# Interview with Professor

# CEDRIC BOECKX

# (Catalan Institute for Advanced Studies

# &

# Universitat Autònoma de Barcelona)

Cedric Boeckx is a Research Professor at the Catalan Institute for Advanced Studies (ICREA), and a member of the Center for Theoretical Linguistics at the Universitat Autònoma de Barcelona. Most recently he was an Associate Professor of Linguistics at Harvard University. He is the author and editor of various books on syntax, minimalism and language (from a biolinguistic perspective). He is also the founding co-editor, with Kleanthes K. Grohmann, of the Open Access journal *Biolinguistics*.

The interview came to fruition after we had the idea of asking various linguists the following question: *"What is the right place for linguistics?"*. At first, we were looking for short, straightforward answers. The question soon proved to be hard to approach that way, and Prof. Cedric Boeckx was kind enough to accept our invitation for a more thorough elaboration on the subject, under the "Interview" section of our journal, which he generously granted us on November 7th, 2011, at the Faculty of Letters of the University of Porto, a day before his "Introduction to Biolinguistics" workshop, also there, and for which we are also very thankful.

This text is a virtually word-for-word transcription of the recorded 2-hour long interview, subject only to minor revisions by our editorial team and some comments by the interviewee. We hope that the final result is of interest to students, researchers and people alike.

**Pedro Tiago Martins (PTM)** *After more or less a century without discussing the issue of the origin of the human language – it was even declared as a kind of taboo among linguists – linguistics has recently turned itself again to this area of research. The biolinguistic program has played a decisive role in this shift. Moreover, it is a clear example of how linguists, biologists, anthropologists and other scientists can work together. We know that,*



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*right now, this is an increasing area of knowledge, with new discoveries being made on a regular basis. In your opinion, will it ever be possible to answer some classical questions such as knowing when and where did language appear or whether all languages descend from one common, ancestor language?*

**Cedric Boeckx (CB)** I would, if I may, disagree with part of the question or how it's phrased. I think it's not the case that people didn't think or speculate about the origin of language for a while. It's true that there's the famous ban coming from France [in 1866, by the *Sociéte Linguistique de Paris*] and other linguistic societies about the origin of language but, if you look at the literature, there's actually a fair amount of work that's been going on, even during the supposed ban. Chomsky himself, actually – he's often said to be one of the linguists who didn't talk about evolution – has an interesting paper in the 1970s [Chomsky 1976a], at the time when it was not supposed to be allowed. Part of the reason why people went back to this topic has to do with a series of changes that took place in linguistics and allied disciplines in the mid-1990s and afterwards. Specifically the fact that people changed perspectives on various things made it possible to ask questions about the origin of language. For example, there's been a shift, that's now well documented, in comparative psychology, where people used to take different species and try not to compare them but to contrast them, say, "humans have language but our closest relatives don't". Things like that. For some reason, recently comparative psychologists have just started to approach the same question but differently, namely asking "if language is not this unique thing, if it's like a decomposable entity, would it be possible for other species not to have language as a whole but certain parts of it?", and that somehow revived the topic. In linguistics as well, there has been sort of a softening of the nativist position, where nativism is still, I believe, the norm, that is, it's the case that humans acquire language, but not other species does. But people have softened this in saying perhaps not everything that enters into human language as a biological entity really is specific to language or specific to humans. Even the die-hard nativists have now allowed or even actively explored the possibility that a lot of what we thought to be highly specific to language and to humans may not be. That reopened a set of questions about the origin of language. A third factor, and I think perhaps a more important one, has been the shift in biology itself from a strict Neo-Darwinist position – the modern synthesis – to something broader, that many people call evo-devo [evolutionary developmental biology], although evo-devo is more like a bunch of fields as opposed to a unique one. For linguistics evo-devo has been good, because its philosophical roots are shared in an interesting way with the roots of linguistics, at least as a cognitive science. Chomsky has this important book called Cartesian Linguistics [Chomsky 1966], that traces back the philosophical conceptual history of the field, and if you



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look, the evo-devo literature goes back to roughly the same philosophical work, so there is a commonality there that can be exploited when it comes to asking about the origin of language [see Boeckx 2009, 2011]. I think that's been a shift in biology itself, that's been exploited in language but also in other cognitive areas, to approach the origin question. So, it's a combination of factors that have led to something fruitful. It's also been the work, I think, of people who have really studied this topic seriously for a long time, and for a long time were not very, perhaps, prominent, but then have gained prominence. I'm thinking of Derek Bickerton, who had important books, that now are on everyone's reading list and citation list, but for while his work was isolated as an enterprise. Also, the group in Edinburgh, with James Hurford, has done significant work. They were probably the first to establish a program in evolutionary linguistics, and I think that the fruits of those efforts are now becoming apparent, even though the beginning of it goes way back. Now, to your question, or sub-question, whether we will ever know, it depends on what the questions are. I was heavily influenced by Richard Lewontin, at Harvard, who's written this very pessimistic article saying that there are certain questions about the origin of human cognition that we'll never be able to answer [Lewontin 1998], so let's not ask them, because it's a waste of time. I was influenced a lot by that, so I think that there are certain questions that we'll never be able to answer scientifically [see Chomsky 1976b]. We may have interesting and coherent speculations about them, but answers that we can test… maybe not. There are certain questions that we'll be able to answer. For example, the spread out of Africa may be able to tell us that in order for our story about the origin of language to be consistent we'd better say that there was just a single group of individuals in which language emerged and that from there has diversified, so that could be answered. There is a particular branch of biology, again specifically evo-devo, that has dealt with things like deep homology and genes that have been conserved for a while, and that may actually be the genetic equivalent of fossils, and may tell us a lot about language. Once we understand more about the genetic basis of human language we may be able to use those genes and see if we can actually use some of them as fossils in order to answer some of those questions. Maybe we won't be able to answer the question about what was the thing that made language particularly adaptive at first, what was the function that made it stay, but other questions we'll be able to answer. It will depend a lot on the information we get from the biologists. I think a lot of that information won't come from linguistics, actually. It's just us the linguists being able to exploit what they, the life scientists, can give us.

**PTM** *This next question follows some of what you just said. How important are the notions of FLB [Faculty of Laguage in the Broad Sense] and FLN [Faculty of Language in the Narrow Sense], and is their characterization*



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*the milestone of what someone in biolinguistics must do? Do we have to assign linguistic facts or facts about language to each of them as they are discovered?*

**CB** I don't think the answer I'll give to that is the standard one. If you look at the number of the citations of Hauser, Chomsky and Fitch [henceforth, HCF], the article where that distinction became famous [Hauser, Chomsky & Fitch 2002], and if you look at it in the context of the reemergence of biolinguistics as a word, as a concept and as a field, you'll see that that paper played an important role. In part, because this was the return of Chomsky as a coauthor with non-linguists. We had Chomsky and Miller [Chomsky & Miller 1963, Miller & Chomsky 1963], we had the close association between Chomsky and Lenneberg… the beginning of the first phase of Biolinguistics. And then, for a while, we had Chomsky and other linguists, but not non-linguists. And I think it was significant that Chomsky wrote a paper with non-linguists on these issues. But I don't think that this paper is as central as the citations would suggest. In particular, I don't think that the distinction FLN/FLB is a very useful one, for various reasons. But first I want to note that that distinction, perhaps ironically enough, goes back to Ray Jackendoff, even though in his reply to HCF he doesn't mention it, but it's there. In his book, Consciousness and the Computational Mind, in 1987 [Jackendoff 1987], he comes very close to making that distinction. He talks about language and he says that to address certain questions we should distinguish between language in the broad sense and in the narrow sense. He didn't use the term "faculty of language", but I think that he came indeed very close to that distinction. I think what's good about the FLN/FLB distinction is the FLB part, and that's the part that promotes a certain type of comparative linguistics, that is looking at specific portions of the language faculty and elements that enter into it and trying to test whether they are present or not in other species. That's very good. The part that I have more problems with is FLN, actually. That's the part that interests linguists more. FLB… they will admit it's there. What's really interesting is FLN for them. And I think that concept is ill-defined, actually, so I don't think it's very useful. Part of the proof of that is that if you look at the history of what came after HCF, which was supposed to be a paper that would offer a testing ground hypotheses about FLN, specifically, and FLB, everyone focused on recursion and the nature of FLN, right? From Pinker and Jackendoff in their reply [Pinker & Jackendoff 2005], but then also the work on recursion in starlings [Gentner, Fenn, Margoliash & Nusbaum 2006] and other species, it's all about whether you find recursion or not. There's been a lot of heat but not much of light in that discussion. And I think part of the reason is because FLN is not a concept that's actually useful to deal with. So if you look at how it's defined, FLN is that which is supposed to be specific to language and specific to humans.



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Specific to humans I can sort of understand. Specific to language… I have trouble understanding that, if you tell me that language is not this monolithic thing; it's FLB and FLN. But then what's the notion *language*? How do you say that this is specific to language, if language is these two things, one that's shared and one that's not? So already there, from the point of view of the definition, it's very hard to say "this would be specific to language", if language is not this unique thing. Also, it turns out that if you asked the biologists, they would be very surprised to be asked what you expect to find in FLN. Because, basically, the biologists would say that this FLN/FLB distinction is trying to get at the topic of novelty or innovation in evolution. There's several ways of approaching novelty or innovation in biology, but none of them are very easy to reconcile with the FLN/FLB distinction because some of them say "well, evolution is a tinkerer; the way we make new things is by using old tools and putting them together in new ways." Well, ok, how do you express that idea in FLN/FLB terms? What you would find are a couple of properties belonging to FLB put together in new ways to yield FLN. But then, are they part of FLN or FLB? Well, yes they are part of FLB because independently of one another they are found in other species (they are old genes, say, that have been taught new tricks), but it's the conjunction of them that makes FLN, or that makes FLN emerge. But how do you express that if you follow HCF? FLN is a proper subset of FLB. Actually FLN should be the conjunction of FLB things; it should be the bigger set in a certain sense. So this is the issue that many biologists look at in the context of emergence, self-organization, topics for which a reductionist approach, one that decomposes things ("this is in FLN; this is in FLB"), is not very appropriate. It was good politically and rhetorically to have that paper, but I don't think it's good to say "this is FLN/this is FLB", or "is case or agreement FLN or FLB?". I think that's not useful biologically speaking. Unfortunately, it's what most people do in the context of this article. More and more linguists want to say "is this FLN or FLB?". I don't think it's a good question.

**PTM** *This next question loses some of its interest now, but: do you think that the faculty of language is in fact a species-specific feature that keeps us apart from other species?*

**CB** As a whole, yes. It's just a fact that we have a certain system that other species don't seem to have, so as a whole I have no problem. But no one has a problem with that. I think the issue really comes about when the FLN notion is brought on the table.

**PTM** So this specificity will not be defined by FLN, but just the conjunction of the elements of FLB; that's the only thing that yields this specificity.

**CB** That could be. So as a system, as a whole, it's a fact that we have it and other species don't, but that's not particularly useful to say, because that brings us back to a period of this contrastive approach that I mentioned in my answer to the first question, when people say: "we have it, they don't". That doesn't help very much. What's more useful is saying "they have some things that enter into this other thing." So that's where FLB is relevant. But as soon as you talk about FLB, many people will ask "what about FLN, or that thing which they don't have?" And in linguistics we haven't learned the lesson of saying "well, perhaps it's the conjunction of FLB things that gives rise to FLN". It would be a little bit like water. A certain amount of hydrogen and a certain amount of oxygen gives rise to water. Water is not reducible to the properties of hydrogen and oxygen, but you wouldn't want to say it's not made up of H and O. It's distinct, but at the same time made up of it. There's something that I've never understood in the HCF paper, and that perhaps would bear on this question. They say that it's quite possible as an option that FLN is empty. And I don't know what they mean by that.

**PTM** Do you think they mean they'll potentially exhaust all the possibilities [of characterizing elements as part of FLN] as they find things in other species?

**CB** The thing is that there is a certain sense in which we want to say that, as a whole, we have language and other species don't. So how do we capture that specificity? And I think the FLN notion was supposed to capture that, but if it's empty, then we lose that specificity. At the same time, if it's non-empty, how do we reconcile that with the idea that innovation and novelty in biology is really not something radically new and different from what other species have? As a whole, sure, we have a system that other species don't have.

**PTM** *Do you think it's also possible to use biolinguistics to answer more, perhaps, philosophical questions like "is language truly necessary?" or "why do languages vary across the actual attested range of possibilities?" And do you think they are philosophical questions?*

**CB** I don't know what you mean by philosophical questions. It used to be the case that what people called philosophical questions turned out to be now called scientific questions. Galileo insisted on him being called a philosopher. Now, maybe he wouldn't want to say that. So it doesn't really matter if they are philosophical questions or not. I think that if they are interesting questions, they deserve to be asked, and some of them we could approach. There's one particular question that I like, about language variation. That's where I think a biological perspective on language could help at least clarify the question and some of the answers that we may want to



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favor at least as hypotheses. When people talk about language variation, in a biolinguistic context, it's very important to make a distinction, or to remind ourselves that the topic or biolinguistics is the language faculty, not individual languages. Unfortunately, very often when people ask questions about language variation their real interest is about specific languages; these may not be biological entities. They might be made possible by a particular biological faculty, but they themselves are not biological entities. So, to take an obvious example, a lot of people talk about bilingualism. Well, bilingualism is a fine topic if you talk about specific languages, but bilingualism is not a fine topic if you talk about the language faculty because there is only one, and so there is no bilingualism[1]. So, the biolinguistic approach might be useful in clarifying the nature of those questions. Are we talking about languages, basically cultural entities made possible by a biological substrate, or are we talking about the language faculty? So in a biolinguistic context for example when people talk about comparative linguistics, I would think that comparing, say, birdsongs, the alarm calls of the vervet monkeys and properties of our language faculty that would be good. Let's do a seminar on this. But when people talk about comparative linguistics, it's always French versus English versus German. Biolinguistics could tell us "well, you've got to choose your topics. You've got to choose the entities you want to study". Everything is fine to study, but just be clear about whether you're talking about the cultural systems, or the biological systems. And then the things to look at will turn out to be, I suspect, very different.

**PTM** *So, do you think that variation is not intrinsic to the faculty of language?*

**CB** The source of variation is, I think, part of the language faculty. That is, there are many things that the language faculty, as a biological entity, if you want, leaves underspecified or open. It doesn't really "care" about certain things, and those things, those plastic, unspecified things can then be exploited and so give rise, provide a pool of variants, and then it's up to the cultural dimension to make sense of those variants in specific languages, so that yes. But I don't think that the language faculty codes rigidly for certain variants, like it doesn't code for English or French.

**PTM** *So, what do you think of markedness[2] as a property of UG [Universal Grammar] or the faculty of Language?*

[1] Of course, this does not mean that bilingualism is irrelevant to the study of the language faculty.
[2] This term has, as pointed out on p.8, many senses. In the context of this question, it is to be understood as the asymmetric relationship between linguistic elements of various sorts, generally referred to as markedness, to which different authors have given different interpretations and degrees of importance and explanatory power.



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**CB** The question is tricky…

**PTM** *Do you think that markedness is a property of the faculty of language; something that constitutes the faculty of language?*

**CB** It depends on what you mean by faculty of language or universal grammar, like you mentioned. If you think about something like the language faculty as something that's structured by several forces or factors, like Chomsky called them, for example, in his article on three factors in language design [Chomsky 2005], then it's quite possible that things that have fallen under the rubric of markedness – fall under what Chomsky has called third factor, that is, generic non language specific biases of data analysis, used in the course of language acquisition… There are so many senses of markedness [for an analysis of some – if not all – of these senses, see Haspelmath 2006], that it's difficult… I think that the study of markedness in chapter 9 of the Sound Pattern of English [Chomsky & Halle 1968] has a role to play, but it's interesting that that topic emerged in the context of phonology, not in the context of syntax. And I think that it's interesting because there is a difference, and probably more than one, between the way phonology and syntax have been studied. If you take, at least in the generative context, the two most famous iconic books on those fields, I think Sound Pattern of English would certainly be the one for phonology, and perhaps Syntactic Structures [Chomsky 1957] for syntax. Now ask yourself the following question: "What's the big difference between the two titles, as iconic publications?" Well, one of them contains the name of a specific language, and I don't think it's an accident that it's the phonology book that has that. Put differently; ask yourself if it were possible to have an iconic book in phonology just called just Sound Patterns, or Phonological Structures. I think it would be hard to find or write such a book. Inevitably, when it comes to morphology or phonology, people need details of specific languages. But in syntax for some reason it's not the case. That is, it's perfectly fine to write Syntactic Structures, period, and not Syntactic Structures of English. It's okay to write it; people have written famous books like French Syntax, or Italian Syntax, but I think there is an interesting difference between two fields, maybe deeper than just the titles. And I don't think it's an accident that markedness emerged on the context of phonology and not syntax.

**João Veloso (JV)** *And the concept of markedness is older than SPE.*

**CB** Yes, sure.

**JV** *It's a rather phonological concept.*



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**CB** It's actually interesting that most of the famous concepts that syntacticians borrowed from phonology are those irreducibly linguistic in nature. Another example of this, and a favorite of mine, is the notion of feature, which is something that we clearly borrowed from the phonologists and then incorporated to define syntactic categories and so on. There is nothing as specific in language as a feature. When you get down to features, that's when non-linguists give up, because they have nothing to say about it. That's the point where we say "this is linguistic and this is not". We don't use generic features; we use highly specific ones for language, like [+accusative]. Give [+accusative] to a biologist or to a comparative psychologist and they won't know what to do with it.

**JV** *It's the specificity of language.*

**CB** Yes, but it's interesting that it comes primarily from phonology.

**JV** *You mentioned that language variation is not intrinsic to the language faculty…*

**CB** Well, part of it, yes…

**JV** *Nonetheless, it is made possible by the language faculty.*

**CB** That's right.

**JV** *There is a kind of limit to language variation, and this restrictive property is a matter of the faculty of language.*

**CB** That's true but, if you allow me to use a bit of jargon, if you ask me if there are parameters, in the traditional sense [see Chomsky 1981, Baker 2001], that are specified biologically, as such I don't think that they exist. That variation is limited, yes, but that it's limited because of a set of options that is biologically or even genetically specified, no.

**JV** *You assume that they are biologically specified… we know for sure, that until* this point *we can consider* this *to be a natural language and beyond* this point it*'s not anymore a natural language, and this is a function of the faculty of language.*

**CB** But not only. It's interesting that in your question you talk about "we know that this is *a* natural language", so there you are already talking about a specific linguistic system. I think that what gives rise to the limited variation is actually a conjunction of factors; it's not something pre-specified, although it's how it's been studied. I know that the rhetoric is often as follows: before



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we came up with the idea of parameters, people thought variation was infinite, and then parameters put a limit. I think that's rhetoric. First, I don't think that people before parameters thought that variation was infinite; I think they knew it was finite but they didn't know how to restrict it. And now people say "well, but with parameters we know how to limit that". I think that's somewhat misleading if you consider the fact that now there are so many parameters that, while it's limited, the number of possible linguistic systems is so huge that for practical purposes it's not that limited, so I don't think that parameters give us that much of an understanding of the limits of variation.

**PTM** *Now, a question about evolution. Even when we accept that language must be a result of evolution, we have to bear in mind that natural selection is not the only process by which evolution operates. Do you think that language might have been a result of natural selection, perhaps some other process, or maybe a random gene mutation?*

**CB** I think we have to be open to all possibilities. Biologists will tell you that natural selection is not the only thing. If you look at the biology literature, there's now a range of mechanisms to understand the emergence of systems, including cognitive systems, like language. We have lots of options to consider. I think people, perhaps influenced by a certain school in psychology, thought that the only interesting question was whether language was an adaptation. I think that's not the most interesting question about the origin of language. What one has to bear in mind, when we ask questions about the origin of the language faculty, is that we're asking a very difficult question, because it's a question that people like Darwin wouldn't have addressed. I know that his famous book is called "On The Origin of the Species" [for example, Darwin 1964], but he doesn't talk about the origin of species. First of all, he doesn't talk about species, because, he says, species is not a primitive concept. But then he also doesn't talk about origin, because he says it's too hard. He talks about the preservations of variants, but he doesn't talk about the origin of form. When some linguists ask about the origin of language, they're really asking about the origin of form, cognitive form. That's a very difficult question. That's a question many biologists would refuse to ask for simpler systems, those we understand much better, those that can be tested much better. So that question about origin is really a very difficult one. Because it's difficult, we cannot be dogmatic about the sort of answers we are willing to accept. I think as soon as we recognize that the language faculty is not this unitary thing, that it's probably a conjunction of things, we have to also be ready to accept the possibility – I think, a real one – that multiple mechanisms gave rise to those multiple ingredients. So there is no single answer that



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works for the entire language faculty. I think we shouldn't be surprised by that. Perhaps it should be the default hypothesis.

**PTM** *If we think of Chomsky's main texts and even Lenneberg's Biological Foundations of Language* [Lenneberg 1967]*, which are works written some decades ago, how innovative is the Biolinguistic Program?*

**CB** The current one?

**JV** *Yes, perhaps a kind of a rebirth of old questions…*

**CB** Yes… It still addresses the same, fundamental questions. Hopefully, it asks new ones, or at least it puts new twists on old ones. But I think one of the things we haven't done enough is re-read the classics. I think Lenneberg in particular ought to be re-read. I think that a few people cite Lenneberg, but when you go to Lenneberg you see that what they are attributing to Lenneberg wasn't in Lenneberg. The famous linguist who's talked about Lenneberg's dream [Wexler 2002] in the context of language acquisition, mentioned the search for specific genes for language, a genetic basis… When you read Lenneberg, it was clear that he was nowhere near gene-centric as the phrase Lenneberg's Dream in that context makes it look [see Boeckx & Longa 2011]. I think that thus, we should re-read Lenneberg; it's always good to re-read the classics. I think it's good also to re-read the Chomsky-Piaget meeting [Piattelli-Palmarini 1980], that took place – and that was perhaps the first real biolinguistic meeting, although there was a prequel to that, in Massachusetts, 1974. That meeting was basically the first one where there were linguists, psychologists, neurologists, biologists, philosophers, coming together and asking questions about language. Classics have this property that whenever you read them or re-read them they give you something new, that is, you read them at different periods and you interpret them differently. And I think we are now at the stage when it would be good to re-read them, and see how much we have learned or not learned from them in the meantime. Now, I think that the new wave of biolinguistics has learned a lot more about language. When you go back, for example, to the Chomsky-Piaget discussion, the core of that meeting was about how specific language was, biologically speaking. I think we have now learned and are beginning to take seriously the possibility that the answer is "not very much". It's a very tough lesson for many linguists. But that seems to be something we are learning or emphasizing. So there's lots of FLB, and we are learning also that when you have lots of FLB in the right amount, it could give rise to FLN, so this is the notion of the emergence that I already mentioned, that's something that we have learned through complex system theories or system biology, for example, that we should really

incorporate. What we have learned also in the intervening years is a lot more about biology; not just the modern synthesis [see Huxley 2010 (1942)], but what now a lot of people call the extended synthesis in biology [see Pigliucci & Müller 2010]. And it's much richer and a more pluralistic view of biological entities, so we can certainly benefit from that. Also, we have learned a lot more about the brain. When I was student – and still often I hear – linguists said "Yeah, yeah, we know about the mind in the brain, but we know so little about the brain, that it's not the right time to make specific hypotheses." Actually, when you look at the literature on the brain, we know quite a bit. At least, certainly, we know a lot more than we would think from reading those comments about how little we know about language. Actually, we know a lot. We don't know everything, but we certainly know a lot more than, say, what Lenneberg had access to. Like now we certainly know what genes do and don't, more than when people who were writing in the 1970s did. So what has to happen, and I think that hasn't happened so far, is that linguists really have to learn about all those sources of information that are very rich for us. If we were to learn from the other fields, like we should, I think the range of hypotheses that are being considered in linguistics would change dramatically, so we haven't done that sufficiently. I think this was a lesson that Chomsky and Lenneberg were trying to tell us in the 1970s, that we should talk a lot more to the non-linguists in order to understand the nature of the language faculty. I think we have to do a lot more of that. So that new wave, if you want, is a new call for inter-disciplinarity, to say now is the time. In the intervening 20 years, those are the fields that really have a lot of information that would be very useful to us. Why don't we make use of that?

**PTM** *So, the biolinguistic program focuses on language as a matter of the human biological endowment. But when we read some of the generative texts that supposedly embrace that approach, we don't see any reference to actual cognitive existence, we just see, basically, structural description of languages. So can we say that this is going back to a time before generative linguistics existed?*

**CB** Generative linguistics, like any field, is understood differently by different people, and I don't think we should say there's a particular reading that we should all adhere to if we want to be a card-carrying generative linguist. People do what they want. Personally, I began to use the term biolinguistics more frequently when I realized that what I thought was the central research priorities of generative grammar, namely biological questions about the language faculty, were actually not addressed in generative linguistics. Or they were mentioned in the first paragraph and then quickly set aside because they're maybe too hard. So I began to use the term biolinguistics simply because it's more transparent in terms of what it aims to do. So, it seems to me stranger to



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write a dissertation on a biolinguistic approach to case in Finnish than writing a dissertation on a generative approach to case in Finnish. The latter sounds okay; the former sounds a little bit funny. And so that's why I began to use *biolinguistics* more, because it focuses on certain questions at the expense of others. It doesn't mean that the other questions are not interesting, but I think that it makes clear the sort of questions that I think Chomsky addressed. But I don't think that everyone doing generative grammar is particularly interested in those questions. Many of them, I think, are very interested in philological questions, and they use the formal tools of generative grammar to address them. I don't think that this is such a good use of those tools, because I also don't think that they were designed to address those philological questions, and I think it would be a miracle if they were also useful to answer them.

**JV** *There is a kind of equivalence between the terms generative approach or generative linguistics and biolinguistics, because the biological concern is part of the founding texts of generativism. When we read most of the generative literature, it's a rough description of structural properties of particular grammars, as if it were done by structuralist linguists. They use a different terminology, a different set of tools and they can achieve full descriptions. It's like Pedro was saying, it seems that generative linguists forget this biolinguistic concern…*

**CB** I don't know if they forget or decide to focus on something else but, for example, there's a focus, or a return of questions about typology that interested neo-grammarians. You know, things about synthetic versus analytic languages. I think it's very striking to me that these are back now in the forefront of generative research, when we know that, at least if you adopt a biological perspective, that shouldn't be the focus, because those are not the entities that you want to study.

**JV** *How do you see this tension between old questions that are being recovered and these new ones?*

**CB** I think it's fine that those questions are being asked, but it's also interesting to ask different things. First, there may be a particular reason why that terminology disappeared for a while: because people realized it was not particularly accurate. That is, there is no such thing as a purely analytic language or purely synthetic language. Now, if we ask "is this language synthetic or analytic?", we should wonder why we forgot that these were not particularly good terms to begin. Second, it's fine to address those questions, but it also would be fine to know the tension between those questions and the other goals. So, I think that's part also of my use of biolinguistics; to make sure that we are clear that there is a tension. It's a known tension, it's the tension between descriptive and explanatory adequacy, except that the use of formal terms makes



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it look sometimes as if they were answering or addressing explanatory adequacy is in fact descriptive. So people should just be clear on those questions.

**JV** *Typology is very popular again.*

**CB** And that's fine!

**JV** *Typology, and biolinguistics…*

**CB** It's fine. I see them as very different things, and I think it's fine if you're clear that they are very different things.

**JV** *But can Biolinguistics offer some explanation for the variation that is targeted by typologists?*

**CB** Perhaps, but, I suspect, very little, because I think that a lot of that variation (that interests linguists) would be cultural – more than biological –, and if that's the case…

**JV** *Couldn't it be that something biological – we can talk again about parameters – could explain this variation?*

**CB** That there are biological constraints on variation, yes; that they will give you the categories of the typologists, I doubt it.

**JV** *We know about some typologists who defend their points of view on the basis of genetics of populations and migrations and so on, a little like biolinguists do, as well. Couldn't there be a bridge or a point of contact?*

**CB** One of the things to bear in mind is that biology is very broad field, just like linguistics is many fields. In fact it was Ernst Mayr, the so-called Darwin of the 20th century, who said that, basically, at least from his perspective, biology is essentially two fields; one is closer to chemistry, and that has to do with basically… molecular biology. And then the stuff that he was really interested in, namely evolution narratives, he said that's much closer to history [see Mayr 1997]. So basically the field of biology should be split, if you want, along academic lines: part of it in the natural sciences; part of it in the humanities[3]. Likewise, linguistics. And I suspect that typological questions will largely be part of the history department and not the molecular department.

**PTM** *For someone who agrees with what the biolinguistic program puts forward, if that person is, say, a traditional descriptive linguist who realizes that language must be studied within biology, along with linguistics and*

[3] Other fields have learned to live with this distinction; anthropology is split between *physical anthropology* and *cultural anthropology*. Martín (2006) suggests something similar for linguistics.



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*other fields, what is the role of what that person does, that is, the role of purely descriptive linguistics? Is there anything that person can give or contribute to the field of biolinguistics?*

**CB** Well, I mean, there's always something. You'd have to be specific about the work of that hypothetical person. There's always something useful, and you cannot say "this is something for them, not for me". But what is true is that linguists tend to work on languages, but I think that what would be good, for linguists interested in biological questions, is to work on non-linguistic systems, using some tools from linguistics. Like, for example, Chomsky introduced a particular hierarchy of formal languages [Chomsky 1956], that can be used to characterize certain cognitive computations outside of language, so a couple of colleagues and friends of mine have looked at the ability to tie knots [see, for example, Camps & Uriagereka 2006; Balari, Benítez-Burraco, Camps, Longa, Lorenzo & Uriagereka 2011], that seems to be specifically human, and that seems to fall within the hierarchy of formal languages at the level of complexity where certain linguistic structures, fall. There is nothing wrong with the linguist working on knots, from a formal perspective, the same way that we approach languages. Likewise I think that linguists ought to study the phonological properties of the songs in birds; I think there are beautiful dissertations to be written there. In order to make an informed comparison, one should try to make the systems to compare as commensurable as possible. Here we have highly formal descriptions of the phonology of specific linguistic systems – languages –, but we don't have that yet in the context of the birds. We know a lot of genetic and neural properties about the songs of the other vocal learners, but we don't have this formal apparatus that's been applied to [human languages]. Why don't we do that? That is, I would see nothing wrong with a seminar on phonology in the linguistics department exclusively focused on the variation of birdsongs or other vocal learners. I think that would be perfect. And so, the linguists who know a lot about phonological processes, structures and representations in languages could use that knowledge to characterize other systems: cognitive systems in other species that could actually tell us a lot about origin, convergence… biological topics that we would like to answer. Ray Jackendoff often makes this point and I think it's a good one: that linguistics is perhaps unique within cognitive science in having a highly developed representational characterization. That is, we just have a good handle on the representational structures and processes. Why don't we apply that knowledge to other domains? Linguists could do that, because they have that knowledge. Linguists typically don't do that because we tend to expect linguists to work on languages, but if you adopt a biolinguistic perspective, languages are not the only things you should focus on.

**JV** *Could you find something like [+accusative] in birdsong, or [+nasal]? Something specifically linguistic.*

**CB** But that's the interesting thing: I think that [+accusative] is not even found in the human language faculty. I think that many of those features are basically not cognitively primitive.

**JV** *They are linguistically shaped…*

**CB** That's right, but they are not primitives…

**JV** *…And the linguist, as any other scientist who is focusing on any other part of reality, finds things like [+accusative].*

**CB** If anything, looking at other systems may actually refine and redefine the primitives of the language faculty. If we say "[+accusative], that's just for language", a fair question is "is it really a primitive we want to use?", that is, how do we ask a biologist what they think of [+accusative]? Like I said, things like features are usually where the discussion stops, because they are like small modules about which, by definition, no one else, that is, non-linguists, can say anything.

**JV** *You cannot deny or you cannot refuse that linguistic systems seen as a cultural product have regularities that are found cross linguistically like case marking, anaphora, relative pronouns, and things like that. Of course, they have a cognitive basis, however they are formally shaped.*

**CB** The question is whether those should be part of the biological study of language…

**JV** *And I think so.*

**CB** … As primitives. I'm not so sure.

**JV** *Even though I am not a biolinguist, I don't deny that there might not be a biolinguistic basis for certain things that linguists postulate. However, it is also possible to look at language and linguistic systems as formal constructions…*

**CB** Yes, it's possible. Linguistics is actually many fields. The term biolinguistics suggests that there is one approach that one can take, but it's not the only one. Social approaches, functional approaches… and these are all fine. It's all fine as long as we are clear about the sort of questions we want to address.

**JV** *An interesting question would be how biological constraints can shape some formal things that are verified by linguists, formal linguistic systems.*

**CB** Too often linguists posit those constraints as biological primitives, that's the problem. But it doesn't mean that there's no connection, but I think that connection is usually translated as "since I don't want to ask about the biological origins of those constructs, let me just posit them as primitives".

**JV** *That links to Pedro's question about the generative linguists doing descriptive analysis, and language description.*

**CB** I'll tell you an anecdote, which I think was very revealing to me. When I moved to Harvard I started meeting seriously with the psychologists and the biologists there, and it was roughly at the time that the HCF paper became popular (it had just been published). I wanted to talk to Marc Hauser, and I was very enthusiastic about the program of the HCF paper. I wanted to try to see if we could run certain experiments, that is, go a little bit beyond recursion, say, and look at other properties of language. Marc, I think, was as enthusiastic as I was, and we are very good friends, so we sat down, and tried to formulate linguistic properties at a level that would be good enough, that is, appropriate to test in other species or in other cognitive domains. This was, I think, an ideal situation, since Marc knew so much about comparative psychology and I knew a fair amount about linguistic systems, and I thought this would be great. We didn't go very far. In fact, we couldn't come up with a simple concept that could be tested. At first we thought that it was just jargon; perhaps it gets into the way. But Marc was very much willing to learn that jargon, just like I was very much willing to learn the jargon of the other side. And then we realized it's not just jargon, that is, it's really that features were the things where we got stuck, simply. That is, the primitives that linguists use are so specific to language that they actually act as obstacles when asking comparative questions, and I think that's very sad, because they basically block a particular research program.

**JV** *But understandable to a certain extent. You don't expect astronomers to share concepts and features with biologists, say, or linguists…*

**CB** No, except when you say that linguistics, or the study of language, is part of biology. You don't say it's part of astrophysics, but if you say it's part of biology, you cannot say it's really part of biology but not something that biologists can't follow. Then, it's bad.

**JV** *How can you see that cognitive linguistics, like Langacker* [1987, 1991] *and so on, can explain the same things, like biolinguistics tries to explain?*

**CB** One of the things I want to make clear at some point, because I've gone to several meetings where that seems to be an issue, is that biolinguistics just doesn't mean generative grammar or minimalism or things of that sort. This is not intended to be that. It's much broader. It's for anyone who's interested in biological foundations. And, as I said before, biology certainly now offers a very pluralistic view, where there are so many different mechanisms in different approaches that one can pursue, and I think that we cannot discard the very real possibility that different linguistic traditions focus on certain mechanisms that find a place in the biology of language. One of the things that we ought to do as linguists is learn more from those various linguistic traditions. I think they have a lot of things that they could tell us. I think that they are not right in everything, but we shouldn't conclude from that that they are wrong in everything. And there's actually a fair amount of convergence of that literature. If you look, for example, at the work of Jackendoff on semantics; if you look at Hale & Keyser's work on argument structure; if you look at Talmy's work on event representations in language. These are different approaches, but they converge to a certain extent, and it would be interesting to go beyond the politics of the field and highlight that convergence. I think that would be nice. I don't think that we have done that enough.

**PTM** *In countries like Portugal and probably in most countries in the world, most students of linguistics study or get their initial degrees in the faculties of humanities, where linguistics shares an academic space with disciplines like literature, culture, language teaching, translation, history and so on. In your opinion, what would now be the natural environment for the study of the language faculty, and how far can the biolinguistic program contribute to a substantial change like, for example, including linguistics as a subject of a faculty of natural sciences, or engineering or psychology or something else?*

**CB** Well, that's an interesting question, because usually that type of question is asked in a different way. It's asked like "what's the position of linguistics in academic divisions?" And that's much harder to answer because linguistics is so many different things that part of it falls into the humanities, part of it in the social sciences and part of it in natural sciences. When you ask about the study of the language faculty, I think it's clear it falls within the hard sciences, but remember that even biology, a hard science, according to Mayr, falls in part into the history department. So, academic divisions are never perfect. In fact, they are not very, very good, even within the hard sciences. So it's no wonder that the position of linguistics is felt as not very good, because I feel that other fields also have the impression that they should belong elsewhere. And to a certain extent I don't think it's very important where linguistics falls. I think what's very important is the



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sort of neighbors that linguists have, that is, the people it interacts with. And it's true that if you have as a focus the language faculty as a biological entity the people you want to interact with are biologists, neurologists, the psychologists, … You also want to interact with philosophers, philosophers of science, for example. But it's not so clear that you'll get informed questions or useful information from the expert on romantic poetry. So, it would be nice also to make clear to the deans and to other people that matter where linguistics falls, that the study of language, specifically the language faculty, comes with a certain set of expectations about the sort of classes we'll offer, the sort of things the faculty will do. In many universities, linguists are not expected to have labs, for example, because literary critics are not expected to have labs either, right? But it makes perfect sense for people interested in the language faculty to have labs. In fact, it makes perfect sense to have a colony of vocal learners like the birds, for example, you know, labs of that sort. So it's very important to make clear that this kind of study has a certain focus that falls closer to what you find in the natural sciences, for example. But even though that part of linguistics, I think, should fall in the natural sciences, it's also very important to realize that as we do that we shouldn't expect a linguistics department to be part of the hard sciences; it's weird to have a department devoted to a particular topic. You don't find a department where they exclusively focus on the biological properties of flight, so we should be ready to, in return to moving towards the hard science, lose departmental status, that is, to be part of and to be a unit within a bigger department, let's say, I don't know, theoretical biology or cognitive/behavioral biology or something of that sort. We shouldn't expect that linguists would have a linguistics department next to the traditional hard sciences; rather, we'd be a topic among many. That, I suspect, would be a good development, like if students could actually look for jobs in the life science departments, not in linguistics departments as part of the hard sciences, but in the life sciences. I think that would be a good development. It's up to us, also. It's surprising to me that, after sixty years of intense writing by Chomsky on this topic, so many people still don't get what his kind of linguistics is. I mean, it's really frightening, considering the output of Chomsky, that no one else will come close to. Many fields are relatively well defined. And then you can decide to do it or not, but people know more or less what a biologist does or what a physicist does. Yet, people still have no idea what linguistics is as part of cognitive science. It's ok, for example, if you get into a taxi, and the driver asks you what you do, and you say you're in linguistics and if he asks you how many languages you speak, that's ok. But I had an interesting experience where one well-known linguist, actually, in Spain, extremely high ranked in the academic world there, supposedly, if not a generative linguist at least someone very close to the work of generative



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linguistics. I met that person and the first question he asked me was "how is your Spanish?" (he did not ask about my Catalan), and that's a fine question. And when I replied "well, it's so-so, it's getting fine, but slowly", he said "well, you should be very good at it, since you're a linguist", and this is not a taxi driver, this is someone who is actually very familiar with the work of generative linguists. In fact, someone who has written in a high profile newspaper that Chomsky was a model for doing linguistics. Well, if that's the case, then I can't reconcile this with the comment that he made. Do we expect the physicists to stay better on their feet just because they understand gravity better? What would you think of an academic making this assertion? And so, when you realize that, after 60 years of Chomsky's, to my mind, clear writing on the nature of linguistics, they still haven't gotten it, I don't know what we can do.

**JV** *That's why we were asking you about linguists who claim themselves to be generative while what they do is linguistic description as structural linguistics used to do.*

**CB** And I don't want to be critical of that work; it's good work. The thing is that it often doesn't inform our understanding of the biological nature of the language faculty

**JV** *That's a lot of Chomskyan thought wasted…*

**CB** Or at least disregarded… One thing that should be clear is that many linguists come into linguistics because of their love of languages. That's an interest that they retain beyond the Chomskyan vision. So, what they are really interested in is still this love of languages but it's not a love of language. I've never met someone who says: "I love languages because they are so similar". It's usually "I love languages, because they are so different". So what you get is a focus on language variation, but variation of languages. And that love is much stronger than the interest in the biological foundations.

**JV** *As I use to say to my students, let's rely on the good faith of these linguists. Somewhere in their thought there was a genuine will of contributing to the understanding of the faculty of language.*

**CB** I haven't done this very carefully but I think it's true that if you look among the prominent departments of linguistics, I think that it's the case that earlier on, that is, shortly after the cognitive revolution by Chomsky, Lenneberg, Halle and others, many of the young PhDs came from non-linguistic backgrounds; you had people coming from mathematics… but what's interesting is that more recently almost all linguists came from linguistics departments themselves

embedded in language departments, and I think that part of that means that the philological tradition is now much stronger than it was at the beginning of the cognitive revolution.

**JV** *We're more prepared to do this kind of work than comparing linguistic and non-linguistic abilities, or something… Linguistic description is not the only way to attain the characterization of the language faculty; it's one of them.*

**CB** It's one way as long as you keep in mind that that sort of description is in service of the biological study of language, but very often it's not in service of anything else.

**JV** *It's not made explicit…*

**CB** Well, no, I don't think that implicitly, in fact, if you scratch underneath the surface, people are interested in that; they are really interested in capturing French versus Italian…

**JV** *If we compare this to religious truths or something, there's a kind of purity of generative grammar that was lost.*

**CB** Well, I don't know if it was ever pure, but I think there was a particular… see, the genius of Chomsky, at least the early Chomsky of, say, Syntactic Structures, was to essentially wed two traditions – or maybe more than two –, but certainly it was to use the tradition that, you know, is biological or philosophical, the Cartesian tradition, and the philological tradition, that is, early generative grammar was really about constructions and language specific, like passive in Hungarian, or so… and progressively, as we learn more about language, we have come to realize, perhaps implicitly, perhaps explicitly, that these two traditions can be studied independently of one another. That is, you can focus on the primitives, those are not language specific, or you can focus on passives in Hungarian. And there what you see is that most linguists actually are going back to, when faced with that choice, the constructions. It's no accident that approaches like Construction Grammar [see Goldberg 1995] are very popular because it's this philological tradition clothed in formal terms that appeals to many.

**PTM** *By the way, do you think that this change in linguistics or in the study of language within universities will inevitably happen? Do you think that at least the continuing of this dialogue between disciplines will spark this change?*

**CB** Well, I mean, one of the things that's true is that even though deans and presidents of universities like to talk about interdisciplinarity, it rarely happens, or at least they rarely allow the structures for it to happen to be built. It's all good to say, but it's very difficult to make it happen.

So, I can't predict the future but I think that as linguistics keeps pursuing current lines, the tension between biology and philology will become more and more manifest, and that people will have to choose whether they go to the biology department or to the languages department, and so you will find both, of course. The concern is not the language department because those will always exist. The concern would be for those students who go more into the biology of things, whether there will be a place for them to pursue that sort of work, that is: once they finish a PhD in linguistics or biolinguistics, can they apply for a post-doc position a biology department? That's what we should, I mean, people who believe in that approach, that's what we should try to guarantee somehow. We should try to convince deans and presidents to create a structure, an institutional structure that makes it possible for people who didn't choose the philological tradition to have job prospects. That's very hard. And, until now, it wasn't so much of a concern, because so few actually took that biological path, because they were still in the transition period when the tension between philology and biology was not so apparent. I think that perhaps the main thing that minimalism in linguistics made apparent is that tension between biology and philology. Jan Koster, a good generative linguist, said that minimalism boils down to the following: linguistics is not "philology by other means" [Koster 2003]. I think that's exactly right. But if that tension is only apparent now, we should worry about the next generation. Those that, until now, could still fall within a linguistics department that did both, or that tolerated the biology, will be told "well, ok, not in this philology department, but someplace else". Where is that "someplace else"? We should worry about that. The only way to do that is to really talk a lot a more to the other disciplines. Otherwise, they won't realize we exist.

**PTM** *Do you think that's important before university, like in high school, for example? If people say "this is not just learning languages; it's also possible to study language as a biological [entity]"…*

**CB** I think it would be nice. I mean, I'm not the first one to point out that since we have access to linguistic intuitions at no cost (we don't need fancy experiments or flammable, smelly products or anything or that sort) it's actually a good way to introduce students to science. Wayne O'Neill at MIT, you know, loved to make that point, and I think we should make that clear. My only concern is that this, to me at least, was very clear in the writings of Chomsky, but then the puzzle is why is it still so unclear? Because Chomsky has made those points sixty years ago, so, and Lenneberg made those points fifty years ago. Why hasn't that happen yet? I don't know, but… it's probably very hard, that's what it is.



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**PTM** *You are a scientist, and one of the editors of Biolinguistics, which is electronic and free for whoever wants to read it, and this interview will also be published in a free electronic journal. Do you think, as a scientist, that this is a good way to bring science closer to everyone who has an interest in its achievements?*

**CB** The Open Access?

**PTM** *Yeah.*

**CB** I think so, but with a risk. I think it's really a way, because the funds that we receive are public money so I think we have a responsibility to make our field accessible to the public, our results accessible to the public, and phrased in a way that at least the public can understand, not every detail, of course, but… The risk is that there is also a new development in the publication area, which is this citation record, or citation index, or impact factor, that threatens the open access. Namely, many of the ways in which you get into citation records and so on and so forth are so institutionalized in fact by journals and companies that sell the most expensive journals on the planet; it's very difficult for at least young or open access journals to make the work accessible to the public while at the same time offering the tools for tracking down citations and so on, that allow for job security for the people who are actually writing the articles. And there is a certain tension. I can tell you from experience that in the context of *Biolinguistics* we have received a couple of inquiries from non-linguists who were very interested in publishing with us or at least submitting articles with us and in the end didn't submit because they asked us "what's the impact factor of the journal", and our answer was "well, we don't have any". I mean we, that is Kleanthes Grohmann and I, are just running this on our own money and energy. We don't have institutional support to speak of. This is just what we can offer, at least for now. And as a result those people who were very interested said "well, sorry, but the department I'm in really wants me, in order to be tenured, to publish in journals that have a high impact factor. Since you don't have any impact factor whatsoever, then I can't even consider submission." That's very bad because we probably missed out on very good submissions. And we have and are still working on that but it's very difficult to get into a system that's money oriented and still make the work accessible to everyone. I mean, one of the reasons we didn't sell the journal – we refused some of the support we could have gotten – is because, you know, we would lose some of the freedom and accessibility that we want to ensure. But that comes as a cost. And this citation index and impact factor didn't exist, really, when I was a student, and I think that before either, and I think that contributions were made irrespective of that fact. There's this impression that having an impact factor is a more objective measure to give tenure, for example; it's not. Because there are



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many good journals that are not supported by wealthy companies, that don't have a high impact factor but have a big impact. In fact, currently, I think, blogs have a big impact in science; they don't have a registered impact factor, but they make an impact. So, there is this tension and I don't know how to resolve it. Of course, I would be in favor of just removing those notions of impact factor and keep work accessible but there's higher stakes at play and I think it would be naïve of me to think that things like impact factor and citation index would disappear, but I am not convinced that they are that useful. If you look, for example, at the work in theoretical physics, like the work of, for example, Steven Weinberg, who got the Nobel Prize for his unifications in theoretical physics, and if you track the citations of the early papers where that unification was proposed, for I don't know how many years, that paper wasn't basically cited by anyone. And then you get a number of citations, and these are self-citations, that is, Weinberg was citing his own paper, building on it. And then, all of the sudden, but many years after, you know, it became, I think, if not the most cited paper, certainly one of the most cited papers currently in theoretical physics. But the period between the time when it appeared and the time of real serious citations is much longer than the period that's being used for a tenure case. So, if you just relied on that [citation index/impact factor], this guy wouldn't have gotten tenured because his famous paper that got him the Nobel Prize hadn't been cited enough during that time. Well, here is a strong argument against citation indices and impact factors. Usually it takes a long time before something that has a real impact has that impact. So if that's the case I'm not convinced that the measures that we are using now are really good.

**PTM** *So you do think that it objectively is bad for the enhancement of knowledge.*

**CB** I am not convinced of its usefulness, because I think that scientists before that did pretty fine in terms of having an impact.

**JV** *Things are changing now about this bibliometry and impact measurements, aren't they?*

**CB** I don't know…

**JV** *Because I remember that, a few years ago, linguists and people from other humanities discussed a way of finding specific ways of measuring impact that would not be the same as used in biology or physics…*

**CB** Yes, that's also true. There is something to add actually, because it bears on the place of linguistics in academia. One of the things where we are really lagging behind is in terms of publication. Most of the publications, if you look at other fields, their period for getting a review

after submission, and the period between acceptance and publication, our field is just way too slow. I mean, it's now standard to submit even a squib or a short paper in high impact journals and to get a review maybe in a year that asks for revisions, that asks for a second round of reviews, and to have that paper published three years after its original submission, that's not… you cannot judge those publications in the same way you judge publications in the hard sciences, for which there is a specific deadline for reviewers to act, and for re-submissions to happen, and publications to happen. You know, a couple of years ago I was asked to review for hard science journals, and I was struck when I was first offered to review for them and they said "would you be able to review by this particular deadline?" and the deadline was, like, you know, two/three weeks, or something like that, and they made it very clear that if I didn't submit the review after that I wouldn't be considered for review again or that paper would be submitted to someone else, so they move on. In our field, we have a lifetime to submit a review, and then the author has a lifetime to resubmit, that's not as serious. Until we fix that, we cannot make a strong argument, also, for being part of the hard sciences, because our practices are still medieval, compared to the hard sciences.

**JV** *These impact measurements were conceived before this wave of electronic or open access journals, and blogs, as you've mentioned…*

**CB** I don't know the specific history of it, and in fact I should tell you I don't know how to measure my impact factor and things like that. I've tried to stay away from it; I'm not convinced. I think it's more fashion… it measures something that's not impact. It measures something else.

**PTM** *What do you think about the future of scientific publication as exclusively electronic publications, in general?*

**CB** Well, I would hope – as I said, it's hard to predict the future – that, with the tools we currently have, the internet, the search engines that we have, and those that will exist soon, this will be on the rise. You know, nowadays I think few people really go to a physical library. Very often, you download papers from… I mean, we don't even know how journals look physically anymore. So, I would hope that's something that will be on the rise. But there is something that we should worry about in this context and that's the costs of publications. Something which in linguistics doesn't quite exist yet but, namely if you ask a linguist when you submit a paper, you know, if it's published, you have to pay 1000, 2000, 3000 euros, linguists would be very surprised. One of the ways in which we could improve, for example, the *Biolinguistics* journal is by charging

the authors for publication. We don't do that because we know that many of our contributors don't have the grants that would allow that, and essentially pay for those papers. But again, if we want to be in the hard sciences one of the things we should do is also publish in those hard science journals, and there we'll be asked to pay. That's a way of supporting those publications. And that's something that no one will have to think about as a community, because we'll need the grants, that go along with it. And already now if you look there are a couple of journals that are not exclusively devoted to language but have an emphasis on linguistics. They are edited by some linguists, or at least people who gravitate around linguistics circles, and the price for publishing papers are just over 1000, 2000 euros, and I think that many linguists wouldn't be able to just afford that right now. Because, again, we are now the victim of where we fall academically, right? I mean, our academic context defines our sources of funding, and amount of funding, but now if you want to publish in a different academic context, like the hard sciences, in order to make that step towards belonging in there, then our sources of funding are just too limited, because, remember, many people, many deans I know still don't know why we need more than a blackboard. And so if they think that all we need is a blackboard we cannot ask for a lot of funding, like thousands of euros for publications, because there's part of where we belong. So all of that is quite complicated. I don't know how to solve it, but I have a couple of suggestions, namely, when we write the grants, it would be useful to try to include non-linguists as co-PIs [Principle Investigators], because that's a way of justifying bigger amounts of money being requested. That's just a way of saying "we have this guy working with us, and maybe you think I don't need a lab, but certainly he has a lab or needs to sustain it", and that's a way of maybe getting around that, and then if those grants are funded, and become successful, then maybe deans will realize we also need labs, independently of the other guys.

**PTM** *What are, in your opinion, the best places today to study language in a biolinguistic perspective?*

**CB** That's a good question. I mean, there are many, many good places. Obviously I'm biased, because I would think that one of the places is Barcelona, where I am. Not because I'm there, but because I moved there, because I thought it was a good place to study language as a biological phenomenon. So, mainly because of my colleagues, mostly non-linguists, I think it's a good place to do that. But, you know, there are many, many places that are good. I think one of the things that people, students, should look at when they apply for graduate school, for example, is not just who is in the linguistics department, but who is in the biology department, or who is in the psychology department, who is in the philosophy department, and see if actually they would be

allowed to write a dissertation with these people on their committees, and I think that that means finding linguistics departments with people that are open-minded, and people that already engaged in collaborations across fields. At least if one is to pursue biolinguistics seriously, then that's the kind of thing that should happen. But, of course, there are difficult situations; I'll give you perhaps the clearest example of a difficult situation: I visit Japan fairly frequently because they have very good, linguistic groups and biolinguistic circles there. And one of the difficulties that they have shared with me is the fact that they find it difficult to recommend biolinguistics to undergraduates thinking of going to graduate school, because even if they could find good places, say, in the US, Europe, maybe in Japan, to study Biolinguistics, the problem is finding a job afterwards. See, if you look at, say, the Japanese situation, many of the people who wrote a PhD in theoretical linguistics go back to Japan to become essentially English teachers, or to find jobs in English linguistics or English departments. And, again, that would be ok if you adopt a philological tradition using theoretical tools, but what if you write a dissertation on, say, non-linguistic things, like, say, the birdsongs I mentioned, say, the phonology or the structure of birdsongs, imagine that as a dissertation topic. You can't really ask for a job in an English department after that dissertation. If you write a dissertation on English case markers, well, ok, you know, that can still fit, but if you go biological, that's much harder to then find a context for jobs. So, they find it hard to just say to students "yeah, this is exciting but, you know, be aware, this is difficult." So there are many good places to study, I think, language in a biological context; what's missing, still, is a good structure after those studies, a good job structure, some support. That's what we have to work on. Those of us who have a stable position and are committed to the enterprise should make sure that there is a structure for the young guys, you know, who are excited about these opportunities and want to do it academically, to also get the chance to do this after the PhD. That's a big task, I think.

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