terms for almost two decades. So, after having made clear which kind of virtual non-debate Chomsky assumed one should have organized, let us finally return to what actually happened.

5. The real debate

From now on, let’s faithfully attempt to reconstruct, from the published records, from the recorded tapes, and from the vivid memory of some of those

⁵With Chomsky’s permission, this, and the following, are verbatim quotes from a letter to M. Piattelli-Palmarini, dated May 8, 1989.

who were present, how all these imaginary, unlikely, virtual debates precipitated into the real one.

Chomsky's written reply to Piaget,⁶ made available a couple of months before the debate, rightly stressed, among other things, the untenability of Piaget's conception of evolution. Not until the first session of the debate proper had anyone realized that Piaget was (Heaven forbid!) a Lamarckian. It was, however, already clear from his distributed "invitation" paper that he had a curious idea of how genes are assembled and of how evolution acts on gene assemblies. Chomsky clearly had got it right and Piaget had got it wrong. This was the first important point in favor of Chomsky. Moreover, Chomsky stressed the need for specificity, while Piaget stressed the need for generality. The concrete linguistic examples offered by Chomsky seemed indeed very, very remote from any generalization of sensorimotor schemata. Some participants already felt sympathetic to Chomsky's suggestion that one should *not* establish any dualism between body and mind, and that one should approach the study of "mental organs" exactly in the way we approach the study of the heart, the limbs, the kidneys, etc. Everything he said made perfect sense and the concrete linguistic examples (which Piaget and the others never even began to attempt to deal with) made it vastly implausible that syntactic rules could be accounted for in terms of sensorimotor schemata. Chomsky's arguments against learning by trial and error were compelling – very compelling. One clearly saw the case for syntax, but one may still have failed to see the far-reaching import of his arguments for learning in general. For this, the participants had to wait until Fodor made his big splash at the meeting. But let's proceed in chronological order.

Most important, to some of the biologists, was the feeling, at first confused, but then more and more vivid, that the *style* of Chomsky's argumentation, his whole way of thinking, was so deeply germane to the one we were accustomed to in molecular biology. On the contrary, Piaget's biology sounded very much like the old nineteenth-century biology; it was the return of a nightmare, with his appeal to grand unifying theories, according to which life was "basically" this or that, instead of being what it, in fact, is. Chomsky's call for specificity and his reliance on concrete instances of language were infinitely more appealing. It became increasingly clear to the biologists at Royaumont that Chomsky was our true *confrère* in biology and that the case for syntax (perhaps *only* for syntax) was already lost by Piaget.

As the debate unfolded, the participants were in for further surprises and much more startling revelations. In order not to repeat needlessly what is already in full length in the book itself, let's recapitulate only the main turning points of the debate.

⁶LL, pp. 35–52.

5.1. The mishaps of “phenocopies”

Upon deeper probing into his rather peculiar idea of “phenocopy”, Piaget indeed turned out to be a Lamarckian. He actually believed in *some* feedback, however devious and indirect, from individual experience to the genetic make-up of the species. The biologists were aghast! Jacob made a marvelous job of politely and respectfully setting the record straight on phenocopies, aided by Changeux⁷ (Monod was not present, and maybe he would have been carried away by the discussion, behaving slightly less courteously to Piaget than Jacob and Changeux did. Monod, haunted by the memory of the Lyssenko affair, always reacted to Lamarckism by drawing his gun!)

Well, believe it or not, Piaget was unruffled. He had the stamina to declare himself “*très surpris*” by the reactions of the biologists, and reject Jacob’s rectifications, quoting a handful of pathetic heretics, obscure Lamarckian biologists who happened to agree with him. The alienation of Piaget from mainstream biology was consummated there and then; patently, he did not know what he was talking about. (The young molecular biologist Antoine Danchin undertook, after the meeting, the task of making this as evident as it had to be made).⁸

Subsequent exchanges with Cellérier and Inhelder showed that they had no alternative explanation to provide for the linguistic material brought in by Chomsky. When they mentioned linguistic examples, these were of a very peculiar generic kind, nowhere near the level of specificity of Chomsky’s material. They pleaded for an attenuation of the “innateness hypothesis”, so as to open the way to the desired compromise. But Chomsky’s counter was characteristically uncompromising: first of all, the high specificity of the language organ, and, therefore its innateness, is not a hypothesis, it is a fact, and there is no way one may even try to maximize or minimize the role of the innate components, because the task of science is to discover what this role actually is, not to pre-judge in advance “how much of it” we are ready to countenance in our theories. Second, it is not true that Chomsky is only interested in syntax, he is interested in every scientifically approachable aspect of language, semantics and conceptual systems included. These too have their specificity and there are also numerous and crucial aspects of semantics that owe nothing to sensorimotor schemata, or to generic logical necessity – no division of labor along these lines, and again no compromise.

The salient moments of this point in the debate can be summarized as follows:

⁷LL, pp. 61–64.

⁸LL, pp. 356–360.

Counters to Piaget from the biologists

Jacob's counter:

- Autoregulation is made only by structures which are there already and which regulate *minor* variations within a heavily pre-determined range of possibles.
- Regulation cannot precede the constitution of genetically determined regulatory structures.
- (Gentle reminder) Individual experience cannot be incorporated into the genes.

Piaget simply did not see the devastating effect of Jacob's counters on his private and idiosyncratic conception of evolution by means of autoregulation. Cellérier was visibly embarrassed by Piaget's anti-Darwinism and tried, I think unsuccessfully, to disentangle the personal attitudes of Piaget in matters of biological evolution from the objective implications of the Darwinian theory for psychology proper.⁹

5.2. The mishaps of "precursors"

During the next session, when Monod was also present, came another major counter, on which Fodor quickly and aptly capitalized:

*Monod's counter*¹⁰

- If sensorimotor schemata are crucial for language development, then children who are severely handicapped in motor control (quadriplegics, for instance) should be unable to develop language, but this is not the case.
- *Inhelder's answer*: Very little movement is needed, even just moving the eyes.
- *Monod's and Fodor's punch-line*: Then what is needed is a triggering experience and not a bona fide structured "precursor".

Once again, it was the impression of several participants that the weight of this counter was not properly registered by the Piagetians. Yet the Monod–Fodor argument was impeccable, and its conclusion inevitable. One thing is a triggering input, quite another a structured precursor that has to be assimilated as such, and

⁹LL, pp. 70–72.

¹⁰LL, p. 140.

on the basis of which a higher structure is actually built. A trigger need not be “isomorphic” with, and not even analogous to, the structure it sets in motion. Admitting that this precursor can be just anything you please (just moving your eyes once) is tantamount to admitting that it is nothing more than a “releasing factor”, in accordance with the innatist model of growth and maturation and against the literal notion of learning. Papert, for instance, went on at great length in offering the virtues of “indirect”, “implicit” learning and of the search for “primitives”. These, he insisted, and *only* these, can be said to be innate, not the highly specific structures proposed by Chomsky. These “clearly” are derived from more fundamental, simpler primitives.¹¹ For this illusion, Fodor had a radical cure up his sleeve, as we will see in a moment. (Healthy correctives to Papert’s, and Piaget’s notion of implicit learning in the specific domain of lexical acquisition are to be found in Atkins, Kegl, & Levin, 1986; Berwick, 1985; Grimshaw, 1990; Jackendoff, 1983, 1990, 1992; Lederer, Gleitman & Gleitman, 1989; Lightfoot, 1989; Piattelli-Palmarini, 1990a; Pinker, 1989.)

Before Fodor’s cold shower a lot of the discussion turned, rather idly, around the existence, in language, of components which are not specific to it, but are also common to other mental activities and processes. Again, a division of labour was proposed along these lines. Chomsky had no hesitation in admitting that there are also language factors that are common to other intelligent activities, but rightly insisted that there are many besides which are unique to language, and which cannot be explained on the basis of general intelligence, sensorimotor schemes, communicative efficacy, the laws of logic, problem-solving, etc. These language-specific traits, Chomsky insisted, are the most interesting ones, and those most amenable to a serious scientific inquiry.

5.3. Chomsky’s plea for specificity

Here is an essential summary of the line he defended:

*Chomsky’s argument for specificity*¹²

The simplest and therefore (allegedly) most plausible rule for the formation of interrogatives

The man is here.

Is the man here?

¹¹LL, pp. 90–105.

¹²LL, pp. 39–43.

is the following (a “structure-independent” rule): “Move ‘is’ to the front”.
But look at

The man who is tall is here.

*Is the man who tall is here? (bad sentence, never occurring in the child’s language)

Is the man who is tall here? (good sentence)

The “simple” rule is never even tried out by the child. Why?

The correct rule, uniformly acquired by the child is not “simple” (in this transparent and shallow sense of the word) and involves abstract, specifically linguistic notions such as “noun phrase”.

Therefore it is not learned by trial and error and is not derivative on sensorimotor schemata. (What could the motor equivalent of a noun phrase conceivably be?)

This is, somewhat bluntly put, the core of the argument. If the process were one of induction, of hypothesis formation and confirmation, we should expect to see the simplest and least language-specific rules being tried out first. But this is not what we observe. More specific data on language acquisition in a variety of languages and dialects (Berwick & Wexler, 1987; Chien & Wexler, 1990; Guasti, 1993; Jusczyk & Bertoncini, 1988; Lightfoot, 1989; Manzini & Wexler, 1987; Wexler, 1987; Wexler, 1990; Wexler & Manzini, 1987) by now make the case against learning syntax by induction truly definitive. We will come back to this point.

*Chomsky’s argument against any derivation of syntactic rules from generic constraints*¹³

We like each other = each of us likes the others

We expect each other to win = each of us expects the others to win

Near-synonymous expressions:

“each other” = “each . . . the others”

BUT

*We expect John to like each other

¹³LL, pp. 113–117.

is NOT well formed and is NOT synonymous with

Each of us expects John to like the others

WHY? There is no obvious logical or communication-theoretical explanation. (There aren't even non-obvious ones, at that).

The linguistic rule is of the following kind. In embedded structures of the form

... X... [... Y...]

where X and Y are explicit or understood components (names, pronouns, anaphoric elements etc.) no rule can apply to X and Y if the phrase between brackets contains a subject distinct from Y.

The nature of this rule is specifically linguistic: the rule has no conceivable sensorimotor counterpart, nor any justification in terms of general intelligence.

Further confirming evidence (just apply the rule):

- | | |
|---|-------|
| The men heard stories about each other. | (OK) |
| *The men expect John to like each other. | (bad) |
| Who did the men hear stories about? | (OK) |
| *Who did the men hear John's stories about? | (bad) |
| John seems to each of the men to like the others. | (OK) |
| *John seems to the men to like each other. | (bad) |

Evidence from another language:

- | | |
|------------------------------|-----------|
| J'ai laissé Jean manger X. | |
| J'ai laissé manger X à Jean. | (both OK) |

These are apparently freely interchangeable constructions, but the symmetry is broken in the next example:

- | | |
|---------------------------------|-------|
| J'ai tout laissé manger à Jean. | (OK) |
| *J'ai tout laissé Jean manger. | (bad) |

NB: *Update*. These phenomena have received much better and deeper explanations in recent linguistic work, in terms of "complete functional complexes" (for a summary, see Giorgi & Longobardi, 1991; Haegeman, 1991). The overall thrust of Chomsky's argument for specificity comes out further reinforced.