LECTURE 10

# Towards an Integrated Science of Language, Cognition, Behavior, and Society

Thank you all for making it to the very last lecture of the whole week. In my series of presentations, we have been covering, as I announced at the beginning, a broad range of topics. To start, I would like to reactivate at least some crucial notions, providing those of you who have not been here for the whole week, at least with a glimpse of the topics that we have been touching on.

We started out with the commitments of the field of cognitive linguistics from the very beginning, until and including the present day and the future: the scientific and cognitive commitments, to which should be added, I proposed, a *biological* commitment. I argued that this is actually a straightforward consequence of the development, over the last couple of decades, of the usage-based approach that assigns a central role to *behavioral* facts as Dirk Geeraerts called them (I quoted him on that), as the primary facts of the science of linguistics – linking the study of human communicative behavior to the communicative behavior of organisms in general, as part of the biological study of communicative behavior. In the case of humans, I have mentioned – and I have been mentioning it a couple of other times – a very special role for the notion of conventionality, as guiding and systematizing this human communicative behavior.

Particularly in the second lecture, we have been engaged in questions of how to conduct scientific work in this area, how to provide scientific explanations for the phenomena that we are studying. I told you about the model of explanation in behavioral biology, to which the name of Tinbergen was attached, distinguishing proximate individual level explanations from ultimate population level explanations, which only together can provide what can be called 'biological explanations' for a phenomenon: no single one can claim to be *the* explanation. In the case of humans, taking the conventionality feature

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(from the first lecture) seriously has certain specific consequences for fundamental linguistic notions as well, which have different meanings on different levels, including, paradoxically, the English term *meaning* itself – you will remember that.

In the third lecture, we paid attention to some consequences of the fact that conventions are community bound, thus languages are community bound, and the consequences for the cognition of individual members learning those conventions when they grow up – [[conventions]] that are associated with particular concepts and tied to particular patterns of behavior in this community, which is rather special when compared to other animals which do not have such a thing as conventionality, (at least not so much in the human sense), but at the same time natural, once you have that sort of phenomenon.

In lecture four, we talked about the special character of human communication, including linguistic communication, as being inferential – there is always more communicated than what is explicitly said, in some sense, which is directly tied to the cooperative nature of communication – and how that is reflected in grammar. In that session, we looked particularly at the example of negation as a tool for intersubjective coordination, which is a pretty universal kind of linguistic tool.

In lecture five, we looked at complementation, which is not so cross-linguistically common, although I stressed already at the end of that lecture that languages that do not have such a structural tool Western-European-complementation-style, do have other perspective managing, viewpoint tools – we talked about that this morning as well – that probably have not been sufficiently studied in their own right, as perspective management tools.

When we talked about semantic change in the sixth lecture, driven by the inferential nature of human communication, we addressed the issue of how conventions, which make it on the one hand impossible for individuals to change them, do nevertheless change, as driven by this inferential nature. There is always more stuff communicated than what is being literally encoded, so to speak, in the signals, the conventional signals of a community. Those aspects – we will also be getting back to that in this overview – can become associated with the signals themselves, conventionalized, and that establishes and creates the phenomenon that we call "semantic change" in historical linguistics. Specific cases of semantic change, as in this case of causation marking, causative constructions that I used as an example, involve having to look at multiple factors, including a very general, presumably universal conceptual model of causality, interacting with culturally more specific models, that

can change for reasons independently of the language, but then giving rise to changes in the associations between form and meaning.

On the basis of a number of these concepts that we have been developing, especially the usage-based conception and exemplar type approaches, we applied them to questions on the origin of language. To begin with: the origins of phonological structure, something that cognitive linguists usually do not talk about a lot. But I tried to convince you that at the level of explanation, we have something to take away from that: cognition, especially learning, plays a crucial role in the origins of the sound structure of human languages, and it has the implication of really deep roots of linguistic diversity. Learning, as a factor in the transmission of languages, was already playing a crucial role before we could have had language in any modern sense, including a whole lot of syntax.

In the eighth lecture, we talked about the evolution of grammatical constructions on the basis of an explicit formulation of the theory of signs based on the *usage* of signs – the way they are used, and the methods and techniques of their interpretation. I boldly claimed that I have presented somewhat of an improvement of standard semiotics (based on a usage-based approach), as the basis for not only grammatical change, grammaticalization as we know it, but with the same mechanisms leading to the emergence of grammatical structure and of second order symbols.

This morning, I applied the same notions to new ideas on the relationship between different kinds of tools for viewpoint management, not only the complementation constructions that we have already been talking about, but also, as alternatives, other viewpoint management tools, in particular direct discourse and free indirect discourse, arguing that direct discourse is based on a really different kind of cognitive capacity, namely the good old classical cognitive principle of iconicity – as opposed to description, that is involved at least partly in indirect discourse and complementation, where conventions play a role.

I am going to use this example to make a specific point that is actually the topic of my concluding lecture now, returning to the issue of integration of linguistics, cognitive linguistics in particular, and its different subfields, in an overall conceptual framework that can also be linked to other disciplines. This has to do with the issue of – you will recognize the staircase picture that I used as a metaphor – the relationship between different scientific disciplines in terms of complex phenomena being reducible to more simple ones on the one hand, and complex phenomena at the same time as novel phenomena, not existent at lower levels, emerging from the lower-level ones.

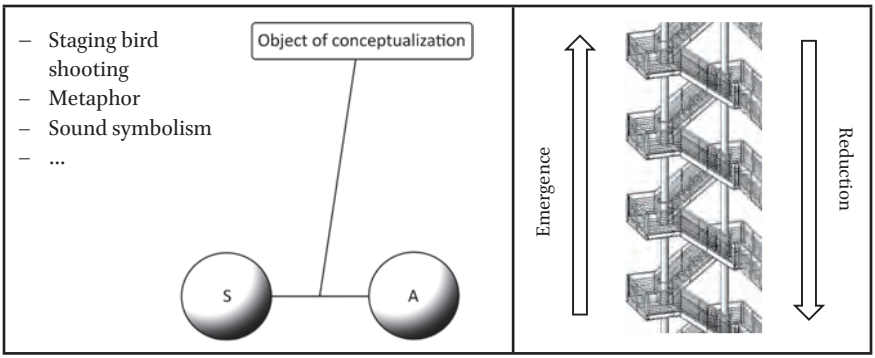


FIGURE 1 Standard iconicity: object of conceptualization

What we have been talking about this morning was an example of that general pattern. Standard iconicity as we know it in cognitive linguistics from the beginning, I want to say, is mostly only really used and applied on the level of the object of conceptualization (in this general structure of human communication – you have seen this picture a couple of times over the last week), so when we talk about metaphor, sound symbolism – or the action of staging the shooting of the birds rather than talking about it, in this morning's example [[*figure 1*]].

But the claim is: we also can and do apply it to the dimension of interaction itself [[*figure 2*]].

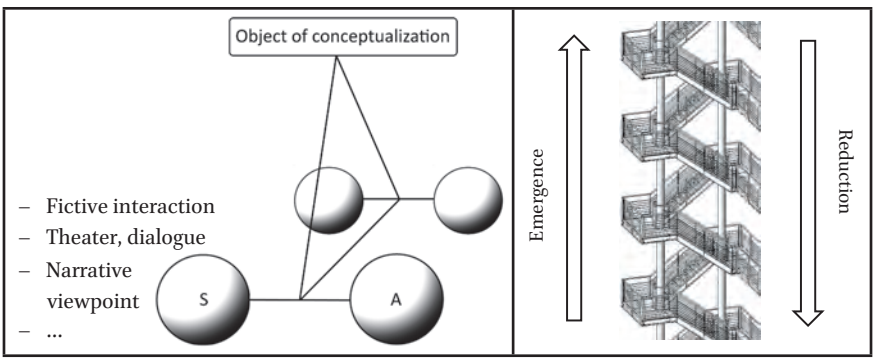


FIGURE 2 Iconicity in the dimension of intersubjectivity

Staging a dialogue, watching or performing a play, enjoying theater or engaging in theater, and understanding, reconstructing, imagining a conversation in a narrative – all that implies taking the viewpoint of others – is an application of the capacity for simulation, the iconic principle, to the structure of interaction itself – it is replicating and *imagining* interaction.

We can thus analyze the phenomenon that we have been working on, in discourse analysis and in cognitive linguistics, as 'viewpoint in narrative discourse', as a kind of emergent phenomenon that can be explained in terms of an interaction between the general capacity for iconicity (simulation), and our experience of being interlocutors, but also eavesdroppers, in conversations. If you combine those, you get the phenomena of theater, dialogue in narrative, and viewpoint – with languages differing from each other in their conventional tools (here we have conventions again) for doing similar work in this dimension of viewpoint organization. Besides these general principles (simulating conversations), languages also provide *conventional* tools to talk about the ideas of others in relation to our own. That gives us the language-specific – by definition, by nature, unavoidably language-specific instead of universal – phenomenon of 'mixing voices', as it is sometimes called.

I want to do this latter kind of thing for the rest of this talk more generally: integrating the different sub-disciplines of linguistics, with the help of the different kinds of ideas, notions, and insights that we have been going over over the last week.

Let us take a language to be, very generally, a repertoire of conventional, observable signals (sounds, gestures, visual markings) that is in use in a community – formulated as 'theory neutrally' as possible, so to speak. A description and analysis of this will give you what linguists know as lexicon and grammar. That is what you get when you describe these repertoires of signals in use in a particular community.

But I have been stressing over and over again that these are used by *members* of a community, as *tools* for coordinating their mental states in individual, local, ad hoc joint *actions*, which are the object of study of fields that we know as pragmatics: the science and theories of communicative and linguistic actions. We do not normally think of lexicon and grammar as having anything necessarily to do with actions; we have repertoires of signals on the one hand, actions on the other hand. But these things that we describe in lexicons and grammars are tools for very specific actions of coordination, and that is causally linked, so there have to be theoretical and explanatory ways of linking them.

[[Now]] we add to this the fact – also emphasized on different occasions – that languages are transmitted culturally and not genetically – not barring the possibility that the capacity to *learn* a language may be innate, to some extent, wholly or partly (I leave that aside); a certainty is that these repertoires of signals, in use in a community as tools, are not transmitted from generation to generation genetically but by imitative learning: they are transmitted culturally. *People* replicate linguistic items, they do not do it themselves.

This gives us the idea of languages – still repertoires of conventional, observable signals – as culturally evolving lineages. The present language has this history of previous stages of observable signals that have been in use in a community for their members to be used for mental coordination in joint actions – so: culturally evolving systems, population level phenomena. These repertoires of conventional observable signals are population level phenomena, defined – one language opposed to another – by their relative communicative isolation. What makes one language ultimately differ from another? Not so much some platonic, essentialist property of their grammar, but basically the fact that the speakers, the users of one set of tools cannot get the job of mental coordination done well with members of another community. Just like species in biology are not defined in essentialist terms but by the fact of reproductive isolation, the differences and boundaries of languages are defined by the criterion of communicative isolation.

This resonates, and I would like to bring that out, with a distinction that has its source outside (even, in a sense, metaphorically, far outside) cognitive linguistics presently, [[namely]] in generative linguistics. Towards the end of the previous century, Chomsky introduced a distinction between I-language and E-language, "I" standing for "individual" and "internal" and "E" for "external". What he meant with it was that the individual internal thing was the only real thing that existed, and the external language is an epiphenomenon. In some of the ways that this distinction is being used, it is actually very much parallel to what I am suggesting here as the distinction between a language as a conventional system at the population level (a system of conventions) and the individual level phenomenon, the individuals who may have very different mental grammars while still speaking the same language in terms of the observable signals and the meanings that they have. In my most optimistic moments, I have the hope and the feeling that by making these kinds of assumptions (that are often left implicit) more explicit, there may even be a basis here, in acknowledging these distinctions, of enhancing understanding across scientifically relatively isolated communities. In any case, the notion of 'a grammar of language X', as you find them instantiated in book series like the

De Gruyter grammar series and descriptive grammars, typically [[concerns]] description of population level phenomena: the regularities in the behavior of a community of speakers – not directly related to, not itself a description of, anyone's mental grammar, some individual's knowledge or representation of those regularities, but nevertheless regularities in the behavior of a community that have a real existence.

Now, to return to the relationships between these [[levels (population and individual)]], the actual place and mechanisms where new things happen and certain variants that exist in a language are chosen and selected over others, is the level of speakers. Speakers interact with each other; they decide at that moment which words and constructions they choose to convey their message, and which they don't [[chose]]. If you have an alternation in your grammar, two constructions that can in principle express the same kind of thing, one is chosen. Those are the moments of selection, where one variant in a language is chosen over another. Thus, pragmatics, conversation analysis as we know it, or the dialogic syntax stuff that I mentioned this morning, has a role to play in the whole story, because it is all about the reasons and motivations for speakers in very specific situations to do one thing rather than something else [[and their effects]].

Properties of the processing systems of individuals, like their memories or how they perceive things in general, also go into it. All kinds of properties of individual speakers that make them understand things in certain ways, or that make them produce things in certain ways, have this role to play at the individual level, especially with respect to selection of certain linguistic variants over others. In other words, the field of psycho- and/or neuro-linguistics has this particular role to play in the bigger picture of languages as evolving lineages.

Social structure – who talks to whom, and what is being said to whom – has its own role to play. Sometimes knowledge of social structure is a factor for individuals to choose to say certain things and not others, so it can play a role in selection. But it has a special role to play in determining what kind of variants get a chance to spread and to be distributed over a large or a small portion of the population. The internal social structure of a community is going to be a very strong causal factor in determining what ultimately gets into the general language, out of all the variants that the members of the speakers within certain social groups are choosing. So sociolinguistics has its role to play in the whole story as well.

And of course: historical linguistics, grammaticalization [[among others]]. The ultimate explanations are of a historical kind. "Why do speakers say the things they do?" [[*lecture 2*]] Some of the answers have to be: they say these

things because these items happen to have been developing into their language as a result of the history of utterances and speakers' actions in their past.

It is a very general property of evolving systems that for change to be going on continuously, we have to have mechanisms to create new variants at some point. If the optimal variants have all been selected and a system has evolved to such a situation that there is no longer any variation, evolution is no longer possible either. So it can only go on and on, if there are also mechanisms that continuously produce new variants. In language, these are all kinds of different things.

When you have new things to say but you do not yet have a rule for it, you have to invent something, so analogy has a role to play here; people usually try to find something that they do not have an expression for by making an analogy with something that they do have an expression for; so analogy and metaphor are there.

Creation and creativity, intentional variation: you may, in order to draw attention to yourself, intentionally violate the convention and do something different. That comes with a risk, but the benefit may outweigh the risks, and if it works, then something new has happened that may make it into the language of the larger community.

Less intentional factors also play a role: memory, interest, laziness – leading to sloppiness. If you can get away with it, then the chances are that the sloppy expression will be copied by others and ultimately become the conventional expression.

I have been using the terms "cultural evolution", language as an "evolving system", an "evolutionary lineage", a couple of times, and I would like to take this opportunity to make one point quite explicitly, namely that we are not talking about a metaphor here, of seeing evolution as a metaphor for language origins and language change, but as something more radical. This can be illustrated by the discovery of the theory of evolution itself.

Darwin, in his autobiography, tells the story of how he got the idea. The idea consisted of a number of different components. Already as a young person, it was clear to him that selection played a role in breeding. The way people created new races of dogs, plants, pigeons, and all that, was by selectively allowing only certain kinds of animals, with certain kinds of properties, to reproduce. In that way, you could create whole new races of animals and plants. The thing was, he could not see how that applied to organisms in nature, until he read [[in 1838]] Malthus' story on population, which was written for totally different purposes. So he was reading it for pleasure, out of interest, but not with a specific academic interest concerning his own topic:

… and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here, then, I had at last got a theory by which to work; […]

http://darwin-online.org.uk/

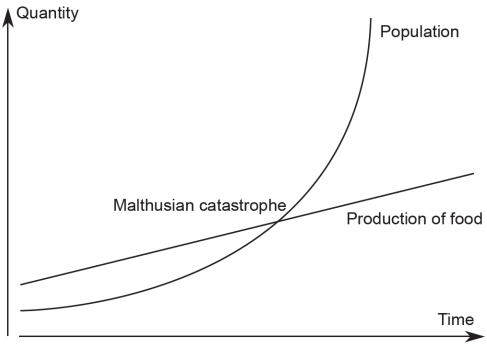


FIGURE 3 "Malthus on Population"
https://en.wikipedia.org/wiki/Malthusianism

So he happened to read, for amusement, Malthus on population. Malthus was arguing that human populations – that is what he was concerned about – were under threat of growing much faster than the resources were growing. So they were going to hit a ceiling and then disaster would take place: there would no longer be food to support the whole population, and all human society would collapse. Darwin realized that the situation that Malthus was describing was actually a description of the state of nature that all organisms find themselves in, continuously, and that in that sort of situation, once you have variation, any variants that have an advantage, even the slightest advantage, over any other would have a bigger chance of surviving the crash than another. This became the idea of natural selection. The combination of the two [[variation and selection]] gives us the theory of evolution. [[Consider figure 4.]]

| | |
|---|---|
| 1. | Variation (in a population of replicators) |
| 2. | Selection: variant with feature F has higher chance of being replicated than variant without |
| 3. | Heritability: features are passed on reliably in replication ('offspring resembles parents') |
| → | Frequency of F in population will increase, cumulatively: evolution |

FIGURE 4 Darwin's algorithm ('substrate neutral')

We have variation in a population of entities that replicate, generally formulated. Selection: that is, the variant with a feature F has a higher chance of being replicated than one without. And we have to have some degree of heritability: children must look a little bit more like their parents than like the average member of a community. If you have the combination of those three, then the frequency of the feature F in the population over generations will increase, inevitably. There is no way to stop it. That is why the caption is "Darwin's algorithm", and why I formulated it in this way, which is called 'substrate neutral'; it is not about genes or organisms.

It is intentionally formulated this way to show that this property of evolution is a consequence of these three general, abstract properties. That makes biological evolution – as we know it, the most famous, well known one – *one* instance of a general process of evolution. It is one instantiation of it – and language is another one. So we are not talking about metaphors. We are talking about a category of evolutionary processes, one that was discovered and described for the first time by Darwin; he actually formulated and described a number of different instances of it. He defined a new *class* of processes of change.

Just as in the case of *meaning* – we have to be specific about what meaning we mean when we talk about it scientifically – we also have to be careful and cautious about the meaning of the term *evolution*, when we use it in the context of a scientific theory. To give you an example, in Wikipedia or any other encyclopedia, in handbooks even, you can find stories about the evolution of the solar system. The term *evolution* is used there, but pretty loosely, in this way. It makes sense in ordinary English, because there is variation initially [[of rocks of different sizes, etc.]]. Some of them disappear and others remain; thus, that looks like a sort of selection. But there is nothing like replication going on in that entire process, making it not an instance of Darwin's algorithm, not 'evolution' in that specifically defined sense. So we have to be careful: here, 'evolution' is a metaphor. My claim is: when applied to language, it is not a metaphor; it is a relationship of a category and an instantiation.

We have to take on board the consequences, which include population thinking. That may be hard, but it is really rewarding. Languages that evolve are population level phenomena, the repertoires of conventional tools at the community level. Not the individuals – the individuals play the role of interactors, doing the selection or being selected themselves (when we talk about the individual lexical items of language, these are being selected). The evolving things are only the population level phenomena.

As a matter of fact, Darwin himself already formulated and identified a number of other instances of his algorithm. Breeding was one, sexual selection

is one, and there are two pages in *The Descent of Man* [[1871]] where he actually invokes language as an example of his algorithm, to convince his readers that this is a good idea that has other instantiations as well, doing it sort of the other way around [[from what we just did]], but Darwin himself took this as quite natural. Historical linguistics was a big thing in his days, and the relationships between the Indo-European languages and the role of Sanskrit had just been discovered. Thus, historical linguistics, for having made these discoveries of the historical relatedness of languages, was quite famous and could be used by Darwin as a rhetorical tool to convince his readers that this was a natural, scientific way of conceiving of the history of life on the planet as well.

But others have also identified other systems. The immune system of multicellular organisms works by variation, selection, and heritability. Other cultural systems have been identified – especially the names of Boyd and Richerson must be mentioned here. Perhaps also interesting for us: the whole scientific enterprise can be fruitfully analyzed as another instantiation of Darwin's algorithm, with ideas, theories, hypotheses, and scientists, competing with each other for conceptual replication into the next generation [[(Hull 1988)]]. For example, you guys, listening to me now and deciding what you are going to do for the future, have your role to play in the scientific evolutionary process.

Other instantiations in the animal kingdom also [[involve]] cultural evolution. I mentioned the bird song phenomenon. One consequence of cultural evolution is the formation of dialects: once communities get communicatively relatively isolated – not necessarily genetically but culturally, communicatively isolated – their communicative practices start to differ systematically. What you see here [[Lachlan et al. (2013)]] is dialect variation of chaffinch song over Europe. You just have to take my word for it, but it is there to provide you with some information that there are actually quite a lot of processes of change that are defined by the newly discovered algorithm that Darwin formulated for the first time.

The last example, more a human case, is a nice study on the descent with modification of windmills throughout Europe along the same principle, starting out with very slight variations in the way that mills were being constructed.

Certain ways of constructing were better when the wind was variable, than others; these were then replicated more because of that, than others – certain kinds of materials were more easily available in some areas than in others, so this provided pressures for certain kinds of variants to be more likely to be reproduced than others – ultimately giving rise to the variation of windmills, originating from a single source, all over the continent.

Returning to language, what this allows us to do, I propose, is to unify the different subdisciplines of linguistics – and perhaps also different approaches

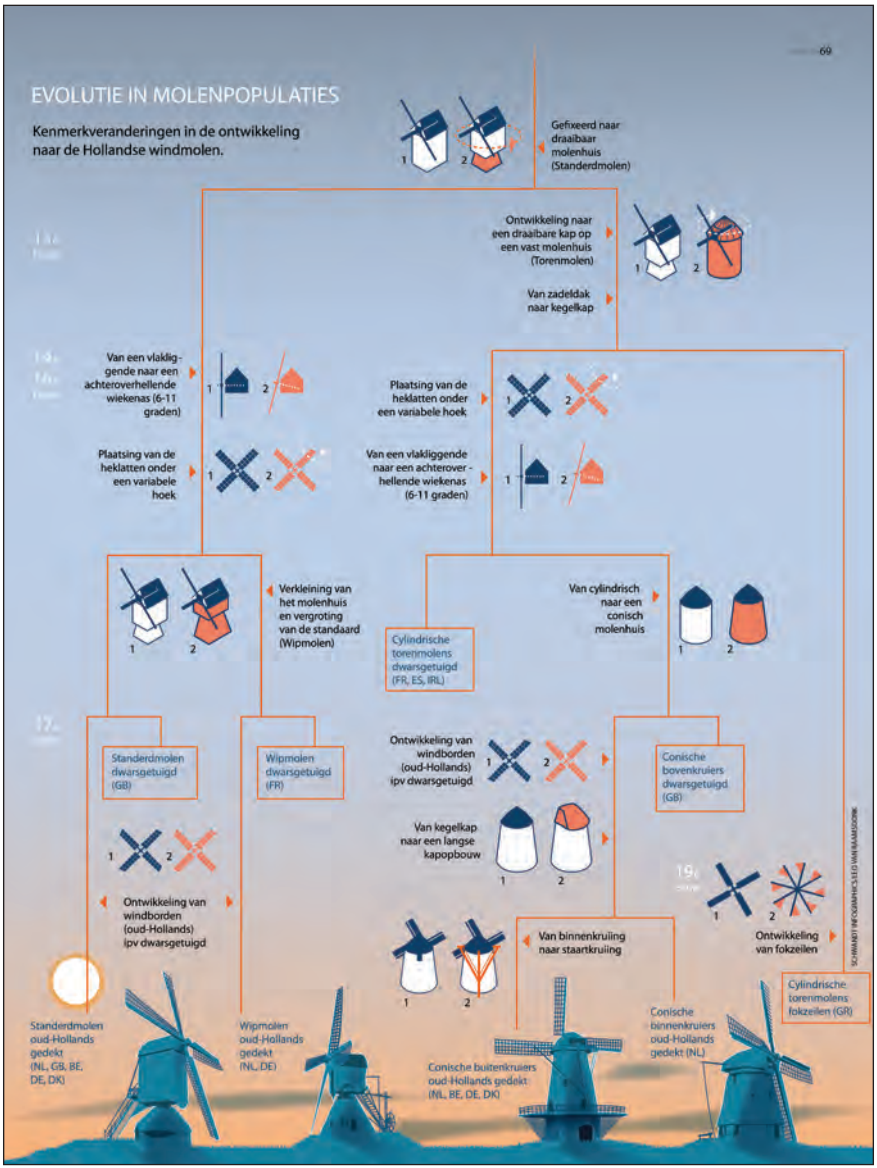


FIGURE 5 Cultural evolution: windmills
REPRODUCED FROM VAN RAAMSDONK 2010

in linguistics – in a similar way as Tinbergen's proposal managed to do for the different approaches to behavioral biology in the sixties of the previous century, answering the question: "Why do the things that people say have the properties that they have?" Why do constructicons look the way they do?

There is no single discipline or subdiscipline of linguistics, like pragmatics, psycholinguistics, historical linguistics, that only on its own is going to provide *the* answer to that question. They can only do so jointly, and they have to acknowledge and recognize that. But it can only be done if each of these is willing to acknowledge and take on board the *processual* nature of all these things. They can only be linked to each other in terms of the *process* of evolution, continuously working. Sticking to traditional structuralist thinking – there is a system somewhere that has properties of its own which can and should be explained in terms of itself; that is typically the kind of *system thinking* in terms of opposition – especially opposition thinking, has to be replaced with a priority for processes. I am not saying that systems do not exist. They do, as transient but relatively stable – think of conventions again –, patterns of behavior, that are stable relative to the situations in which these elements are being used: conversations and speech acts that last a few seconds, and so on.

That they can and should be related can also be illustrated more concretely with the same example that I used in another context this morning, the dialogic syntax phenomenon. In this conversation [[*example* (9) *and table 6 in lecture 9*]], Joanne says something about somebody they are talking about, *yet he's still healthy*, and Lenore responds *he's still walking around*, copying and pasting, as it were, part of Joanne's utterance to make her own contribution. Du Bois uses this to illustrate that for the time of this conversation, this creates an ad-hoc category of a scale of health, on which "walking around" is a relatively low instantiation. That is not at all in the conventional meaning of *walking around*, I hope you agree – nothing like that; it is purely ad-hoc, in this usage with this copying, that this works. But it does create, for these two interactors, a mutual understanding that involves their own very local category at that moment. It lasts for perhaps a few seconds; when they no longer use it, they might have forgotten it a day later; but at least it is there for some time.

In another paper in that same special issue of *Cognitive Linguistics* in 2014, two other authors link this to construction grammar and the usage-based approach that we have been talking about over the last week [[in the following way:]]

> As speakers in an interaction can (collaboratively) form local constructional templates (schematization), which are used productively within the dialogic sequence (instantiation), a degree of local routinization (or

> strength of activation) occurs between the interlocutors. For the interlocutors, these templates are temporarily part of the shared linguistic repertoire and can thus be treated as ad hoc constructions.
>
> BRÔNE & ZIMA (2014: 471)

They sort of say: well, this is a degree of local routinization, for the time being. We can say that there is a certain activation being strengthened of these two concepts related to each other in terms of degrees of health, at least among these interlocutors. They are temporarily part of the shared linguistic repertoire and thus can be treated as ad-hoc constructions – not really constructions in the sense of conventional tools of a community, but you can in principle see the origin of something like that, a new construction. Pretty unlikely in this specific case, but you never know. In all these conversations that we conduct, people make zillions temporary ad-hoc categories and links, the vast majority of which will not survive that specific conversation. But some of them might – to start: with these same speakers when they are having another conversation about the same topic, for example a day later or a week later (that is short enough to still remember this kind of thing); children of these people being around when they have this conversation might pick it up – and something new is starting that then can start to spread. Why not?

So we have a possibility of linking the very short time scale phenomenon of dialogic syntax and ad-hoc category and construction formation, to ultimate processes of language change. Conventional tools are used here for new meanings, by these speakers. They are using, from the community repertoire, words like *walking*, *around*, *healthy*, to create something new. This new thing might be the start of a process that can ultimately, via copying, have consequences at the population level.

This is a kind of different formulation by Du Bois himself, of the same idea, emphasizing the speed of the evolutionary process in this view:

> By raising the cognitive activation levels of the words and structures selected, it enhances their learning [...], increasing the likelihood of their being used again in some future dialogic interaction. Selection becomes a factor in the dissemination of in-progress language change, impacting the circulation of grammatical innovations across populations of utterances and their speakers in the community of discourse [...]. In contrast to the generational time scale of child language learning, selective reproduction in dialogic interaction is very fast. By accelerating the timescale for transmitting "heritable" (learnable) variation, the speed of reproduction and selection are accelerated by several orders of magnitude,

> with profound implications for functional adaptation and the culture-historical evolution of language as a complex adaptive system [...].
>
> DU BOIS (2014: 380/381)

Here is the idea that I just formulated summarized:

– In a joint project, interlocutors build up a shared personal history, also of their use of language.
– As soon as there is a history of their interactions, the resources available to these two for further interactions expand; we get these ad-hoc constructions.
– Most of them will never be used by others, but when they do, you get language change. Only very few [[are needed]].

We are producing, in all our conversations, so many ad-hoc new links all the time, that even if it is only a tiny fraction that gets wider distribution, it is bound to change the language of communities, in the end.

I am going to say, in a sense very briefly, the same thing that I have been putting into a lot of words so far, but now using this 'Tinbergian' schema of proximate and ultimate explanations – the individual, proximate and the population, ultimate level jointly – to suggest answers to the question where different subfields of linguistics fit in [[*table 1*]].

The study of language processing (the neuro- and psycholinguistics stuff), and the study of concrete interactions (the field of pragmatics) contribute to answers of why people say the things they say, and how they say it, are in this corner [[*top left*]] in the square of the whole picture: the mechanisms that are going on, people's motives for certain choices and individuals' knowledge of certain words and not others – you name it; all that stuff.

Development has an important contribution to make as well: "Why do [[certain]] people say certain things?" "Because they are in a certain stage of

TABLE 1 A 'Tinbergian' approach to subfields of linguistics

| | **Mechanism** | **Development** |
|---|---|---|
| **Proximate** | processing (neuro/psycholinguistics), interaction (pragmatics) | learning, un~ (language acquisition, attrition) |
| | **Function** | **Evolution** |
| **Ultimate** | meaning (semantics), identity, norms (sociolinguistics) | language change (historical linguistics) |

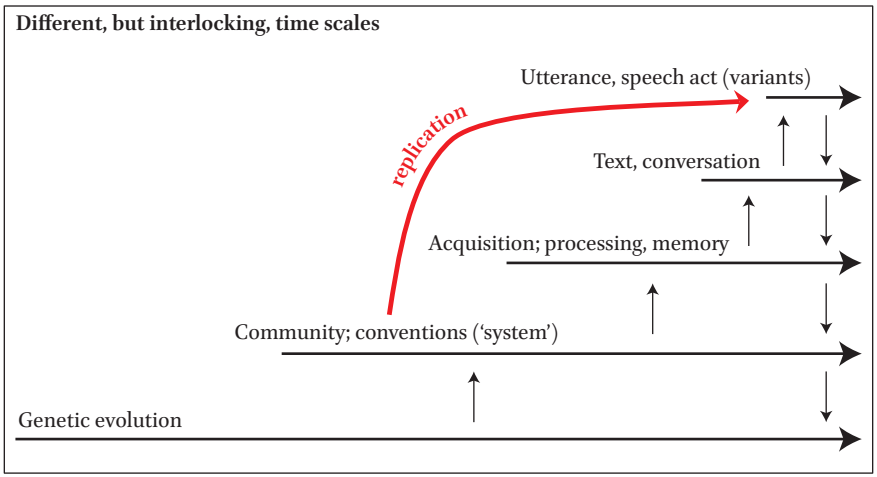


FIGURE 6 Language as a process of processes

language acquisition." I use that term in particular because we are all familiar with the field, the sub-discipline of the study of language acquisition that has an important role to play in filling in this part of the Tinbergian explanation schema, to contribute to our overall answer to the question "Why do languages look the way they do? Why do speakers say the things they say?"

When we talk about the parallel to the contribution to fitness – the function of a biological feature in Tinbergen's schema – we talk about, indeed, the function of linguistic elements. A certain element is chosen by a speaker because it contributes, in his or her assessment, to improving the chances of having communicative success, in conveying the kind of thing that s/he wants to convey: "I use these words from all the words that I know, because at this moment, I make the assessment that these will help optimally to make my interlocutor understand what I try to convey." Those contributions consist in what words and constructions are for, what we call their conventional function and meaning.

Finally, not looking forward but looking backward: historical linguistics, the study of language change – grammaticalization for grammar, semantic change in general – has its role to play in explaining how things got there, certain conventions that we now have in the language, in the first place.

The way that the field of linguistics can be integrated involves prioritizing the *processes* of language use, individually and collectively, and that means processes on many different time scales [[*figure 6*]].

The smallest relevant one, the tiniest time scale that we can think of, is of course that of a specific utterance, one speech act in a specific context, where

variants of language are chosen (I will get back to that in a minute). That is a very small amount of time that we are looking at in those fields, and that is an object of study of certain linguistic subdisciplines. Texts or conversations, the discourse level, span several utterances, several speech acts combined with each other and coherently linked to each other, on a somewhat longer time scale. This is the kind of time scale on which these ad-hoc constructions – the local routines that Brône and Zima propose when they talk about dialogic syntax – will 'live', these jointly constructed temporary routines.

When we talk about the lifetime of an individual, that comprises lots of different discourses and conversations. It moreover develops over time, in which language is acquired, and maybe also, at later stages when you move to a completely different place or get really old, lost. Here is the next level of time spans in the processes that language exists, is processed, and changes.

The history of communities over several generations – so we are now moving from one generation, one lifetime, to cross-generational time – is the longest one when we talk about processes of language use and language change.

All the processes taking place on each of these levels interact with each other, undergo causes from other levels, and have consequences. What people, in a split second, choose to say, means selecting a particular variant out of the repertoire available in the language over others, that, however tiny, contributes to the survival possibilities of that item in the whole language, ultimately. And the other way around. In particular as I was defining languages at the very beginning – languages as repertoires of tools available in a community for members to coordinate their mental states – it involves the replication of the elements of these repertoires on the shortest time scale that we can look at, as far as linguistic processes are concerned.

Linking the study of cultural evolution to the rest of biology, we should not forget that all of this – which is happening, from a biological point of view, on a relatively short time scale – interacts with the historical process of genetic evolution, that [[operates]] on a much longer and slower time scale than cultural evolution, even at the level of many human generations.

That was the most general and, in that sense also the most important slide, because that was my overall message of thinking about linguistics as an integrated field. But in connection with the very last point that I just made, [[I want to make]] a few remarks on relating this conception of internal coherence to other disciplines, committing ourselves to the idea of the unity of science in terms of reduction and emergence as two sides of the same coin.

Christiansen and Kirby – I have shown you this picture before – had biological evolution and cultural evolution interacting. Rightly so, cultural evolution goes faster than biological evolution, and individual development goes faster

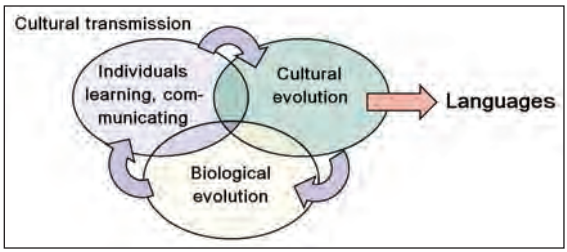


FIGURE 7
Co-evolution, after Christiansen & Kirby 2003 (cf. lecture 2)

than cultural evolution, but still, all of these processes are interacting. In my lectures so far, I have especially been talking about the latter two, but the lower one is also involved. Linking the usage-based approach to evolutionary thinking in general must and can be done. I am especially thinking of the important work by Michael Tomasello, in his *Origins of Human Communication* and other work. The situation that makes us humans, not unique, but pretty special from a biological point of view is our high degree of sociality, of preparedness to cooperate with others, even if we do not know them personally. The whole human species has been relatively successful, in strictly biological terms, due to that relatively high level of trust within cultural communities that allows members of a cultural community to cooperate even if they have no personal relations, thus no personal history that provides justification for this trust. Just sharing the culture is already enough for us to be able to coordinate activities with others, which is basically a matter of trust.

This success provides both a foundation and a selection pressure for conventionality. It is an ultimate source for the emergence of the usage-based system of languages, the whole constructicon – given the way the processing systems are organized; that part of the story has to be included as well – part of which provides tools supporting and enhancing cognition. Negation, complementation, and other perspective management [[tools]] are culturally evolved things that help us maintain this cooperativeness of groups, that [[thereby]] help us survive in the biological world. Thus, there is a link and a feedback loop between cultural phenomena and biological evolution. We would not be there, and not so successful, if we did not have these cultural tools, especially including language that allows us to cooperate and achieve all these things that make us so successful.

In any case, in order to make this link to biology possible, we have to take the concept 'behavior' seriously – that is sort of given with the usage-based approach, but not all the time explicitly acknowledged. But especially also: population level thinking, and its being related to, but at the same time distinct from, the individual level stories, explanations, and causal factors. Only that,

I'm convinced, will allow us to take any further steps towards the realization of this goal of connecting the study of language to other disciplines.

I have been talking almost entirely, in this 'linking' story, about biology, but there is also another direction. Our cooperativeness is biologically special; it requires special biological mechanisms to be explainable. But once we get there, and we have something like a conventional communication system which we call language, we do get a lot of other stuff, like literature, education, logic, and science. No science, no history without language. It is what makes the information that goes into telling stories possible. If there were no ways to preserve, communicate and transmit that information to the next generation, there would be no educational system, there would be no history, there would be no science, no social institutions – the story can go on. They are all, in a sense, 'language-based'. So we have a lot to offer, if we take the perspective of the staircase of science seriously [[*figure 1 above, and lecture 1*]] to the social sciences and the humanities as well. [[We have]] not only to learn from others, but a lot to offer to others, especially in these fields (the humanities and social sciences), as well, by trying to ask questions of the type: "How do languages support these cultural phenomena of literary institutions, literary works, and social institutions? How does that work? How can we contribute to understanding and explaining these phenomena, given how important and how basic the phenomenon of language ultimately is? And how do all these places and environments in which language works and plays a crucial role, feed back into our own object of study – language itself?" With that, I thank you for your attention.