More Misrepresentation: a response to Behme and Evans 2015.

David Adger June 2015

Abstract: This response to Behme and Evans (2015) points out that understanding and correct representation of perspectives to be criticised is crucial for any kind of engagement. It then sequentially examines the points raised and tries to distinguish the content of the argument from its surrounding rhetoric. It concludes that there is a paucity of the former and an abundance of the latter.

1. Introduction

I'd like to begin on an ecumenical note. I thoroughly believe in theoretical pluralism in linguistics. The study of language is a vast field and our knowledge and understanding of language, though undoubtedly growing, is at a primitive stage. Because of this, I believe we need many researchers coming from different perspectives, tackling many different aspects of the phenomenon. My own personal research has included working with individuals who have backgrounds in constructionist approaches to linguistics, variationist sociolinguistics, cultural evolution, interactional sociolinguistics, and artificial language learning among others (Adger and Trousdale 2008, Adger and Smith 2010, Mesoudi, McElligott and Adger 2011, Cheshire, Adger and Fox 2013, Culbertson and Adger 2014). From this experience, I know that interactions between people working from very different theoretical and methodological viewpoints can be enlightening, enriching and lead to a general improvement in theoretical understanding. Indeed, of the authors of Behme and Evans (2015), Evans at least, has made important contributions to linguistics in his work in Cognitive Grammar. Cognitive Grammar has made empirical discoveries with cross-framework relevance and developed insightful theoretical accounts of aspects of language that generative grammar has little to say about. Both theoretical approaches make different contributions to the shared enterprise of understanding language.

However, not everyone shares this perspective on theoretical pluralism, as Evans 2014 (*The Language Myth*, hence TLM) makes clear. That book proposes that the perspective of generative grammar, at this point in time, has nothing to offer the study of language (indeed, TLM takes it to be inimical to progress). It attempts an attack on what it takes to be the fundamental commitments of the generative approach. I argued in Adger (2015) that this attack is a failure, because it is aimed at a caricature of the generative viewpoint. Behme and Evans (2015) (hence BE15) responds to my argument but, as I'll show below, there's little content to that response.

The important point that emerges from this exchange, I believe, is that we linguists make better progress when we try to understand each other's work and learn from each other. Launching broadsides on each other's theoretical perspectives, whoever does the launching, is a waste of time and effort. However, when such broadsides are launched, it is important to correct misunderstandings and misrepresentations, so that people not directly engaged in the debate are not misled. This is what Adger (2015) does with respect to TLM, and I repeat that exercise here, attempting to draw out what is contentful in BE15, and to distinguish that from the associated rhetoric, in the hope that the various misconceptions about generative grammar begun in TLM and continued in BE15 will not proliferate further.

2. Content and Rhetoric

BE15 begins with a couple of curious paragraphs that make the following argument: TLM has received a lot of hostile attention from generative linguists, which is surprising because TLM's arguments are unoriginal, having been made elsewhere in the literature; it is difficult

to understand why Adger focuses so much effort on TLM which is a soft target, riddled with mistakes.

What is content and what is rhetoric here? In terms of content, BE's argument is a non-sequitur that includes an unfounded speculation about my motivations. In fact, TLM had a critical reception amongst generative linguists because it thoroughly misrepresents generative grammar and makes a series of basic errors. That some researchers have made criticisms of generative grammar is irrelevant to whether TLM misrepresented the field. As for my motivations, I gave TLM a negative review because of its misrepresentations and mistakes. It is also deliciously ironic that BE15 criticises me for focusing on a popular science "soft target" rather than on technical literature, when the main target of TLM itself is Steven Pinker's *The Language Instinct*.

In terms of rhetoric, the first section of BE15 is couched in hyperbolic terms that do it no favours: I apparently 'condemn Evans'; 'legions of minimalists invaded' Evans' Facebook page; there was 'minimalist fury'; Chomsky has 'confessed' to his linguistics resting on ontological foundations that make no sense and paragraphs are packed with citations as though that counted as an argument.

Of course, I didn't condemn anyone. I simply criticised a published work, as is normal in academic discourse. Evans, on his public Facebook page, where he advertised TLM and his associated blog, provided a quote by Chomsky to back up an assertion that he was making about generative grammar, but it turned out that he had taken the quote out of context and Chomsky was actually saying the exact opposite – the people that corrected him were simply responding to his error; there was no 'fury' – just astonishment that someone would misrepresent work so egregiously. In fact, it's perhaps worth excavating this situation in some more detail to get a sense of the rhetorical tack that TLM takes and that is repeated throughout BE15.

Page 93 of TLM provides the following statement, which the debate on Evans' Facebook page centered around: "Chomsky famously proposed a Universal Grammar, which he dubs 'a general principle of linguistic structure on the basis of observation of a single language': English". TLM gives a reference for this claim, (page 48 of Chomsky 1980), but when one follows up the reference (as David Pesetsky did), it turns out that Evans' statement profoundly misrepresents what Chomsky wrote. First, Chomsky did not propose "a Universal Grammar, which he dubs 'a general principle of linguistic structure'", and he certainly didn't propose a Universal Grammar on the basis of observation of a single language, English. In fact, that passage, as can be checked by simply reading it, is about the legitimacy of inferring the existence of general principles of linguistic structure on the basis of one language, and Chomsky points out that any such an inference is non-demonstrative and needs to be tested by looking at other languages (Chomsky gives an example of how languages vary in their capacity to stack relative clauses, comparing English and Japanese on page 48-49, and concluding that an inference leading to a principle barring such stacking for non-restrictive relative clauses would not be legitimate because the cross-linguistic data do not support it – the opposite of what TLM claims he says).

By misusing the quotation from Chomsky, TLM created a caricature of the actual position that generative grammar takes, which it then proceeded to criticise. This is what happens throughout TLM: time and time again, incorrect claims about generative grammar are made, and when they are backed up, they are backed up by misuse of quotations. What is criticized is not the generative position, it's a chimaera invented to allow TLM to make an attack.

In fact, BE15 itself repeats this device of misused quotation in Chomsky's 'confession'. BE15 states the following: "Chomsky himself confessed that his linguistics rests on an ontological foundation that forces us to 'accept things that we know don't make any sense' (Chomsky 2012:91)". But if one reads the passage, Chomsky is in fact discussing Nelson Goodman's nominalism (that is, the notion that there are no distinctions of individuals without distinctions of content, from which it follows that there are no abstract constructed classes like sets). In

the full quote, what we find is: “But I came to the conclusion that it's [i.e. a nominalist view without sets, DA] either premature or hopeless, and if we want a productive theory-constructive [effort], we're going to have to relax our stringent criteria and accept things that we know don't make any sense, and hope that some day somebody will make some sense of them - like sets”. This is a discussion of whether one should accept a nominalist metaphysics, and Chomsky is just saying he thinks that, currently at least, we should pursue theory construction using tools we understand, rather than letting metaphysical issues take precedence. BE15 presents this as a ‘confession’, but once again, it is misused quotation, compounded with personalised and hyperbolic language.[1]

The major rhetorical moves seen in this first section are repeated throughout BE15: misleading statements; insinuations about motivation; quotes taken out of context; hyperbole. If there is a debate to be had between generativist linguistics and non-generativist linguistics, it can't progress unless basic standards of scholarship are maintained, and both TLM and BE15 fail to maintain these.

3. Substantive Issues

3.1 “Instinct”

BE15 then looks at the use of the term ‘language instinct’. I objected to TLM’s use of this term because ‘linguists talk rather of an innate capacity triggered by, and partly shaped by, experience’ (Adger 2015:76). BE15 gives a long list of quotes from people, including Boeckx, Chomsky, McGilvray, Schwartz and Tsimpli and concludes that “the term is used without qualification in formal and informal discourse alike”. First, my point was that it is not used as a “scientific term”, not that it is not used *tout court*. But more importantly, I simply invite the reader to go through the quotes BE15 provides and find a single case where the term ‘language instinct’ is used without qualification as a description of what generative grammar claims: in fact, it always either appears in scare quotes or with qualifiers (e.g. “in this sense”, “in this respect”, “something akin” etc.)[2]. There is no argument here, and the evidence provided does not back up the statement made.

What about the rhetoric? BE15 seems to assume that readers will not attend closely enough to the quotations to detect the misrepresentation here, which does readers of Lingua a disservice, I think. In an insinuation about double standards, BE15 states that I am apparently unconcerned about a headline in a popular science magazine that uses the term ‘language instinct’ of my own (joint) research; as is obvious, neither I nor my coauthor have any control over what journalists write as headlines to news stories. It is frankly depressing to encounter such innuendo in an academic debate. Thankfully, some amusement follows, when BE15 finishes off the subsection by castigating me for wasting ‘time and printing space with the pointless terminological quibbles’. In fact, I wrote 162 words on this topic, as opposed to BE15's 993 words, over six times as much.

3.2 Recursion

The next section of BE15 is on recursion, and attempts three arguments, which I’ll take in

---

[1] In a further example of out of context quotation, BE15 in their footnote 5, quote me as saying that TLM relies on “work presented in a 20 year old popular science book” and berates me for ignoring the more recent work cited in TLM. Readers of my review may recall that that that criticism was not about the book in general, but the discussion of double dissociation, though BE15 uses the quote to suggest that I am criticizing the whole book for this failing.

[2] A potential counterexample to this might be thought to be given by Tsimpli 2013, which is titled ‘(Evidence for) the language instinct’, with no scare quotes. However, if one reads the article, it is in fact a nineteen page qualification of the term and the upshot of the discussion is that the evidence for something one would want to call an instinct is inconclusive.

turn. The first is of the following form: Adger ‘accuses’ (note the personalised language, again) Evans of conflating two notions of recursion, but Chomskyans don't use the term ‘recursion’ consistently, so it is legitimate for TLM present recursion in the way it does, a way that I argued was confused. This first argument is another non-sequitur, served with a dollop of rhetoric. Even if generative linguists as a group do not use the term consistently, that does not excuse the writer of a book for lay readers from deploying it correctly in making criticisms. Indeed, one might argue that it is incumbent on such a book to clarify the relevant distinctions, but TLM shows no evidence that its author is even aware of the relevant distinction.[3]

BE15 then states that ‘clarifying this issue is certainly desirable” and offers four definitions of recursion, but these just add further confusion, rather than clarity, to the discussion.

In my article, I distinguished two concepts that the term ‘recursion’ picks out in generative grammar, and I argued that TLM’s not distinguishing these led to a mischaracterisation of the issues. I provided analogies, not definitions, for these distinct concepts, as my piece was not intended to be a technical discussion, but rather a commentary on a book aimed at a popular audience. One use of ‘recursive’ refers to the class of computable functions. It is very clear, throughout my piece, that this notion is the relevant one for generative grammar's fundamental claim that the best scientific model of the human linguistic capacity has at its heart “a computable function that creates, from a finite list of basic bits of language, a potentially infinite set of structures, each associated with sound and meaning” (Adger 2015: 78) and that the “hypothesis is that this particular function is specialized to human language” (Adger 2015:79). For the avoidance of doubt, the idea is not just that human language is computable (some perspectives, such as Cognitive Grammar would dispute even that claim), it is that there is a particular computable function with particular properties (the current hypothesis involves the function Merge, on which, see below). This use of the term ‘recursion’, to mean computable, has been stable throughout the history of generative grammar (see Lobina 2014 for extensive discussion). I distinguished this from the use of ‘recursion’ to signify self-embedding of category in a generated structure. These are quite distinct uses of the term and correspond to the first and (very roughly, to the) last of BE15's definitions.

BE15 also discusses *recursive definition*[4] and *recursively defined grammar*. To my knowledge BE invents the latter term, at least as a term in linguistics, and I'll not discuss it any further, as it simply piles confusion on confusion.

BE15’s discussion of *recursive definition* is rather narrow, as it only picks out definitions where a function calls itself, as in computer science, rather than where a set of objects is defined recursively (this more general case is also known as a *definition by induction*, see Kleene 1952: 258-261). BE15 states the following:

---

[3]We find another misquotation here. BE15 quotes Hauser et al. 2002 as saying “**The** core property of FLN is recursion ... **it** takes a finite set of elements and yields a potentially infinite array of discrete expressions” (Hauser et al., 2002: 1571). But actually the quote is “All approaches agree that **a** core property of FLN is recursion, …. **FLN** takes a finite set of elements and yields a potentially infinite array of discrete expressions.” The difference between the indefinite and definite article here is important, as is the substitution of the pronoun ‘it’ for the noun ‘FLN’. BE15’s quote suggests that recursion is the unique core property of the narrow faculty of language, and that recursion takes a finite set and yields a potentially infinite array. What is actually implied by the indefinite article (and later explicitly stated (Hauser et al. 2002:1573)) is that there are other core properties of FLN (a set of principles mapping structures to the interfaces). Further, it is FLN as a whole (not recursion, which is a property of FLN) that yields the potentially infinite series of discrete expressions. There is a deep misunderstanding of the object of criticism underlying this kind of cavalier misquotation, and those reading TLM and BE15 should be aware that the authors really don’t understand at all the position they they are attacking.

[4]BE15 makes here an elementary mathematical mistake and gives a recursive definition of factorials, while specifying that it is giving a recursive definition of non-negative numbers. This is ironic, given that “clarifying this issue is certainly desirable.”

“Merge is not recursive in either the sense of ‘defined by recursion’ or the sense of a recursive rewriting grammar. When Chomsky refers to recursion in the context of minimalism, he is tacitly referring to iteration of the Merge operation”.

There are a number of misleading aspects to this statement, as it implies that definition by recursion is not relevant to Merge and that Minimalist syntax has at its core an operation which is fundamentally iterative not recursive. These implications may not be intended, but are incorrect, and should be addressed for clarity's sake.

While it is true that Merge itself is not recursive in the sense of ‘defined by recursion’, Merge is a crucial component part of the recursive definition of syntactic objects in minimalist syntax. For example, Adger (2010:186), following the definition in Chomsky (1995:243) gives:

“(1) a. lexical items are syntactic objects.
b. If A is a syntactic object and B is a syntactic object, then Merge of A and B, K = {C, {A, B}}, is a syntactic object.”

(1a) here is the base case of the recursive definition, while (1b) is the recursive (inductive) step that defines all the elements of the set. Merge is therefore the structure building part of a recursive definition of syntactic object (later formulations remove the label C, so that the Merge of A and B is simply the set {A, B} and the empirical effects that seem to require labels are dealt with via other aspects of the theory, e.g. Adger 2013, Chomsky 2013). It is true that Merge applies *iteratively* in a derivation of some syntactic object, but it is a crucial part of the *recursive* specification of what constitute the well-defined steps in that derivation (again Lobina 2014 is particularly clear here, but the idea is already clear in Chomsky 1967: pp 398, 405-408, and especially the associated footnote 12; the distinction between a recursive system and iteration of Merge is appealed to by Chomsky 2004:108 in his definition of the notions *contain* and *term-of*).

The actual content in BE15's first argument about recursion is negligible, while the rhetorical device here is a kind of *tu quoque* argument in reverse: generativists use the term ‘recursion’ inconsistently, so it's ok that TLM can. BE15's four definitions of recursion either just repeat what I wrote in Adger (2015), or are some combination of mistaken, misleading and made-up.

BE15's second argument in its discussion of recursion goes as follows: Adger says that a special property of the human mind can be ‘scientifically understood as a kind of mathematical function’ (Adger 2015: 76). But functions are abstract objects, which do not exist in space and time, so Adger is conflating abstract models of grammar with biophysical implementations of grammars.

There are philosophical positions where grammars are taken to be abstract objects (Katz 1981, Soames 1984) and our grammatical theories are theories about those abstract objects. But one doesn't have to accept such positions, and few do. This is because there is a very well established and well-understood alternative, which is to say that our grammatical theories are theories about physical objects, but at a level of abstraction from biophysical mechanism (the *locus classicus* of this is Marr 1982). Generative grammar takes the right level of abstraction to be one at which a particular computable function can be specified, as this is the level at which an explanation can be given of a basic property of human beings: our capacity to systematically pair sound and meaning over an unbounded domain by using discrete symbolic resources. The explanation given by generative grammar is that the human mind implements a particular computable function that creates an unbounded set of hierarchically structured objects that interface in particular ways with the systems of sound and meaning. The physical implementability of computable functions is rather fundamental to our post-Turing world, and I assume that BE15 was written on a physical machine that performed computations, so its authors are familiar with how physical material can implement computable functions. There is no conflation of abstract objects and biophysics.

There is indeed a question about brain implementation, but it's not a question that any subdiscipline of psychology that looks at higher cognitive functions has much of a grasp on (see Embick and Poeppel 2015 for recent review of the issues). Certainly, TLM provides no suggestions as to how the 'cooperative instinct' that it espouses is implemented in brain states.

The final argument in this section is more complex rhetorically. It goes as follows: Adger says that Evans presents (bad) arguments against 'recursion' being specifically human, but Evans explicitly states that he does not equate human and non-human abilities, rather Evans writes "my claim is simply this: recursion appears not to be a uniquely human trait". What Evans means by recursion here is a pattern recognition ability in starlings continuous, from an evolutionary perspective, with the human ability to recognise recursive patterns in speech. When Corballis (2007) concludes that there was no evidence that starlings were 'truly capable of recursive syntactic parsing', what Evans wrote is compatible with that. Finally, Adger should have anyway focussed on other examples Evans gave.

The intellectual tortuousness of this line of reasoning is, I must admit, beyond me. I think what is being said is that the starling research shows that species other than humans can recognise patterns in sounds, and somehow this is an argument that the human capacity for language is possibly like that pattern recognition ability, inasmuch as it could be continuous with it in evolutionary terms. Well, it could be, I agree; after all, birds and humans share an ancestor at some point. Indeed there is some evidence for similar genes being involved in various organisms that have vocal learning (Pfenning et al 2014). But vocal learning is not related to recursion in any of its senses and that is the point at issue.

BE15's argument, such as it is, appears to appeal to some kind of guilt by association: pattern recognition in starlings is sort of like recursion in humans if you defocus your intellect sufficiently, so it follows that "recursion appears not to be a uniquely human trait". Well, no. Pattern recognition appears not to be a uniquely human trait.[5]

4. Localisation

The final set of arguments returns to simple misuse of quotation. BE15 states that I claim that TLM incorrectly attributed to minimalists the view that "language should be anatomically lumped together in a single bit of our brains." I followed this, in Adger (2015), with the statement: "But there's no logic to this", and BE15 makes two criticisms of my discussion: it is not a point of logic, and anyway Evans in TLM or the associated article doesn't hold that view. However, BE15 misses out the first half of my sentence. What I actually wrote was: "We've seen so far that linguists have postulated the existence of a human capacity for language. They have modeled this capacity by saying it's best understood as a kind of computable function. Their hypothesis is that this particular function is specialized to human language: it is a distinct part (or module) of the human mind. Evans' book and article both claim that a consequence of this idea is that language should be anatomically lumped together in a single bit of our brains. But there's no logic to this."

What there is no logic to is not just that "language should be anatomically lumped together in a single bit of our brains", but the implication that that is a consequence of modularity, as would have been clear if BE15 had given the whole sentence rather than chopping off the first part. BE builds an argument on the basis of this partial quote about Chomsky's analogy of

[5] There's also a footnote that says that it is "surprising that Adger would rely on Corballis (2007)" for a discussion of starlings because Fitch and Frederici (2012) has criticised Corballis's discussion of tamarin monkeys. Aside from the star(t)ling non-sequitur, it's not surprising. I cited Corballis, because he was, to my knowledge, the first to make the point that the results could be explained via counting, rather than centre-embedding. That's usually considered to be good academic practice rather than something that would occasion surprise.

language to the visual system (which is broadly anatomically localised), but the argument is otiose, as I wasn't attributing illogicality to the consequent, but to the inference. For the avoidance of doubt, the implication is the following: a consequence of the idea that the function is specialised to language (call this idea P) is that language should also be anatomically specialised (call this Q). What I was objecting to the logic of is that P → Q (indeed, I even helpfully used the word 'consequence', to no avail, apparently). In fact, P does not imply Q here, as I pointed out. Q may hold independently or not, but it doesn't follow from P.

I wrote that Evan's book and article both make this claim (that modularity implies localization). It's curious to see BE15 denying this and writing that Evans doesn't hold this view. Here, for example, is a quote from the Aeon article "Well, if language emerges from a grammar gene, which lays down a special organ in our brains during development, it seems natural to suppose that language should constitute a distinct module in our mind. There should be a specific region of the brain that is its exclusive preserve, an area specialised just for language." And here is a relevant quote from TLM, which opens the chapter on modularity and characterizes the (purported) myth "The language module occupies a dedicated neural architecture in the brain: it is specialized for processing grammar and is inaccessible to other mental modules". But the mind is an abstraction from neural mechanisms, so taking something to be a module of the mind does not mean that there are either "specific regions" or even "dedicated neural architecture". In fact, as mentioned above, the issue of how the brain neurally implements the linguistic capacity, or any other higher cognitive function, is wide open.

BE15 then raise a couple of quotations by Chomsky where he suggests that "some small genetic modification somehow rewired the brain slightly" (Chomsky 2012:12-13). BE15 adds to this the claim that "The default assumption would be that a fairly localized brain-rewiring would be called slight". This is false, of course: minor genetic mutations can lead to major phenotypical changes, and minor cortical rewiring can lead to highly distributed neural systems (e.g. Sporns et al. 2004).

5. Conclusion

In its final section BE15 speculates that I haven't read much of TLM. That is incorrect; I read the whole book. BE15's justification for the speculation is that, only from a syntactico-centric vantage point, would it make sense to ignore various other aspects of the book. But that is not true. The actual claims about generative grammar that TLM makes are so flawed, and the approach it criticises is such a caricature, that it makes complete sense to focus on those claims.

BE15's last paragraph talks about defending the "Chomskyan framework" and talks about what theories "Chomskyans" are committed to, what findings support the "Chomskyan" framework, and how the "Chomskyan paradigm" can overcome various challenges. I, however, wrote about generative grammar not about a particular individual, no matter how influential. Generative grammar includes all of those theories which take the unboundedness of the human capacity to link form and meaning as a core explanandum and which posit a finitely specifiable computable function as part of the explanation. There are many such theories (varieties of Categorial Grammar, Tree Adjoining Grammar, unification based grammars, Parallel Architecture frameworks, etc.). What matters in this debate is ideas, not people; we are attempting to contribute to science, not soap opera. Indeed, one of the positive points about TLM is that it is fairly focussed on ideas (though it gets much of its discussion wrong). BE15, in contrast, is personalised throughout, in very unhelpful ways.

Although I think that TLM presents a profoundly false picture of generative grammar, and that BE15 is an incoherent mélange of bad arguments and worse rhetoric, I'd like to end by returning to a more positive note. Different theoretical approaches are needed to understand language in all of its complexity, and much can be learned by approaching linguistics from cognitive, social, processing, anthropological and other viewpoints. But I think that the same

is true of the generative viewpoint. Generative Grammar has made, and continues to make, important empirical discoveries across a wide range of phenomena, and has developed, in my opinion at least, the only explanatory, theoretically deep, account of how it comes to be that we humans can pair sound and meaning across such a limitless domain. There is a real debate to be had about whether, for example, a constructionist alternative to the generative position is tenable as an explanation of this basic capacity (e.g. Adger 2013, Goldberg 2013), but basing the debate on a mischaracterisation as egregious as that propounded by TLM is likely to lead nowhere.

REFERENCES

Adger, David. 2010. A minimalist theory of feature structure. In Anna Kibort and Greville Corbett, eds., *Features: Perspectives on a Key Notion in Linguistics*, 185–218, Oxford: Oxford University Press.

Adger, David. 2013. *A Syntax of Substance*. Cambridge, M.A.: MIT Press.

Adger, David. 2013. Constructions and grammatical explanation: Comments on Goldberg. *Mind and Language* 28:466–478.

Adger, David. 2015. Mythical Myths: Comments on Vyvyan Evans "The Language Myth". *Lingua* 158: 76-80.

Adger, David and Smith, Jennifer. 2005. Variation and the Minimalist Program. In Leonie Cornips and Karen Corrigan, eds., *Syntax and Variation: Reconciling the Biological and the Social*, 149–178, Amsterdam: John Benjamins.

Adger, David and Trousdale, Graeme. 2007. Variation in English syntax: theoretical implications. *English Language and Linguistics* 11:261–278.

Behme, Christine and Evans, Vyvyan. 2015 Leaving the Myth Behind: a reply to Adger (2015). *Lingua*.

Cheshire, Jenny, Adger, David, and Fox, Sue. 2013. Relative *who* and the actuation problem. *Lingua* 126:51–77.

Chomsky, Noam. 1967. The formal nature of language. In Eric Lenneberg, *Biological Foundations of Language*, 397–442, New York, N.Y.: Wiley and Sons.

Chomsky, Noam. 1980. The linguistic approach. In M. Piattelli-Palmarini (Ed.), *Language and Learning*. Cambridge, M.A.: Harvard University Press. pp 35–52.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam 2004. Beyond Explanatory Adequacy. In A. Belletti (Ed.), *Structures and Beyond*. Oxford: Oxford University Press. pp 104–131.

Chomsky, Noam. 2012. *The Science of Language*. Cambridge, U.K.: Cambridge University Press.

Chomsky, Noam. 2013. Problems of Projection. Lingua 130: 33–49.

Corballis Michael (2007) Recursion, language, and starlings. *Cognitive Science* 31:697–704.

Culbertson, Jennifer and Adger, David. 2014. Language learners privilege structured meaning over surface frequency. *Proceedings of the National Academy of Sciences* 111:5842–5847.

Embick, David and Poeppel David. 2015. Towards a computational(ist) neurobiology of language; *Correlational*, *integrated*, and *explanatory* neurolinguistics. *Language, Cognition, and Neuroscience*. 30: 357-366.

Evans V (2014) *The Language Myth: why language is not an instinct*. Cambridge: Cambridge University Press.

Fitch, W. Tecumseh and Friederici, Angela D. 2012. Artificial grammar learning meets formal language theory: an overview. *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 367:1933–1955.

Goldberg, Adele E. 2013. Explanation and constructions: Response to Adger. *Mind and Language* 28:479–491.

Hauser, Marc.D., Chomsky Noam., Fitch. W.Tecumseh., 2002. The faculty of language: What is it, who has it, and how did it evolve. *Science* 298, 1569 – 1579.

Katz, Jerrold J. 1981. *Language and Other Abstract Objects*. Totowa, N.J.: Rowman and Littlefield.

Kleene, Stephen. 1952. *Introduction to Metamathematics*. Amsterdam: North Holland Publishing Co.

Lobina, David J. 2014. What linguists are talking about when talking about… *Language Sciences* 45:56 – 70.

Marr, David. 1982. *Vision*. San Francisco: W.H. Freeman and Company.

Mesoudi, Alex, McElligott, Alan, and Adger, David. 2011. Integrating genetic and cultural evolutionary approaches to language. *Human Biology* 83:141–151.

Pfenning, Andreas R., Hara, Erina, et al. 2014. Convergent transcriptional specializations in the brains of humans and song-learning birds. *Science* 346.

Soames, Scott. 1984. Linguistics and psychology. *Linguistics and Philosophy* 7:155–179.

Sporns, Olaf, Chialvo, Dante R., Kaiser, Marcus, and Hilgetag, Claus C. 2015. Organization, development and function of complex brain networks. *Trends in Cognitive Sciences* 8:418–425.

Tsimpli, Ianthi Maria. 2013. (Evidence for) the language instinct. In Cedric Boeckx and Kleanthes Grohmann, ed., *The Cambridge Handbook of Biolinguistics*, 49–68, Cambridge: Cambridge University Press.