What kind of evidence could refute the UG hypothesis?

Commentary on Wunderlich*

Michael Tomasello
Max-PIanck-Institut für evolutionäre Anthropologie, Leipzig

A science is a series of 'conjectures and refutations'. The most powerful conjectures are those that are formulated in such a way that they may be easily refuted by observation. On this account, Universal Grammar is an extremely weak hypothesis. This is because (i) there are very few precise formulations of exactly what is in UG (Wunderlich's list on pp. 620–623 being an admirable exception), and (ii) there are very few suggestions for how one might go about testing any precise conjectures that are put forward.[1]

Although the most common practice is to invoke UG without specifying precisely what is intended, there are some specific (though mostly non-exhaustive) proposals. The problem is that these proposals assume UG to be very different things. For example:

- In his textbook, O'Grady (1997) proposes that UG includes both lexical categories (N, V, A, P, Adv) and functional categories (Det, Aux, Deg, Comp, Pro, Conj).
- Jackendoff's (2002) proposal includes X-bar syntax and the linking rules 'NP = object', and 'VP = action'. Pinker (1994) agrees and adds 'subject' and 'object', movement rules, and grammatical morphology.
- The textbook of Crain and Lillo-Martin (1999) does not provide an explicit list, but some of the things they claim are in UG are: *wh*-movement, island constraints, the subset principle, head movement, c-command, the projection principle, and the empty category principle.
- Hauser, Chomsky, and Fitch (2002) claim that there is only one thing in UG and that is the computational procedure of recursion. Chomsky (2004) claims that the only thing in UG is the syntactic operation of merge.
- Baker (2001) lists a very long set of parameters in UG, including everything from polysynthesis to ergative case to serial verbs to null subject. Fodor (2003) gives a very different list, with only a couple of overlaps, for example: V to I movement, subject initial, affix hopping, pied piping, topic marking, I to C movement, Q inversion, and oblique topic.

Studies in Language 28:3 (2004), **642–645.**
ISSN 0378–4177 / E-ISSN 1569–9978

- Proponents of OT approaches to syntax put into UG such well-formedness constraints as stay, telegraph, drop topic, recoverability, and MaxLex (see Haspelmath 2003 for a review).
- And Wunderlich (this special issue) has his own account of UG, which includes: distinctive features, double articulation, predication and reference, lexical categories, argument hierarchy, adjunction, and quantification (he specifically excludes many of the other things on the above lists).

The variety of different things on this list is enough to give one pause, for sure — are they all really talking about the same thing? The problem is that there do not seem to be, as far as I can tell, any direct debates anywhere in the literature among these or other researchers about which of these or other accounts of UG should be preferred and for what reasons. Each researcher is simply free to invoke 'UG' in whatever form is convenient for the argument at hand. Nor is there any discussion about what type of innateness we are talking about, for example, Elman et al.'s (1996) architectural innateness or representational innateness. It is perhaps telling that evolutionary psychology à la Pinker (1997), which proposes various innate cognitive modules including language, suffers from the same basic problem: everyone has a different list of innate cognitive modules, and there are no agreed upon methods for deciding among them.

As far as I can tell as an outsider, the normal procedure in generative linguistics is either to assume the existence of UG or to provide confirmatory evidence for it. Confirmatory evidence is mainly (i) the possibility of describing any and all languages in terms of X-bar syntax, movement rules, and so forth; (ii) certain 'logical' arguments such as poverty of the stimulus; and (iii) the existence of empirical phenomena such as deaf children who create their own languages, people who supposedly have defective grammar genes, linguistic 'savants', and selective language deficits in aphasic persons. But (i) just about any language can be forced into just about any descriptive system if one is Procrustean enough and has the possibility to hypothesize parameters as needed (witness the erstwhile success of describing all European languages in terms of Latin grammar); (ii) in science logical demonstrations are only as good as their premises, which are demonstrably false in the case of at least some poverty of the stimulus arguments (Pullum & Scholz 2002); and (iii) all of the empirical phenomena typically cited in favor of an innate UG are also consistent with the existence of biological adaptations for more general skills of human cognition and communication (Tomasello 1995, 2003).

No, as philosophers of science since Popper (1959) have emphasized, the quest to confirm a scientific hypothesis is fruitless: we simply propose a hypothesis and hope it stands up to attempts at falsification. If it is constructed in a way that makes it immune to falsification, then it may be a pretty picture of the world (as, for example, Freudian psychology or Marxist sociology), but it is not science. So what could constitute falsifying evidence for a specific UG proposal? Most directly, one would think that the existence of significant cross-linguistic variation in such things as basic grammatical categories would potentially falsify the UG hypothesis

(especially when no one has as yet proposed anything like an adequate set of parameters to explain the variation, much less any kind of theoretical account to 'link' UG to language particular grammatical categories, i.e., a theory of 'triggers'; Fodor 2003). But apparently it does not. Even more strongly, one would assume that if a basic 'nonparameterized' linguistic phenomenon was not universal among all languages, it could not be a part of UG. But many languages show no evidence of having any form of movement rule, and yet it is widely assumed by generative linguists (if not by Wunderlich) that these languages nevertheless employ 'covert' movement. And many languages show a nonconfigurational pattern of phrase structure organization, but still X-bar syntax is assumed to be universal (e.g. Radford 1997). If these kinds of observations do not falsify the UG hypothesis, then what kinds of observations possibly could?

One final point. I think it is important that the oddness of the UG hypothesis about language acquisition be emphasized; it has basically no parallels in hypotheses about how children acquire competence in other cognitive domains. For example, such skills as music and mathematics are, like language, unique to humans and universal among human groups, with some variations. But no one has to date proposed anything like Universal Music or Universal Mathematics, and no one has as yet proposed any parameters of these abilities to explain cross-cultural diversity (e.g., +/- variables, which some cultures use, as in algebra, and some do not — or certain tonal patterns in music). It is not that psychologists think that these skills have no important biological bases — they assuredly do — it is just that proposing an innate UM does not seem to be a testable hypothesis, it has no interesting empirical consequences beyond those generated by positing biological bases in general, and so overall it does not help us in any way to get closer to the phylogenetic and ontogenetic origins of these interesting cognitive skills.

And so in the context of this special issue on "What counts as evidence in Linguistics? — The case of innateness", my challenge to Wunderlich and other proponents of an innate UG — a challenge that may be directed at anyone in any scientific field who proposes any hypothesis — is simply: What exactly is and is not in UG and what kind of evidence could possibly refute the UG hypothesis?

Notes

* I would like to thank Adele Goldberg for useful comments on an earlier draft.

1. I am following Wunderlich throughout in assuming UG to be a hypothesis about "a human specific learning algorithm towards language", a brain module genetically specified for language.

References

Baker, M. 2001. *The atoms of language.* New York: Basic Books.

Chomsky, N. 2004. "Three factors in language design: background and prospects". Invited address at the 78th annual meeting of the Linguistic Society of America, Boston.

Crain, S.; and Lillo-Martin, D. 1999. *An introduction to linguistic theory and language acquisition.* Oxford: Blackwell.

Elman, J. L.; Bates, E.; Johnson, M.; Karmiloff-Smith, A.; Parisi, D.; and Plunkett, K. 1996. *Rethinking innateness: a connectionist perspective on development.* Cambridge, MA: MIT Press.

Fodor, J. 2003. "Evaluating models of parameter setting". Handout, LSA Summer Institute.

Hauser, M. D.; Chomsky, N.; and Fitch, W. T. 2002. "The faculty of language: what is it, who has it, and how did it evolve?". *Science* 298: 1569–1579.

Haspelmath, M. 1999. "Optimality and diachronic adaptation". *Zeitschrift für Sprachwissenschaft* 18(2): 180–205.

Jackendoff, R. 2002. *Foundations of language: brain, meaning, grammar, evolution.* New York: OUP.

O'Grady, W. 1997. *Syntactic development.* Chicago: Chicago University Press.

Pinker, S. 1994. *The language instinct: how the mind creates language.* New York: Morrow Press.

Pinker, S. 1997. *How the mind works.* New York: Norton.

Popper, K. 1959. *The logic of scientific discovery.* New York: Basic Books.

Pullum, G.; and Scholz, B. 2002. "Empirical assessment of stimulus poverty arguments". *Linguistic Review* 19: 9–50.

Radford, A. 1997. *Syntactic theory and the structure of English.* Cambridge: CUP.

Tomasello, M. 1995. "Language is not an instinct". *Cognitive development* 10: 131–156.

Tomasello, M. 2003. *Constructing a language: a usage-based theory of language acquisition.* Cambridge, MA: Harvard University Press.

Author's address

Michael Tomasello
Max-Planck-Institut für evolutionäre Anthropologie, Leipzig
Deutscher Platz 6
D-04103 Leipzig
Germany

tomas@eva.mpg.de