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Commentary / Chomsky: Rules and representations

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Passing the buck to biology

I think that Chomsky's claim that universal grammar is inately fixed in the form of explicit rules is gratuitously strong. That is, although on a sympathetic interpretation it could turn out to be true, the evidence and argument so far adduced support only a milder and less specific version of the thesis (roughly) there are innately fixed structural features - design features - that specifically constrain the development of linguistic competence in the child. So stated, the thesis is no news at all; what is news, and not entirely welcome news, is that the constraints are much stronger than one might have thought. Since I know from discussions that other commentators - e.g., Searle - will produce good arguments against Chomsky's strong version, I will take the opportunity to comment on why even a milder version of this thesis is in a certain respect unwelcome (We should always seek Truth, but what we find may nevertheless be regrettable on occasion). This is intended not as an objection to Chomsky, but as reflections on the context in which his arguments take place.

We can all agree, these days, that extreme tabula rasa theories of learning or cognitive development are false. Even Skinner acknowledges the necessity of a modicum of genetically transmitted structure for fixing the effects on the organism of his postulated reinforcers. And no one flies to the opposite extreme and denies that there is phenotypic learning (or differential development) in response to different environments or perceptual histories. The truth lies somewhere in the middle, and the disagreements concern the amount, specificity, and detailed structure of the innate contribution. Perhaps no one supposes there is a larger innate contribution than Chomsky does, and perhaps the facts will eventually bear out a position close to his, but his polomics sometimes ignore the perfectly reasonable motivation behind the contrary perspective - what we might call the minimalist research strategy.

Moving more and more structure into the category of innate may help us to get a more realistic picture of the individual capacity for cognition and learning, but what is innate must have been "learned" in evolutionary history, so the task of explaining the genesis of the design in the organism remains. Views imputing a minimally-prestructured organization to the infant (that easily succumb to empirical refutation) may nevertheless be rehabilitated if they are interpreted as rational reconstructions of the genesis of intelligence. View them, perhaps, on the model of social contract myths, or Rawls's "original position" thought experiment, which are attempts to explain the genesis of social or political structures, rules, or principles at a level of abstraction that renders them immune from disconfirmation by brute historical fact. Of course, there is no guarantee that such a high level of abstraction will yield any reliable or theoretically useful results, but there may be no practical research alternatives - due to the simple inaccessibility to research of the actual processes one wants to describe

Let me add one more specimen to this garden of analogies: Suppose the evidence mounted in support of the hypothesis that life did not in fact evolve on Earth from the lifeless soup of preorganic molecules; rather the Earth was seeded at some early time by living "sporus" (or whatever) from elsewhere in the universe, perched on some meteor, or intercepted while floating by. There is something profoundly unappealing about this hypothesis, and it is easy to say what it is if it is true, then the fascinating question of how life developed from nonliving "materials" (as must have, somewhere} becomes drastically less accessible to study for example, if we will not be able to rely on well-grounded assumptions about the prevailing conditions on Earth during various periods of its early history as boundary conditions for candidate scenarios of this momentous development, then our efforts to devise and confirm the right scenario will probably be too unconstrained to permit anything but "unscientific" speculation. We would like to be able to view the infancy of the Earth as a sufficient tabula rasa for the genesis of life, "gifts" of life from elsewhere would be most unwelcome, for it would be immensely more difficult to infer the genesis of their design than the entire process could be assumed to occur locally. Unwelcome through such a hypothesis would be it is empirically possible, and one can imagine being able to prove that it was true - e.g., from arguments that fixed a maximal speed of mutation and selection and showed that there had not been enough time on Earth for the whole process to have occurred locally.

Chomsky's arguments, from the poverty of the stimulus and the speed of language acquisition, are analogous, they purport to show that there must be large gifts of design in the infant if we are to explain the speedy development of the mature competence. And while we can take solace in the supposition that we may someday be able to confirm the presence of these innate structures by direct examination of the nervous system (like finding fossils of our extraterrestrial ancestors), we will have to accept the disheartening conclusion that a larger portion than we had hoped of learning theory, considered in its most general form as the attempt to explain the transition from utter ignorance to knowledge, is not the province of psychology at all, but rather of evolutionary biology at its most speculative. The more the infant brain can be viewed as a tabula rasa, the more accessible to experimental research the ultimate mysteries of learning will be, if the facts constrain psychologists to pass the buck to the evolutionary biologists, we will have to settle for more abstract and speculative answers to the ultimate questions. No a prior argument could refute Chomsky's empirical contention about the amount of innate structure actually to be found in the infant, but it is nevertheless reasonable to hope, for the sake of science, that he has overstated the case

Note
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