University of Cologne

Seminar with Noam Chomsky[*]

Chomsky:

So we are talking about evolution on acquisition. There is a little bit of evidence about evolution, very little. In fact, to try to get evolutionary evidence about anything is extremely difficult. And of course, there is no direct evidence, naturally. So you have to reconstruct from very fragmentary evidence. In the case of cognitive capacities, like language, there is no direct evidence at all, of course. Nobody took tape recordings 100,000 years ago. So what you have to do is reconstruct. And the soft tissues of the brain do not fossilize. So all you know about the brain is the skull, which tells you something, but not a lot. And then there are artefacts that lead to some plausible speculations. So it is a very weak inference about human evolution altogether. And it does not go as far as answering the kind of question that Michael just raised. So you really cannot say; maybe that happened, maybe not, you know?

Question <00:01:36>:

Professor Chomsky, my question concerns your reversal of the Aristotelian maxim regarding sound and meaning. The Greeks and Aristotle himself would have relied on the idea that ἰδεῖν (*idein*) is both thinking and speaking as a chronological moment at the same time. Is there, from cognitive neuroscience then, a suggestion that there is something that precedes the external expression that is itself, however, discrete and language related, such that we can say that there is not the occurrence at the same time, but rather a chronological occurrence of some sort of language/neural activity and then we make an expression of that?

Chomsky:

The evidence does not really come from neuroscience and it is a little bit like the question about evolution. Not enough is known about the brain. We do know a lot about, say, the human visual system, but that is from experimentation with other animals, so, invasive experimentation with, say, cats and monkeys that can teach you a lot about the detailed neurology of the visual system. And humans have approximately the same visual system, so one concludes that our system probably works the same way. But in the case of language, you just cannot do that. There are no other animals that have the capacities, so you cannot compare it to neurology to try to imagine what the human language capacity is. There is evidence from neuroscience, but it is mostly about localization. The evidence comes from what you can find out about the brain by electrical activity and so on, maybe FMRIs (Functional magnetic resonance imaging), skull studies and the movement of the blood in the brain, that kind of thing. It gives you some information, but nothing about the detailed neurology. So, there is very little neurological evidence. However, there is pretty strong evidence from language design, the way language works. That it is essentially designed for thought, not for speech or some other form of externalization.

Externalization seems to be independent of modality. So, sign works pretty much the same way speech does, theoretically you can use other modalities. And in fact, people can learn language from extremely limited tactile evidence, like putting your hand on the face and so on. The deaf-blind can learn language that way, and very well, in fact. Helen Keller is a famous case. And there is no experimentation with it. So it seems to be modality-independent. There is design evidence from the nature of language. It is a little bit like what I mentioned the other day, I just barely touched on it. But if you look closely at the nature of language, the nature of the computational procedures, it turns out that they directly yield structures that are interpretable for thought. But then they are modified in the process of externalization. So that they actually lead to communication problems again, because of minimization operations. So it looks very much as if language is a thought system and then externalization comes along later. I mean, as I mentioned, you do not learn a lot about evolution, but there are some reasonable speculations: One, which is in fact accepted by some leading evolutionary biologists, Nobel laureates, and so on, is that if you think about what must have happened at some point, as was just pointed out, at some point in the evolutionary record, some humans – our remote ancestors – must have acquired a capacity, which animals lack, to construct some operation that yields an infinite array of structured expressions. I mean, all humans have that

capacity. If you go back, say 100,000 years, there is no evidence that the capacity existed anywhere, so it is somewhere in that [time span]. And as I think I mentioned the other day, in the last roughly 50,000 years, there has been no evolution to speak of. All humans are centrally identical in this capacity, which means that somewhere in a pretty narrow window this computational operation appeared. Well, that is presumably some slight rewiring of the brain, the result of some mutation, no other mechanism is known. But a mutation takes place in an individual, not in a group. That is obvious. So that means that some person – call him whatever you want to call him, say "Eve" – found that something happened to her brain, just like genetic mutation, she ended up having this capacity. Well, Eve then had the capacity to think, she could construct arbitrarily complex expressions in her mind, she could relate them to the thought system, she could plan, interpret, do all sorts of things that the other people in her tribe could not do. These people were living in small groups, hunter-gatherer groups of maybe a maximum of a couple hundred people, probably less. But she was alone, she was the one person that could think. That alone tells us that language probably was designed for thought, not speech. Presumably this capacity to think provided some sort of selectional advantage, now she was a little better off than other people. The ability would have partially been transmitted to offspring. They would have been slightly better off than anyone else. Pretty soon you have a group of people in the tribe, who have some advantage that others do not have. Well, a small selectional advantage can spread, it can lead to more reproduction, essentially that is what it means. It is not a simple matter. It has been shown that selectional advantages do not – or very rarely – translate into extension of the selectional advantage. It obviously sometimes happens, we are not all bacteria. So, it sometimes happens, but pretty rarely. As far as we know this might have happened any number of times in human history, but they never survived. Well, once we know it survived, because we are here and we all have the capacity, so somehow it survived. Pretty soon the hunter-gatherer group had a lot of people and it had this capacity. At that point, it might have occurred to some smart guy that it would be useful to externalize it. Then you could figure out what somebody else was thinking. So, modes of externalization were developed, many different modes. There are many different ways to externalize what is inside, so it comes out of the mouth, the hands, whatever was used to communicate. And in fact, there are many different ways of externalizing. We see it right in front of us: What we call a lot of different languages are probably just different ways of externalizing. I mean it could turn out – you cannot prove this, yet – that the variety of languages reduces to variety of externalization. I mean, experience tends to conform to that, so for example if one of you decides to learn a second language, what you are going to study

is the externalization. You cannot study the fundamental core principles, for one reason: You cannot study them because nobody knows them, so nobody can teach them to you. By now, something is known about them, but it is not our problem. It is kind of like learning to see: You do not learn to see by figuring out or by being taught how the visual system works, of course. So when you are learning a language, if you think about it, you learn the sound system, you learn the morphology, the inflections, the irregular verbs, you learn a couple of things about order, such as German has a slightly different word order than English and so on. Those are all very superficial things. But that is where the complexity of language is, and that is essentially all that you learn. You learn some very superficial things about meaning, very superficial: which meaning goes with which sound, but that is trivial, and it is learned very fast. It is known from experimental evidence that children pick up the meaning of words – i.e. very young children, a year or two old – extremely quickly. A child may learn eight or ten words a day, which means they are basically learning them on one exposure. And somehow they already know the rich complex meaning that is inside somewhere. And they just attach it to some sound. As far as syntax and rules of formal semantics go, there is no way of learning them, they just got to be in there and they are somehow used when enough stimulation occurs, like other innate capacities. All of this suggests that the variety and complexity of language is actually in a secondary system, in the externalization system. And what you would expect is that the core nature of language you would just come about by, basically, laws of nature. That is what I meant the other day by saying it could turn out that it is kind of like a snow flake, it just developed by laws of nature, laws of computational complexity and so on. Anyhow, that is the kind of evidence, I mean, I do not want to overstate, none of this is proven, there is just sort of evidence in this direction, which would indicate that the Aristotelian dictum should be reversed.

Question <00:13:25>:

Professor Chomsky, you already mentioned language acquisition. I am interested in how you now consider language acquisition in the new framework of the "Minimalist Program". Because before, in the Principles and Parameters Theory it was clear that you said that there are some principles and when a child acquires a language, it has to acquire the parameters. But now in the Minimalist Program, the principles, if I have got it right, are abolished and replaced by the operations 'Merge' and 'Move'. What impact does this have on language acquisition or how do you see language acquisition now in this new framework?

<u>Chomsky:</u>

Maybe the phrase "Minimalist Program" should never have been used, it has misled people. I have tried to explain it many times, but actually there is a principle about language and that is if anything can be misunderstood, it will be misunderstood. That works like almost 100%, for the human sciences generally. But the Minimalist Program is just an extension of what has been done since the beginning. It is a little different, because research reached the point where it seemed that you could not try a new research paradigm. It is just a different way of doing research, with the same paradigm essentially. What was suggested is that we might ask what would be a perfect system and then look at the discrepancy between that and what we actually see; and then proceed to see if we can overcome this discrepancy. But that is a research program, not a thesis. And it has been a pretty productive one. But as far as Principles and Parameters are concerned, that is essentially the same. So this approach would not sharply simplify the principles, but maybe it would somehow simplify the parameters. What it would suggest – this comes out of what I was saying before, thirty years of work trying to show this – is that the parameters are in the externalization. I mean, it could turn out – I cannot prove it, again – but it could turn out that in the core syntactic semantic system, the basis of language design, there is no variation at all. That is a pretty plausible expectation, because of the rapidity with which it is acquired and the impossibility of teaching any of it. And that would go down to things like the meaning of words and so on and so forth. So it could be that it will turn out that the core of language has no elementary variation and that the parametric choices have to do with various aspects of externalization, so sound system, morphology, inflection, irregular verbs. And notice that the externalization is very susceptible to external influences. So, say the Norman invasion of England changed the language radically, it became sort of half French-like. And in fact the teenage jargon is a typical way in which languages change, and very quickly in fact. And it is very susceptible to influence, my children for example do not speak the way I do, they speak the way their friends do. Children tend to pick up the language of their peers, not the language of their parents, for whatever reason. Well, maybe there are good reasons... Sometimes parents are not too happy about the reasons, but it is pretty well known. So, the point is quite correct, it could turn out that the parameters really are in the externalization system, but you have to find them. And, there has been a lot of difficulty in finding them. In fact, the inquiry into parameters has tended to show that they fall into two quite different types. They are sometimes called macroparameters and

microparamters. So, the macroparameters are big effects, like: Is it a head-initial language or a head-final language? That seems to have a big effect. Is it a poly-synthetic language or an analytic language? On the other hand, the people who study dialects in detail, people like say Richard Kayne and others, like Rita Manzini, they find tiny differences between very closely related, what we call dialects, actually languages. And these seem to vary all over the place. So, nobody knows how many of them there are. But they seem to be of a different character than the macroparameters. So probably, you can guess reasonably that the research into parameters may divide up this way. And then, of course, the question arises, whether the macroparameters are a part of the externalization or a part of the core system. And there is an interesting debate about this, so even the question of say linear order, which I mentioned, which would have to do with the ordering parameters I suggested the other day that it is all externalization. But there are some very good linguists, like Richard Kayne for example, who argued for the opposite, and they have good evidence. So, it is a science, not a religion. You know, there are conflicts all along the way I have tried to resolve.

Question <00:19:42>:

You emphasized that language is a thought system. Would you go so far to say that language is the very reason that human-specific thinking is possible?

Chomsky:

I cannot think of a coherent alternative. There is a lot of literature, books are coming out all the time, articles, claiming that language is kind of a secondary phenomenon and thought came first. But nobody has ever given a proposal as to what thought can be, other than a language. What else is thought? I mean, how do you think a subject-predicate relation, unless you have a language-like system? And how do you think an operator-variable construction, unless you have a language-like system? So, when you eliminate the kind of handwaving and vacuous talk, the claim that thought preceded language is just the claim that language preceded externalization. So it comes back to the same thing. If you think of languages just being externalization, well then it is probably true that thought preceded language, but the thought itself is the language, it is the real language. There is no alternative, that I know of or can even imagine, to the idea that thought is basically a language-like system. Now that does

not mean that all thought is in language, of course it is not. But the kind of sort that can be expressed in language seems to be language-like.

Question <00:22:14>:

Actually, my question aims to establish a connection between the lectures you gave in the past two days, and it is: You were talking yesterday about some global democratic processes that are taking place nowadays. Now my question is: how could we see language and the possibilities of language – scientifically speaking – and its importance for global processes of social and political transformation?

Chomsky:

Language itself is kind of irrelevant to this. So, in a more democratic society you speak the same language as you do in a totalitarian society. Let us take modern Germany, which had very radical shifts up and back, more than any other modern society. So, the 1920s: maybe the peak of western democracy; the 1930s: the depth; today: the peak, again. But the language did not change. People spoke the same language. The way they used the language might have changed, in fact it did change, but that is use of language, it is not the instrument itself. Language is kind of like a tool, say like a hammer: a hammer does not care whether it is used to build a house or to torture a prisoner. As far as the hammer is concerned, it is irrelevant. And it can be used for anything. I think the same is true of language. There are some slight changes, but they are mostly changes in usage, so propaganda, for example, modifies the use of language, it makes up new meanings for words, for example. But these are really pretty superficial things. Language is overwhelmingly the same, no matter how it is used. So, I do not really think that there is a connection. Now some of my colleagues disagree, incidentally, so this is my view.

Question <00:24:42>:

Professor Chomsky, do we have a reasonable notion about the relation between the lexicon and the computational system in the beginning, in the Adamite period, and its emergence later and the different weights that the lexicon versus the computational system had when growing up to our state of the language faculty?

Chomsky:

And you are essentially talking about evolution again. Now we are back in the same morass, we do not know anything about evolution. You can imagine almost any story: let us take "Eve" again, this person who had the good or bad fortune – depending on how you look at it – to have this capacity to think. There had to be some kind of units around. You cannot have a computational system without some kind of atoms of computation. So, essentially something more or less word-like – maybe not words, but something more or less word-like – had to be around. But how much did there have to be? We cannot say. And the richness of meanings of words, it could have all been there in the concepts, whatever concepts she had. In fact, again, it is hard to think of an alternative. However, with the appearance of the capacity to produce complex constructions, it is very likely that that led to lexical enrichment, in some fashion, again using some sort of innate capacities. So, at this point you can produce stories, all kinds of them. But there is no evidence for any of them. I do not think there is an answer.

Question <00:25:55>:

Regarding your two-step hypothesis, would it make sense to ask, if there is in innate grammar, also to that externalization process, the secondary process? Or is this not innate at all and we only have to consider the notion of innate grammar or the innate construction regarding that constructive first step – possibly silent –, thought-related process, when language emerged? And the second question is: what do you think about the hypothesis by Josef Reichholf, a Munich biologist, that multiple languages occured specifically as a consequence of the fact that groups did not want others to understand them. Specifically to bar the understanding of others when groups would compete for resources, for example?
What I have forgotten in the first question: Do we have an innate grammar for music, for listening to music, for example?

Chomsky:

Ok, there are several questions. First of all, everything that we do is based on something innate. It is the same with everything that an animal does. So there is always some innate element. The word 'innate' is a kind of a bad word in some circles, but that is just confusion.

No animal, down to bacteria, just acts randomly in all possible ways. They are somehow constrained and that is innate structure. And of course, that is true of every aspect of humans.

If the scenario that I described is anyway near accurate, then the initial stage was totally innate. It was a neural wiring change or mutation, which led to something new and out of that comes some cognitive system. And there are no other factors entering into how it comes. So that is totally innate. Then comes the question what happened next: is it affected by further experience, by other genetic changes – there could have been many other genetic changes that still could be innate, but they could be different, and so on. And there we are entering into the world of complete speculation, there is no evidence.

The variety of languages plainly involves experience. I do not speak Swahili, but if I had grown up in Kenya then I would. So plainly there is no question that the experience has an effect and now we are back to the question that was raised before: does it have an effect only on the externalization? Or to what extend does it affect the core of grammar and semantics, including the meaning of words? There is a reasonable speculation that it is externalization, but not certain by any means. But even in the externalization, e.g. the pronunciation, the morphology, the word order, everything in the externalization, there have to be innate factors. Otherwise, it is incoherent. You cannot acquire anything except in terms of some restricted capacities that you have. That is as old as Aristotle. It is plain truth, close to logically true that you have to get some kind of pre-existing structure in order to acquire anything. So there are always going to be innate elements and the question is what kinds are there? Are there innate elements specific to language or are there the innate elements that enter into other forms of cognitive development, the elements that enter into statistical analysis, and so on and so forth. These are just research problems. There is a little bit of evidence about them, but not a lot known. I think I have mentioned something the other day about detecting words, a child detecting word-like elements from running text, it is a pretty early development. It appears that it is done by a mixture of statistical analysis and grammatical principles about prosody and so on. There are a few cases like that, they are understood, and there may be more you have to find. But it cannot be that there is no innate element. That is impossible for any kind of growth, cognitive or other.

The second question concerns the idea that one of the motives for developing different languages, probably meaning different kinds of externalization, is preserving group identity and separation from other groups. That is conceivable, it has been suggested a number of times. There is an important book by a generative grammarian, a very good one, Mark Baker,

called *The Atoms of Language* in which in the last chapter he is studying macroparameters, which were called microparameters before, like polysynthesis and so on. And at the end of the book he has a chapter, I do not know if it is tongue-in-cheek or not, but he suggests that maybe different macroparameters were chosen in order to deceive others. So he uses it as an example that during World War II the U.S. intelligence used Navajo speakers to communicate, so the Germans would not understand them – a coding technique. He suggests that maybe this developed kind of in the way you mentioned. Well, that is possible. Again, we haven't got the slightest idea. There is no evidence for it, but it is a possibility.

And the last question is about music. Here, there are some interesting questions and they affect the origins of evolutionary theory. So you go back to Darwin and especially Alfred Russel Wallace, the co-discoverer of natural selection. Wallace wrote, with Darwin, about questions like this. I do not think he mentioned music, but he was interested in the fact that all human beings have an arithmetical capacity. That is another universal human capacity, unique to humans. We can deal with natural numbers – one, two, three –, we can multiply, calculate and so on. So where did that come from? And he pointed out that this is kind of a mystery, because in human history that capacity was virtually never used. It is only quite recently, only in the last couple of thousand years there is any evidence that this capacity was used at all. And even then it is only used by a very small number of people. By now, it is used by a lot of people, but until very recently by almost none. So, it could not have been selected. So, how did it get there? Wallace believed in – and here he had a big argument with Darwin, his colleague essentially – some other principle besides natural selection to account for the emergence of this capacity. I think we can now see that that is not the case, that very likely the numerical capacity just piggybacked on language. If you take a look at the core computational principles of language and you simplify them very narrowly, you reduce the lexicon to one element and let the principle of computation function freely, essentially you get the natural numbers. So it could have just been what is called an acceptation, i.e. taking some characteristic that is already there and using it for some other purpose. There are questions about it as always, but that is a strong possibility.

Well, what about music? Music and dance seem to be universal. I do not think that any society has been found that does not have something like music. It could be based on different principles, like Western music is tonal and other kinds of music are rhythmic, but it seems to be universal for humans. So we have the same question: Where did it come from? And again, one possibility is that, at least in part, it is building on language. There are structures in music

that are language-like and they have been investigated. About 30 years ago, I guess, Leonard Bernstein, the famous musician, gave a series of lectures at Harvard, based on this theme. He kept to the Western canon, i.e. tonal based music, and tried to show that in structure and character it could have been derived from language. And since then, there is a lot of work on the topic, pro and con. So that is a possibility. And if that is not the core, then you have got to search for some other source. It does appear to be a genetic human capacity; it is unknown among other organisms. You do get things a little like it, mainly in songbirds. Songbirds do have something, which superficially looks a little bit like music, but it is very different in character. There is quite good work on this by a scientist, I think in Utrecht, who worked on it, you can dig up the name [Sanne Moorman et al. "Human-like brain hemispheric dominance in birdsong learning", Utrecht University [ts]]. So they are different, but nevertheless there are some rough similarities. But songbirds are evolutionarily extremely remote from humans. If anything, it is some kind of convergence, it is not an evolutionary source. So we are up in the air, as with most questions about evolution. I think, I may have mentioned the other day that very simple questions of evolution are understood to be so complex that nobody even looks at them. Like the evolution of the communication system of bees. There are about 500 species of bees and some of them have quite complex communication systems, [Karl] Von Frisch's studies sort of broke this open. Some of them have no communication system at all, that anybody can detect. And they make out about as well as the ones that have, for example the waggle dance and so on. That raises the question of what it is all for. Anyway, there are lots of different systems, so you get a lot of comparative evidence. Bees, of course, are tiny organisms. I think the brain is about the size of a grass seed, so the evidence is much easier to study than complex mammals. You can do any kind of experiment you like, the bees do not have to sign consent forms and so on. So, all kinds of experimentation are possible. They have very short gestation periods, I think a couple of days, so you can breed them. Essentially, everything is open, but nothing is known. It is a hard problem, the science is not easy. And studying something which looks as simple as the evolution of bee communication is so difficult that there is almost nothing in the literature about it. And it is not that people have not thought about it, they just understand that they cannot do much. It is kind of a paradox: there are libraries full of books on the evolution of human language, which is the incomparably more difficult question and almost nothing on the evolution of bee language. It is a kind of pathology of human culture. People cannot see that they are trying to study something that is way out of sight, when you cannot even study much simpler cases. You could ask why that goes on, but it certainly does. You can go to the

library, you can check it out very quickly. But the questions you raise are very certainly significant ones, like where does music come from, why does it have the few forms that it does and how come that children can pick up a musical style so simply?

I think there is pretty remarkable evidence on this. Some of you may know the study of a girl who was called "Genie". This is a girl who was locked into a room when she was about two years old [...] and she was kept almost in total isolation and she was found when she was about twelve and, of course, released and treated and so on. But she went from two to twelve, roughly that, without any human contact. Nobody spoke to her, her father pushed food under the door and she could pick it up. I think she was tied to a chair, in fact. But when they finally kind of found her and tried to save her somehow, it turned out she was very smart. She learned very quickly and learned pretty complicated things. She was also apparently very personable; everybody liked her and so on. And the experimentalists first fooled themselves into thinking that she was acquiring language, she was able to act in ways which made it look like she was acquiring language, but closer investigation showed she really did not. However, she did know musical styles. She was probably hearing something through the window or somewhere. It turned out that she obviously was psychologically a total mess. But the psychologist who was taking care of her, a very good person, Susan Curtiss, happened to be a pianist. And she discovered that she could calm Genie down, if she was upset, by playing certain styles of music, specific styles, I think Romanian folk songs. She obviously identified those styles, they meant something to her. So with almost minimal experience, she had acquired an understanding of musical genres. Fortunately there are not a lot of cases like this. But where they exist, it turns out that musical styles apparently can be acquired extremely fast, kind of like language. That must mean that, what we would have anticipated in these events anyhow, that there are very sharp genetic restrictions, which come from somewhere; where, is an open question.

Question <00:44:23>:

Professor Chomsky, you have pointed out that thought is a language based system. But you also said that it can never be proved. There are only hints at it. Did you ever think about what might be a refutation for that assumption?

Chomsky:

A refutation would first of all have to be some alternative hypothesis and at the moment there is no alternative hypothesis. You can only investigate the correctness of some hypothesis, if there is an alternative to compare it with. And I do not know of any.

Question <00:45:25>:

I would like to come back to the talent to interconnect. First of all there are linguistic, this is what we are talking about at the moment, and political questions. And I do not agree – or I have another estimation – that linguistics or language have an important impact on the way human beings behave and act, also on social relations. So my question would be: You just mentioned that structures in music are also based on language, but are the structures within human relations also based on languages and the way language is expressed?

Chomsky:

Human relations are certainly based on the way language is expressed. That is not even controversial. But the scientific question is a different one: Does the way in which language use influences thought reflect differences in characteristics of the language itself? Or is it kind of like a hammer? Like I said, a torturer can use it, a carpenter can use it. So is language like that or is it somehow the structure and nature of language that influences human behavior? As far as I know there is no evidence that it does and there is pretty strong evidence that it does not. The history of Germany, which I mentioned, is a pretty good example. The German language did not change in any relevant way from the 1920s until today, but the human behavior certainly changed radically, in fact, about as radical as anything in modern history. There are many other examples like that. So, what you have expressed is a very common view – even among linguists and anthropologists particularly and sociologists. But it is extremely hard to think of any evidence for it. Though, of course, language use transparently relates in all sorts of ways to human relations.

I have two questions about linguistics: one more general and the other one a bit more technical.

The general question is: So, in linguistics you easily get the impression that everything is still up for grabs and things come and go. What do you think are the main insights that generative grammar has yielded so far, in the past 50 years? So, what I have in mind are things like developing the theory of case or things like that. So what do you think are the main technical insights the program has brought up so far?

The second – a bit more technical question – is: You have mentioned in your lecture the case of elicit extractions, WH-expressions or whatever. What you said was that in all of these cases, we have the intuition or the impression that these elicit sentences express a deliberate human thought and your conclusion was that that indicates that there is something about externalization again, and as you know the research says the same thing, that externalization plays a role there. And I would just like to know if you have any thoughts about why that might be, i.e. why might the externalization system care about things like items.

Chomsky:

The first question is a good question, but it would acquire a complex answer. In fact the answer would not be given by comparing what was thought about language say in the 1950s with what is thought about language today. It is very different. Go back to the 1950s, to the earliest steps in trying to construct generative grammar, actually the late 1940s, they had phrase structure grammars, transformational grammars, it was very complex and of a lot of interest, that seemed to be necessary to yield minimal descriptive adequacy. Almost all of that has been eliminated. Phrase structure grammar, which is an extremely complex system with lots of stipulations, has been eliminated totally in modern generative grammar. Transformational grammar had pretty complex structures in the 1950s, later on – as you know very well – there were successful reductions to much simpler principles like ultimately say 'move anything anywhere'. A major discovery of the late 1990s is that what is left of the two systems can be combined under a single operation, which furthermore is the simplest possible computational operation, i.e. Merge. It should have been recognized much earlier – but it was not – that Merge alone gives you the rudiments of both systems. And it does this in a fashion, which is adapted to thought systems, but maladapted to speech systems, which is part of the

reason for thinking that there is this dichotomy that I mentioned. In the early approaches – in the 50s and 60s – the conception of universal grammar was that it provided a format for grammars. So, here is the kind of system a grammar is. But it permitted an infinite number of them. Therefore it had to be supplemented by some procedure, called evaluation procedure, which would pick one or another given data you have to account for language acquisition. So the idea was the child is just approaching language acquisition with the understanding that this is the format that the language has to satisfy. But there is an infinite number of possibilities and therefore you use some procedure to select among them. Well that is the general problem that is called abduction, in the philosophy of science; it goes back to Charles Sanders Peirce. And it is known to be unsolvable. So scientists somehow do it, but by a mysterious process nobody understands. But a child has to have a way of doing it. And what is the way? That was a real difficulty. And that difficulty was resolved by kind of cutting the Gordian knot and that is the Principles and Parameters program around 1980, which allows only a finite number of choices. So, from that point of view, the acquisition process is kind of like answering a questionnaire: here is a finite number of questions, the child has to answer each one of them and when each one is answered, you get the language. Well, that is a huge change and then comes a very rich period of extensive research. I think there is no doubt that more has been learned about language since around 1980 than in the entire several thousand years of history of linguistic research. That was a very productive research program, though it does have all kinds of problems, like the ones I have mentioned. Take say case, which we mentioned: it is kind of striking that in all of the history of study of language, there was never really any recognition – it was implicit understanding, but never explicit recognition – of what is a pretty simple fact, namely that there is a difference between inherent case and structural case. An inherent case is like the ablative in Latin that has a particular meaning, a structural case is like the nominative or accusative or ergative or absolutive, which have no meaning at all. They just depend on the structural position. It is a pretty sharp difference, but if you take really classic studies, like Roman Jakobson's *Casuslehre* – one of the major achievements of structural linguistics – he does not make any distinction: he tries to find a meaning for nominative case and accusative case. He did not mention that he would have tried for ergative and absolutive. And that is just false. Well, that distinction was really recognized in the 1970s by Jean-Roger Vergnaud, actually in a famous letter, which is now well-known and in which he makes that distinction and drew many consequences from it. In part, what he was arguing was that every language has the same case system in the internal language, it is externalized differently. So, in Latin and English you externalize it very differently, in English practically

not at all, in Chinese: nothing. But it is the same internally and he argued that the structural case system in particular has certain consequences and those consequences are found even if they are unarticulated. It is a little bit like the WH-movement, let's say in Chinese, you do not see it, but it seems to have the same consequences. That is Vergnaud's case theory around 1980, pretty well-known. And since then there is a ton of inquiry into it. You know, how does it work? Is it a plausible theory? Could you sustain it in the face of apparent counter examples? You know, Finnish, Icelandic, they look different, can you work them into to the same system and so on. So that is a rich area. But all of this is a quite considerable progress, nobody in their right minds anyway teaches the study of language the way you did in the 1950s or the 60s or for that matter the 1980s. Well, all of that is progress.

[...] inherent in the core computational system. So, take say locality, there has been a lot of investigation of locality. For example Luigi Rizzi's *Relativized Minimality* or the linguistic core notion in contemporary generative grammar. That could well be what I was calling a 'third factor principle': just a principle of natural law, a principle of minimal computation. A fair assumption – by now reasonably well supported – is that since language is a computational system, it is going to satisfy the general properties of computational systems, one of which will be minimal computation, i.e. do as little computation as you can. And in fact, if you have locality principles, it does reduce the computation extensively. So it is quite possible that locality principles just come from the fact that language is a system of the natural world. That is a possibility and I think it is probably true. Probably it has nothing to do with externalization. On the other hand, there are cases where you get properties of performance – and this is the other extreme – that do involve other systems, like memory. For example, about 50 years ago, George Miller, a psychologist, and I did some studies of performance embedding. If you have embedded structures like 'if ... then' constructions or 'either ... or' or 'the men are, but not the men is', things where there are long distance dependencies, which can be embedded inside each other, then you get an indefinite bounding. Well, it turns out that humans cannot process these, when they go beyond about 7. If you push it hard, you can construct sentences with about 7 levels of embedding, which are reasonably intelligible. And there is a reason why and it comes out of George Miller's work on short-term memory, in the famous paper of his from the 1950s called "The Magical Number 7, Plus or Minus 2". The discovery was that apparently across a wide range of animals – including humans – short-term memory has about 7 options, for birds maybe 5, some other organisms 6, but somewhere in that range. Some humans can maybe go up to 8, but there is a short-term

memory limitation and that would account for this aspect of performance. Well that is a restriction not so much on externalization, if you like, but it is coming from something else. It is coming from the structure of memory. Now, there is another discovery which is much more interesting. We also have it in the same paper. And that is, if you have self-embedding, i.e. you have an agreement relation like a plural noun or plural verb, if you have an agreement relation and you embed it in another agreement relation or you have a 'if ... then' construction and you put it inside another 'if ... then' construction, then the bound on performance reduces sharply. In fact, you can barely get to three. People just cannot understand it. Two you can manage, but three is almost impossible, you have to really think about it or write it down or something like that. So for self-embedding, there is a much narrower restriction and that cannot come from short-term memory, because it is the same short-term memory consideration. So there has got to be some other reason for that. It is still a research question, but one thing we suggested is that in processing a sentence it is sort of like a computer program. At each point you are calling in a subroutine, so there is a kind of subroutine, let's say, I am now in an agreement problem, or I am now in an 'if ... then' problem. And it could turn out that when you are executing a subroutine, you cannot call on the same subroutine. If that is the case, you would get self-embedding maybe up to the level 2. So, it could be the answer, but it could be some other answer. But those are cases where other factors enter into performance, which are not part of the linguistic system. What about islands of the kind I mentioned the other day? ECP, you know? "How many mechanics do you wonder if fixed the cars?" Now it turns out that even in other languages, let's say Italian, you have sentences just like that. This looked like a problem about 30 years ago and we now have the standard separation of linguistics from the natural sciences, unfortunately. As I mentioned the other day, in the natural sciences, typically, when you get something that looks like a contradiction of a principle, you do not throw away the principles, you try to find the reasons for the apparent difference. A classic example, which I mentioned, is the perturbations in the orbit of Uranus. That was noticed, I think maybe as far back as Galileo, but it was noticed. The scientists did not throw out Kepler's laws and Newton's laws. What they did was search for some reason for the perturbation and sooner or later they found Neptune. When same problem arose with Neptune, they found Pluto. But in the study of language there is kind of like a drive to throw out everything, so if you find something that does not work, you throw out everything. That goes on all the time. There are a lot of contemporary papers about it. It is totally irrational, but it is driving force in the human sciences, unfortunately. Well in this case, the exception is ECP, as you know perfectly well. Luigi Rizzi, I think about 30 years ago,

pointed out that in null-subject languages – languages where you do not have to express the subject – there is another position for the subject, a post-verbal position. And the extraction is probably coming from the post-verbal position. So it is not violating the principle, in fact it is adhering to the principle. Well, that is the right kind of answer, when you get a counter example. You know, that does not work for matter, that's a problem of discovery. If that turns out to be the right way to go, then ECP really is universal. And then comes the question: Why is it there? Is it an externalization question or is it just something about minimal computation? I have a proposal. I do not think it is in print even, but I think I have mentioned it in class last fall, [...] I think I talked about trying to deduce ECP from inheritance of features from C to T. If that works, it would be kind of a minimalist computational answer to why the principle is there, again minimizing the computation. And it would not be in the externalization system. But these are always just open questions. Some of them may be in performance like Ivan Sag has argued that subjacency restrictions or performance restrictions are the, what is called, superiority violations. That was years ago, by now there is research on it. It could turn out that superiority is not a real issue; it is a matter of focal stress. It looks like that might be true. The same could be true for quantifier reversal, you know, 'someone, so everyone', Shigeru Miyagawa has argued that. So you really just have to look at the particular cases and figure out what the answer is, it is never self-evident.

Question <01:07:06>:

In reference to the case you were talking about – with Genie – I have a question concerning language acquisition and what I want to know is: Do you think that language acquisition is really restricted to a certain age or does it depend on acquiring any parameter or setting any parameter to learning languages [...]?

Chomsky:

So is language acquisition kind of age-restricted? Almost any innate capacity that we know of has what is called a critical period, it was actually studied first by the great ethologist Konrad Lorenz a long time ago. And it turns out to be pretty universal. There is a certain period in which it has to be implemented usually by stimulation. So take say the capacity for visual perception, recognition of objects: the visual system - I mean, now in neurology this is very well understood again from experimentation with cats and monkeys – it is all inside. The

neurology is constructed so that you see the lines, angles, rigid objects and so on. However, there are famous experiments by Hubel and Wiesel about 1960. It turns out that if you deprive a kitten of pattern visual stimulation in the first couple of weeks of life, then the neural systems degenerate and cannot be reconstructed; the kitten will be blind essentially. So it is an innate system, but has to be stimulated and it has to have a particular kind of stimulation. If the kitten gets diffused light, then it does not get stimulated, it has to be a patterned. And in fact the nature of the patterns, like how many horizontal lines are there and so on, that is what affects the neurology of the system and the way the kittens see. That is the norm for all biological systems. And it is presumably the norm for language, too. As is obvious, you cannot experiment in the same way with humans. So you do not raise children and control their environments to see if they will not develop language and so on. There is no direct experimentation, there are no other organisms you can do comparative work with; so you have to use very indirect evidence. But the indirect evidence indicates something that most of us know from experience: there is a period when language acquisition is almost reflexive. The child cannot help learning the language. It just comes like growing arms. And that seems to change, typically around puberty. Post puberty it is generally much harder to acquire a language natively. People can still learn languages, but they typically kind of tack them on to their own language. So you are kind of learning it more or less by translation. And things like pronunciation, many people just cannot do it at all. But there are individual differences. So there are some people who manage to pick up languages like children, for whatever reason, maybe they are immature or something like that [jokingly [lk]]. We had a joke at my department at the MIT: I am about the worst possible language learner there is, but there was one person in the department, Ken Hale a great linguist who learned languages like a child, he goes somewhere and in a couple of weeks he is talking the language and we used to kid him about being immature. Anyhow, that difference is pretty steady. By now it is known that there are other critical periods that also make a difference, there is one apparently around six. And there is some evidence. This is work my wife did mostly on Helen Keller type cases. You know, cases of deaf-blind who do learn languages the way I mentioned with minimal information, that is the way Helen Keller learned it. She got very fluent, but with a tiny nub of information. Well, the studies of these people apparently show that there is a critical period around maybe 18 months, something around that age. And if the child has become deaf-blind – usually a result of spinal meningitis –, it loses sight and hearing before that age, it will never acquire a language; you cannot use the method of teaching. If the disease comes around that time or later, then the method of teaching works, if you take the famous case of Helen Keller,

that is her case, I think, she was about 20 months. Now fortunately you cannot investigate this anymore, because spinal meningitis is now treatable, so you do not have any more cases. But it has very remarkable implications, if you think it through. What it seems to imply is that by about 18 months, a child already knows the whole language. And what is coming after that is just eliciting the internal knowledge. Those of you, who know 18 months old children, know that they do not exhibit any knowledge of language, virtually nothing. Maybe say a word or two. But apparently it is all going on in there and they have acquired their native language, then it can get elicited. Well, if that is the case, there is a very sharp critical period. There is more evidence about this that is coming through: It turns out – as experimentation techniques become better and better – that you can push the age in which something is acquired lower and lower. It is by now pretty well established that there is intrauterine learning, that inside the uterus, the child is already picking up something about the native language. And it is known by experimentation with cows, you stick a hearing device on the uterus that if you listen to what you are getting, you get a kind of muffled speech, so simply the infant is getting the same thing. And by the time the child is born, it can already distinguish the language of its mother from another language, both spoken by a bilingual woman whose voice it has never heard, the experiments are well done. As soon as this was discovered, immediately there it set off a lot of research on what kinds of distinctions are made. It turns out it is not any two languages, but it depends on the prosodic structure of the language, i.e. the rhythm, pitch, pitch contours, things like that. If language is different in those structures, then the new born infant can distinguish them. If they are more or less the same in those structures, it cannot distinguish them. So apparently that is what the infant is picking up. By now there is a little known about the neurological basis, apparently there is work by an excellent cognitive neuroscientist, Laura-Ann Petitto who is now in Toronto, who appears to have found that – I do not think this is published, yet – an identifiable part of the human brain – which does not exist in other animals – that responds to certain rhythmic properties and interestingly they are in roughly syllable lengths. And it turns out that this piece of the brain is kind of searching the environment to find structures of that kind, they could be sound or they could be touch or color, almost anything, as long as anything has that kind of rhythmic property this piece of the brain is stimulated and starts acting. That kind of suggests that that is what is going on prenatally, intrauterine. And by now it is pretty well known that by about six months, the child has already acquired most of the prosodic system of the language. By about ten months roughly, the child has acquired the basic phonetic distinctions. So if you take, say, a Japanese child, and you have not had evidence about the R-L-distinction, it will never acquire it. It will

have to learn it in some other way, because that capacity is gone. And there is considerable work of this kind, also in other cognitive domains. So those of you who have studied Piaget's work – a very important work – will know that he proposed stages of cognitive development. There has been a lot of research into that since and it turns out that probably none of them exist. If you do the experiments properly then you can show that – as early as you can test – children are making the distinctions, it is just harder to do experiments with one year olds than with six year olds. These are very rich research areas and there is a lot to discover there, but the general picture seems to be that by and large language observes the same kind of developmental processes, in particular a variety of critical periods that you find with other capacities, incidentally with humans let us say. The same is true simply for walking. I mean, if a child – for one reason or another – has to be kept in stilts as an infant, so it cannot walk, and then if it is cured of whatever the problem is and when it is two years old the stilts are taken off, it probably cannot learn to walk. You just have to stimulate these things at the right age. The same is also known about social interaction. It is well known that in orphanages where children may be physically cared for perfectly well, they are fed and so on, but they do not have normal human interaction, they are just permanently stunted cognitively, all kinds of cognitive development just does not proceed. In fact, it is even known now – there is recent work from a very good neuroscientist, Helen Neville, who has done recent studies on cognitive differences depending on the socio-economic level, so in poor and richer families – it is well known that there are cognitive differences. But she has discovered that there are neural differences even. As she proceeded further she found that a lot of this just depends on how the parents talk to the children. So if you have a culture, usually lower socio-economic levels, where the parents do not talk to the children, but they just yell at them – you know "shut up" or "get the hell out of the house" or something like that – then the children have sort of normal language, but they do not have a normal cognitive development. And therapeutically, like if you try to figure out if you can cure it, it turns that if you have some kind of family training, you kind of train the parents to talk to the children the way educated people talk to their children, read them stories, interact with them and so on, then the cognitive difficulties are considerably overcome. So there is something going on. If you let it go long enough, it will be a permanent deficiency, but there are all kinds of differences of stimulation, which affect the neural development and cognitive development; language is a case in point, it seems to work like others.

Question <01:20:48>:

Professor Chomsky, as a stubborn syntactician I very much like the structure preserving principle and I miss this principle in your phase theory. Correct me, if I am wrong.

Chomsky:

The structure preserving principle is obviously there. It is all over the place. It shows up in the cases that I mentioned. Why? I do not think that is has to do with phases. The only good explanation I can think of and I know of, is the one I mentioned, i.e. that linear order just is not available. It is simply unavailable to the computational system, meaning it comes from externalization. So it is plainly there in externalization. But that could well be just a reflex of the sensorimotor system. We do not talk in parallel; we have to talk in sequence. So the sensorimotor system is imposing the requirement that you have some kind of order. And incidentally there can be different kinds, so in sign it is quite different. In sign, you do things in parallel. So in American Sign Language to ask a question – it is just a declarative assertion – you raise your eyebrows through the whole question. That is parallel speaking or producing. But various kinds of organization are imposed by the sensorimotor system and it could be that linear order is one of them, in which case structure preserving is just minimal computation. Period. There is no alternative.

I mentioned the other day some neurological evidence, it turns out that there is some evidence now from a group in Milan that if you try to teach people what from their point of view are nonsense languages, if they satisfy universal grammar principles, then Broca's area, the language area is activated. But if you try to teach them something that involves linear order, like negate a sentence by putting the negative part at last to the third word, a very trivial computational thing, they can solve it, but they are not using Broca's area, they are using other parts of the brain, so their reflexively treating it as a puzzle not a language. This kind of evidence is accumulating, but there is also counterevidence. Richard Kayne's work, which I have mentioned, is a very significant work. He argues quite strongly that linear order has to be in the core components, so you just have the usual contradictions that you find in science. There is evidence pointing opposite ways, you just have to figure out how to deal with it.

Question <01:24:34>:

I am a teacher at a university and I try to conduct my classes according to anarchist principles. Usually, I do not say this. The one word that is about to shock people is the word 'anarchist' or 'anarchy', but I am wondering if you think that education could become more effective through reduction on hierarchy at schools and universities. But I have a practical question: I founded a summer school for kids and it is also along anarchist principles, but I was very careful not to include the word 'anarchist' in the title of the school, in the name of the school. Do you think that is wise? Do you think we can ever recover the true meaning of this word or has it been too polluted in the popular consciousness?

Chomsky:

It is possible that it has been too polluted, but that is true of just about every word of political discourse. So in the United States, for example, the word 'liberal' is unpronounceable. You have to call yourself progressive, if you are a liberal you are some kind of maniac. Even to the extent that 'liberal' is used, it is used in a way which is opposite to its meaning. So, if you go back to classical liberalism, it is what is now called conservatism, liberal social democratic, but you cannot use the term. 'Capitalism' is unusable; I think it is one of the most interesting cases in the United States. It is all over the media and Congress and everything else, you see it everywhere. There is an obscene word in English, it is so obscene that I cannot say it, maybe there are children listening [jokingly [lk]], so I will spell it. It is p-r-o-f-i-t-s. It is unpronounceable, it is obscene. But there is a way of pronouncing it: it is called 'jobs'. So, when you hear the President or Congressmen saying 'we have got to do such and such', like reduce taxes on co-operations, 'because we have to get more jobs', what they mean is 'we have to get more profits', but you cannot say that. So yes, 'anarchism' has been poisoned, like most words. That is part of political propaganda. On the other hand, the principle that you mentioned correctly, eliminating illegitimate hierarchy, I think that is as natural as learning the language and I think everybody agrees with that. If it is presented that way, yes, why should we have illegitimate authority? If there is some kind of hierarchic structure, some structure of authority and domination, it is not self-justified, it has to justify itself. If it cannot do so, it should be dismantled. Sometimes it can, like take teaching: part of the duty of the most open-minded anarchist teacher is going to be the structure of what the child is acquiring in some fashion. There is a kind of classic description of this in Wilhelm von Humboldt, who

is one of the founders of the modern higher educational system. He was one of the founders of classical liberalism. He suggested that, the image that they used was, education should not be thought of as pouring water into a vessel, but it should be thought of as laying out a string, along which the learner proceeds in his or her own way, creatively, but with some kind of structure. Well, I think that kind of authority can be justified. But pouring water into a vessel, I do not think can be justified. Can this work? Sure, it can work. A graduate in any decent educational sciences tries to achieve that, maybe fails, but at least tries. There is a great 20th century physicist, Victor Weisskopf, who taught freshman courses at MIT as most of the senior faculty does and he was famous because in the freshman courses students would ask him 'what are we going to cover in this course' and his standard answer is 'it does not matter what we cover, it matters what you discover, that is what we are doing here, you are going to discover things'. And if the student challenges what the professor is saying, that is good, that is what you encourage. In fact, a lot of innovation comes along that way. Most of us experience this in graduate courses, often. Somebody says 'I do not believe that, that is wrong. I have another way of doing it.' That is fine, that is what you encourage, it is often right. This way a lot of progress takes place. And that can go on at the kindergarten level, too. Luckily for me, I happened to experience it. I was at a Deweyite school, that is a John-Dewey-style school, which is kind of run along these lines. Actually before I was about 18 months old, because my parents were working, so I was at this school until I got to high school at about the age of 12. And it was a very free and open place, a lot of creative work, a lot of cooperative work, nobody was graded. It was not until I got to high school that I knew I was a good student, because the question never came up. So you get to high school, you are ranked, your third in class, whatever it may be. It is a totally different system. Everyone knew that I had skipped a class, but all that this meant was that I was the smallest kid in class; no other conclusions were drawn from it, neither by me nor anyone else. And in high school it is all different: ranking, coercion. I can remember what went on in my childhood school very well, but I cannot remember anything from high school. It is like a black hole. I know I got through it, I got a scholarship to college, so something must have worked, but I do not know what it was. That was pouring water into a vessel and ranking people on how well they churned out the water. Sure you can do it from kindergarten on through graduate school and I think it can be done very successfully, pretty much along Humboldt's lines. There is some organized structure, but then the student has to figure out their own way to work through it, maybe original ways, they are working together with others. I mean they have exams, but those are only for measures of progress, it does not matter how they come out. The actual

systems that are in place are quite different. I do not know how it works here, but in the United States at least the educational system is from kindergarten up it is moving towards training for the Marine Corps, literally, constant tests. I have talked to teachers, complaining about this. A couple of weeks ago I was talking to a sixth grade teacher, who teaches kids about 8 or 9 and she told me that they were talking about something in class and some little girl came up to her after class and said she was really interested in this and asked how she could pursue it more. And the teacher had to tell her 'You cannot do it, because you have to study for this exam and if you do not pass this exam, you are going to be in trouble and I am going to be in trouble.', because the teachers are graded on how well the kids do in the exams, like how much water they have poured into the vessel. I am sure you have all had the experience of studying for an exam, learning everything, doing perfect and two days later you forgot what the subject was. That is what it is like, if you force training to people. And that is the way, the system works. Even teachers are being graded on it and they are kind of impelled to do it so or they lose their jobs or there are cuts in salary, if they do not pour enough water into the vessels. That is a very destructive form of education, but anarchist style education – it is usually not called that – works extremely well, I think.

Question <01:33:50>:

Dear Mr. Chomsky, I have got a more personal, maybe also a bit naive question for you. You deal mostly with political topics and problems which are pretty depressing and sad to deal with from the politics of your country to the general state of the world and its people. I also experienced that in my studies. Now my question is: How does that personally affect you and what is it that keeps you going on and dealing with all of this without turning cynical or depressed?

Chomsky:

How it affects me, you have got to ask my wife, not me. [jokingly[ts]] I mean you deal with the depressing problems, because those are the problems. You can talk about how wonderful something is, but who cares? You are trying to improve, to change the problems, so from a certain point of view it is depressing. It is not necessarily depressing. In fact, you look over a period of time and there is considerable progress. Things change, they change for the better very often. Within the lifetime of most of you, say from the 1960s up until today roughly,

there has been a lot of progress. I do not know anything about this university, but I suspect it is the same as the ones I do know about, just like my own – say MIT. When I got to the MIT in the 1950s, it was very different from the way it is today. In the 1950s it was almost entirely white males, well-dressed, hierarchic personal relations, the style of dress reflected human relations, no political activity, people were working on the problems they had to work on with laser-like intensity. Over the years it changed. Look at it today, it kind of looks like this: it is about half women, about a third minorities, informal dress, which reflects informal relations, a lot of interaction, faculty-student interaction, a lot of political activity of all kinds. Well, that has happened everywhere. That is a big change that came about mainly from the 60s activism and what followed. A lot of it is what followed. So the feminist movement probably had more impact on the society than anything else. That is mostly from the 70s. The environmental movement was the 90s. The anti-nuclear movement was the 80s. The global justice movements are now big. Those are very recent, like the last decade. So there is plenty of progress and there is regression also, so there is both. But you can celebrate the progress, but there is not much point to it. The important thing is to look at the existing problems and the regression and to do something about them. As to how you feel about it, that is kind of irrelevant. It is a personal matter. About all you can do is pursue kind of Pascal's Wager. You can decide to be pessimistic and depressed and not do anything and in that case you ensure that the worst happens or you can choose to be optimistic and look forward and try to do what you can and you may be able to improve things. Well, that is not much of a choice. So, I do not think that there is anything to say about that. Just make your choices!

Question <01:38:09>:

My question concerns the Arab world and the Arab spring. What are the tasks the Arab people should immediately do in order to fight against internal and external forces that try anything to stop the democratization of the region? They do not want to really change the most important region of the world. You said yesterday, it is a very important region and they do not want to lose control or resources. What can the Arab people do about this?

Chomsky:

Do exactly what they are doing. There are very dramatic developments in the Arab world in just the last few months and very successful ones, in fact. And they have won considerable

successes, like in Egypt, which is the most important country and has had the most progress. They have not overthrown the traditional regime; the military is still in charge. But the protestors are still at it. There are big protests every Friday at Tahrir Square and so on and they are now confronting the military for the first time. Before this, the protests were mostly applauding the military, because the military had turned against the dictatorship. But now that the military is back in control, there is torture going on, imprisonment, imposing restrictions. The protestors have not given up by any means. If you are from that region, you know better than I do that they are going ahead and they have already had some significant achievements. The press in Egypt for example, in Tunisia also, is much more free than it was before. Before, it was mostly state press, not worth looking at. Now, *Al-Ahram*, a major journal, is really worth reading, it is a free, open, independent journal, more so than ours, I think. A crucial part is labor organizing, there has been a very militant labor movement in Egypt for a long time with constant struggles, some victories, a lot of repression and violence, but now they are organizing freely. And in fact, they are going pretty far. There are some cases where worker-owned and -managed industrial complexes are beginning to function. That is way beyond us. So they are moving ahead, meeting a lot of repression. As I mentioned, the West is totally opposed, doing everything it can to keep the old regimes in place; that is to be expected. Also to be expected is that they will claim the opposite, they will claim they love democracy and freedom: disregard what the political leaders, the intellectual leaders say. But what they are doing is try to repress it and constrain it and it is perfectly understandable, they understand perfectly well that if Arab public opinion were to begin to influence policy, the West would be in real trouble. I gave some of the reasons yesterday, I guess. That is going to continue, but what can we do? You and I, we are not in Tahrir Square, we are here. But we can influence our own governments. They are the ones who were trying to repress democracy and freedom and we do not face torture chambers, military and so on. We have a lot more freedom and options than the Egyptians, Tunisians, Syrians and others do and we can use it. We can use it to influence our own governments so that they will at least tolerate moves towards freedom and democracy, maybe even support it. That can be done, too. So there is no shortage of things to do, just a shortage of will to do them.

Question <01:42:58>:

Professor Chomsky, thank you for being here. My question is this: I think it was Bertrand Russell who once described the human instincts as – I do not have the exact quote – enemies

of reason and justice. In other words, it will always lead to conformism, to prejudice and racism. On the other hand, we have you, talking about a creativity that is involved in every act of using language and in your debate with Foucault, you talked about the creativity as a fundamental human characteristic. So, do you think that there is a possibility to be much more optimistic about human nature than Russell was?

Chomsky:

Well, Russell, a person I respect a lot – in fact, the only person who is portrayed in pictures on the wall in my office –, was repeating something that is familiar and in part true. There are parts of human nature that are very regressive. That is why you get oppression, violence, torture, that is all part of human nature. On the other hand, other parts of human nature are quite different. Striving for freedom, for overcoming authority, striving for justice, it is all part of human nature; it is all instincts, if you like. There is a range of instinctive behavior that humans have. And the appropriate task is to cultivate the ones that are benevolent and suppress the ones that are harmful. That is what life is about. And, as I mentioned, there has been plenty of progress. The things that were taken for granted not very long ago, are considered intolerable today. Take another example: take homosexuality in Britain and the United States, both very free societies. In the United States until about 1960 it was criminal. In Britain there was a famous case, which illustrates it: one of the great mathematicians of the 20th century, Alan Turing, who also helped save Britain from destruction during World War II, he was one of the people who decoded the German codes, which enabled Britain to survive the bombings and so on. So he is a national hero, also one of the top mathematicians and sort of founder of modern computer theory and he was a homosexual. In the early 1950s the British government essentially murdered him. They did not call it murder, but what they did was force him to undergo treatment for his disease, because it was considered a disease. And the treatment ended up doing some horrible thing to him, he committed suicide. That is unheard-of today, maybe in some countries it still exists, but not here. Not in England, not in the United States, not here I am sure. Now it is just a way of life, accepted like others. There is still discrimination, but there is enormous progress. And a lot of human history is like that, that is why we do not have slavery or feudalism. There is plenty of domestic abuse, but now it is opposed. Take Strauss-Kahn: a couple of years ago there would not have even been a problem. Now there are cultural differences, like in France, they think the United States are too puritanic, and the United States, I think, are right in this case. Furthermore, there are other

things about this case that are not discussed, which are critically significant, that the hotel where this incident took place happens to be unionized. Now there are all kinds of efforts to destroy the last remnants of the union movement. But the unions protect people, if this woman had been in a non-unionized hotel, she would have just been fired. In a non-unionized hotel, if you complain about a rich guest, you get fired. But she was protected by the union. And there was support for her, an overwhelming support in the country. Those are significant changes. Go back 30 or 40 years: domestic abuse was not even an issue. The police did not deal with domestic abuse. And now, in the United States at least, every town has special police units that deal just with domestic abuse. It is not tolerated. Those are big changes. And there are plenty of others. These are other expressions of our instinctive nature. Our moral realm kind of expands over time. It is now expanding to animal rights. That is new. So, you cannot do any experiment you like in e.g. MIT and Harvard. The city has restrictions on how animals have to be treated. That is expanding moral range and I think it should go on.

Question <01:48:55>:

I would like to ask a linguistic question. In recent minimalist literature there has been critique that under feature-drivenness, the inclusiveness condition and the output conditions, syntax has lost its status of autonomy. Do you think that minimalist syntax has become too lexicalist maybe?

Chomsky:

At fist, let me say a word about autonomy. That is a notion that has been pretty seriously misunderstood. Autonomy of syntax just meant that the syntactic rules operate without paying attention to, for example, lexical meaning or whether the sentence is true or false, something like that. That is was autonomy of syntax meant. At the time, in the 1950s that was a radical choice, because it was assumed – take Quine for example, a famous logician philosopher, who was kind of orthodox – that grammatical status is just a reflection of meaningfulness. If a sentence is meaningless, it is ungrammatical. That was quickly shown to be wrong, so that is autonomy of syntax. And that remains, I do not think there is many change in the assumption that the syntactic rules of a language are basically independent of, for example, questions of truth or falsity, things like that. Actually, this is not only true of the syntax; it is also true of the formal semantics. What is called semantics in linguistics is actually syntax, technically. It

is simple manipulation. In the traditional sense, in the sense of Frege, Peirce, way back into the medieval ages, syntax means essentially symbol manipulation. You get the semantics when you relate it to the outside world. So what you are referring to, for example, is it true or false, that is semantics. But what is called semantics cannot deal with that. It deals with symbol manipulation, it is all fundamentally syntax. And it is all autonomous in this sense and that remains.

Now the other questions, the technical one: is it becoming too dependent on the lexicon? That depends on what the facts are. Should it be dependent on the lexicon? So take features, which you mentioned. They are a part of lexical items. And you get into quite interesting questions here, like I mentioned before, that any computational system by definition is going to have certain atoms of computation. But what are they? First guess is that they are lexical items. But that is not obviously true and exactly what you have mentioned is a case in point, so can features function independently inside the computational system? Or do they only function as parts of complexes, bigger complexes which are the atoms? And that leads directly to questions under intense investigation. For example I mentioned feature inheritance, the five structural features like agreement, case and so on. There is pretty good evidence that there, in the category C, the top clausal category, they show up inside the sentence, in the tense. So they are kind of inherited. Well, the question is are they inherited individually or are they inherited as a complex? If they are inherited as a complex then the question particle will also be inherited. And that leads to an answer to the ECP problem. On the other hand, there are other approaches that say: No, they have to be inherited separately. There are open research questions.

Question <01:53:19>:
[parts missing]
no, not negative income, unconditional basic income, which is an international basic income, which means that everyone should get payed for not being at work.

Chomsky:

You mean minimal subsistence for everybody, internationally. That makes good sense. That is essentially what any decent health and welfare system provides, nationally. Not in the United States unfortunately, but I think here, for example, as far as I understand. There is a minimal subsistence guarantee. Everyone gets health care; everyone gets enough to have enough food

to eat, let's say. That is by now normal in industrial societies, maybe it does not work all the time, but at least it is the principle. In the United States, too, although health care is a shambles, but technically there is food available for everyone, food banks and so on. Again, this does not work perfectly, but theoretically it is there. There is an earned income tax credit, if a person is working – unfortunately this is not for people who are not working – and does not have enough income, say for a family to survive, then it is upgraded automatically. Actually this comes from the last liberal social democratic President in the United States, i.e. Richard Nixon. Ever since then, these things have been degraded. But sure, that makes sense, if it is national, why not international? Theoretically, every country is committed to this, if you read the universal declaration of human rights, which practically everybody signed. Take a look at article 25. It says, every person everywhere must be guaranteed health, education, food and so on. Those are words, but at least in principle every country is committed to them.

Question <01:55:44>:

Hello Mr. Chomsky, I am grateful that you are here and I have got a question. What is your position on the current nuclear crises, which started with Fukushima and why do you think people in America do not take it to the streets, the same way people in Europe take it to the streets and what can you do as a writer and a famous public person to bring the critical position to America?

Chomsky:

Well, this is plainly a crisis and the German reaction is so far unique as far as I know, moving towards canceling nuclear power. I hope it spreads elsewhere. As for going into the streets, there is plenty of that in the United States. Take what just happened in Madison, Wisconsin in the last few months. The ultra right-wing governor backed by a couple of multi-billionaires, the Koch brothers, who are also funding the Tea Party, they wanted to ram through legislation to ban collective bargaining rights for public sector Union workers. And that led to a huge popular reaction. Tens of thousands of people were on the streets everyday, the state capital was occupied a couple of times. And it is continuing. The governor is now trying to ram through as much rotten legislations as he can, because the whole party might the thrown out in the coming elections, very likely they will be. That is only one example, there is plenty of activism and not enough, but it is certainly there. In fact, one of the dramatic moments of the

past few months was – about March sometime – when a message was sent by one of the major Egyptian labor leaders, Kamal Abbas, one of the organizers of the Egyptian protests. He sent a message in the name of the Egyptian labor movement to working people in Madison, Wisconsin, expressing their solidarity with American workers. It is kind of sad that that has to happen, but it happened.

The Fukushima case, well, you read in the newspapers, everyday the Japanese government releases a little more information about how they were lying about it. Just a couple of days ago, they have conceded that the actual radiation level was about double what they had claimed and this process has been going on since the catastrophe. It is a huge catastrophe. There is some talk in Japan, finally, about doing something about nuclear power. And there are options; they are not stuck with nuclear power by any means. It is a major crisis; everybody ought to be reacting to it. There was a meeting of G8 – eight rich countries – that just ended yesterday, where there were some formal responses to it, like let's have better nuclear safety and so on. Here, Germany really is in the lead, it is taking the right position, I think.

Question <01:59:22>:

Hello Mr. Chomsky, I am a Kurdish woman, but I never learned Kurdish, because I am coming from Turkey and my language was forbidden and we learned Turkish at school and at home. My mother spoke with my grandmother in Kurdish and with me in Turkish. And my communication with my grandmother was not easy, only a few words and mostly with body language. So, I am now an adult person and I learned foreign languages, German and English. I had the ability, I learned it very quickly and I also like it, but on my mind I have my borders. I mean, I learn it, but then I stop to learn. Do you think that this is maybe because I know that I never learned my own mother language? I think so. I do not learn the foreign language better, because I know that I did not learn my own language. Is it my border and is it possible to overcome it?

And the second question is: Why are the native languages of some occupied countries forbidden? What is the target of this? And what do you think about the future of the Kurdish issue beyond the Arabic uprising. Because Erdogan always gives the message of democracy to the Arabic leaders, but in his own country, in Turkey, the Kurdish people are repressed. What do you think about this?

Chomsky:

The Kurds are roughly 25 million people, scattered over a number of countries, the major concentration is in southeastern Turkey, as you know. I suppose that they are the major ethnic group that has not anything like a national state or some form of political representation. The Turkish case has been the worst – aside from particular moments, like in the 1980s under Saddam Hussein, when the Kurds in Iraq were subjected to horrendous treatment: al-Anfal, Halabja and so on. Contrary to what many people believe, the West had a lot of responsibility for that. The Reagan administration denied that it was happening. They insisted that it was Iran that was carrying out the atrocities. The reason was that the United States and its allies were quite strongly supporting Saddam Hussein. In fact, the Reagan administration intervened to prevent any denunciation of it even, a long and ugly story. But apart from that period, over time, the worst repressions have been in Turkey. In the 1990s it was one of the worst humanitarian catastrophes in the world. The Turkish army was carrying out a counterinsurgency campaign in southeastern Turkey, which killed tens of thousands of people and destroyed according to Turkish statistics about 3500 towns and villages. There were probably millions of refugees. I have been there a number of times. Go to Istanbul, there are sections of Istanbul with horrendous miserable slums, decaying buildings and the only people who live there are Kurdish refugees from the southeast. The children cannot get out of their rooms, because it is too dangerous and so on. But it has improved. Incidentally, this was all supported by the US, primarily the United States, but also Germany and England. The United States were providing practically all the arms, about 80% of the arms to the Turkish army, in a single year, i.e. 1997, which was about the peak of the atrocities, the Clinton administration in that single year send more arms to Turkey than in the entire Cold War period combined, up until the onset of the counterinsurgency campaign. This is undiscussable in the United States; it was not reported, the *New York Times*, for example, had a well-known reporter in Ankara: He refused to report it. There was a small number of people, I was actually one, who were protesting and trying to get it known. But it was suppressed and you can tell me about Germany, but I suspect it was suppressed here, too. Germany was also providing arms, not on that scale, but significantly and Britain, too. So these were basically western-backed massive atrocities. I got there right afterwards, in the year 2000 or 2002, around then. I went there for a Kurdish language case. A publisher was on trial for translating a book of mine and the book was not about Turkey, but it had about 5 or 10 pages on these Turkish atrocities. So he was on trial and I went to take part in the trial. His lawyer, who became the mayor of Diyarbakır,

Osman Baydemir, suggested that I insisted on becoming a co-defendant at the trial. The trials are a total fraud, they are military trials, you know, I do not have to make any further comment. So he thought that if I insisted on being a co-defendant, they would probably drop the trial, which is exactly what happened. So, I was a co-defendant and the prosecutor and the judge had obviously agreed, so they have been ordered to terminate to the trial, you know, too much negative publicity in Europe. So they terminated and he was led off, but later back in court again, it was pretty ugly then. I went to Diyarbakır in southeastern Turkey with some Turkish human rights activists. Turkey is the only country that I know, where leading, prominent intellectuals, major writers, academics, journalists, publishers, not only protest the atrocities, they are carrying out constant civil disobedience against them, facing harsh sentences, sometimes enduring them. No country like that that I know of. In fact, intellectuals are usually just servants of power, Turkey is unique. When I come to Europe and I hear people talk about how Turkey is not civilized enough to be let into the European Union, you have to laugh. They can teach lessons to western intellectuals, of course they will not listen, they will not report it, but it is a striking difference. I was able to go with them to Diyarbakır, take part in some protests with prosecutors and officers and so on. In Diyarbakır, when you walked around town in those days – I was also going with the main investigator for human rights watch, a very good man, he was later kicked out of the country, because he was too good, but he knew Kurdish, knew Turkish, he understood the situation and he would occasionally direct me away from a certain street – we were of course followed by Turkish security people and if there was a street where there were children playing, who had among them the colors of the Kurdish flag, he did not want me to go down that street, because after I left, the families would be picked up and thrown into jail. So we went somewhere else and there were people living in caves on the walls of Diyarbakır, it is a wall city, and that was pretty ugly. That was I think in 2002 or 2000 or so, but I went back a little later and there were some improvements. The last time I was there, it had quite considerably improved. You still cannot teach Kurdish in schools, but it is more open. There is a Kurdish radio station, people now talk Kurdish freely, they are not afraid to show the colors of the flag. There is more tolerance, it is an improvement. Yes, there is still plenty of repression, but nothing like it was like in the 90s or even the early part of the millennium.

So, that is to the good and Europe could make a difference, instead of pretending that Turkey is not... I am sure the reason for not allowing Turkey into the European Union has nothing to do with human rights violations, it has to do with the fact that Germans do not want to have Turks walking around the streets or something like that; it is European racism. But it can have

a very positive effect here, if policies change. You are right that it is a bad situation, but things can be done.

As to not learning your native language, that is a serious problem. There is no general theory about it, but if people are deprived forcibly of their native language, culture, society, it has a damaging effect, a severely damaging effect. It is something that should not be tolerated. It should not be tolerated in the western countries either. I do not know how it works here, but in the United States there is a strong and big Hispanic population, many of them flee from horrendous atrocities carried out by the United States in Latin America, they still flee in fact. But they come to the United States if they can make it and the children are permitted into the school system, but there is an issue about whether they should be allowed to have bilingual education. Should they be allowed to study in their own language? Well, you know by any civilized criteria they should. They will learn the second language anyway and they will get ahead more effectively if they can study in their own language. That is a big issue, it probably exists here, too, I do not know, but you probably know. Sure, it should be permitted; in fact it should be encouraged. These are other major human rights issues. And it can have an effect. You said it had an effect on you, I do not doubt it.

Question <02:11:23>:

Mr. Chomsky, it is an honor to hear you speak in person. I studied linguistics, but work as a journalist, so I also have two questions. The first one is related to this idea of this kind of proto-mother language. Maybe this is a persistent pop culture idea that there was this one mother language. Perhaps, your theoretical "Eve" met her theoretical "Adam" somewhere in Africa and they and their offspring developed this mother tongue that somehow the rest of the languages in the world branched off of. So, what is your take on that, first?

Secondly, I was recently talking to a sociologist, doing a story about the left radical actions in Berlin for May Day. And he described the movement and what he said was really interesting to me, he said that anarchism basically does not exist in Germany. He was really talking about anarcho-syndicalism and that kind of strain of anarchism, and the word he used to describe kind of what came out of the student movement, and the squatters, and anti-nuclear is 'autonomous'; autonomous movement. And I want to get your take on shifting of labels. Because 'anarchist' has also unfortunately taken on a whole negative array of meanings that have nothing to do actually with anarchism.

Chomsky:

Well, as far as the mother language is concerned: as far as I can see that is about the only coherent possibility. Go back to "Eve", maybe with "Adam", we do not know. But whoever had this mutation, they at first developed a language, an internal language. When it got externalized in this small group, it was everybody's language. By about 50,000 years ago, some small group left Africa and very quickly expanded over the whole world. I mean in 10,000 or 20,000 years they were everywhere. By about 30,000 years ago they were all over Europe. They at first went down along the southern part of Eurasia, Papua New Guinea and so on, but then moved up and came back towards Europe as the ice age receded and so on. At that point they were already separating into many different languages. Whatever the reason – maybe the ones we were talking about. But there were particular mother languages, almost certain, unless there was multiple genesis, which is conceivable, you cannot prove that there was not, but it is hard to believe. Why should they all have he same properties? And it is very striking to notice that there is strong evidence for that there has been no evolutionary change for 50,000 years. You take a child from a remote tribe in Papua New Guinea or the Amazon, which has had no human contact and it is the same as with children here, they will learn the same language, become quantum physicists, anything. There are individual differences, but there are no known group differences in cognitive capacity or language capacity. So apparently whatever happened was done 50,000 years ago and did not begin much before that. So yes, there is good evidence that there was a mother language. We cannot recover it, of course. In fact, the start of linguistics goes back maybe 10,000 years, but it did not come near the point of the origin of language.

As for the anarchism question, it is true that anarchism got a bad name, but it got it in the late 19th century. Assassinations, unprovoked violence, there is a strain of what was called the anarchist movement, it was very destructive. On the other hand, there was a strain that was very constructive, like anarcho-syndicalism, which is a major strain of anarchism that actually developed substantially in Germany, mostly in France and Switzerland, but also in Germany people like Rudolf Rocker, one of the major anarcho-syndicalist thinkers, who was originally in Germany, went to London, then the United States. But does it have an effect? I think it has a big effect. Take co-determination in the German industrial system. It does not work the way it ought to, but something is there and I think it comes from these libertarian strains, which were reflected in the anarcho-syndicalist movement. I mean the great success of anarcho-syndicalism was in the Latin countries. In fact, Marx, who was pretty authoritarian, one of the

reasons he destroyed the First International, it was because there was too much influence of the anarchists in the Latin countries. He thought it ought to be German-centered, so he basically destroyed it and finally moved it to the United States and it disappeared. And it reached its major peak in Spain in 1936, which is a very important development. It was a major anarchist revolution in Spain since Franco came on the scene. It liberated a lot of Spain, created anarchist institutions, which were pretty successful. It was attacked form every side, Hitler and Mussolini attacked it, they send troops to Franco, the liberal democracies attacked it, Russia was right in there at the peak of the attack, they hated anarchism, the Stalinist government. They were the police and so on, they killed the leading activists and crushed it. In fact, what we call the Spanish Civil War actually took place pretty much after all sides had agreed to crush the anarchist revolution. After that then they turned to fighting over the spoils, over who would pick them up. But that was a real success and it has never been reconstituted or anything like that. The autonomous movements had different sources, some of them had roots in this, some not. I think these anarchist strains still exist all over the place. And you see them in all kinds of popular movements. In fact, you see them in every attack on hierarchic authoritarian structures and there are plenty of those.

Question <02:19:05>:

First of all, thank you very much for being here and inspiring all of us. It is a great honor. My question was and still is: What is the most powerful method or way for humans to change the world to a more peaceful place without causing any harm. What is the key resource we as human beings have to do so?

Chomsky:

I do not think that there is any general answer. It depends on what you are trying to deal with. There are many problems in the world and there are different ways of dealing with particular ones. Take the treatment of Turks in Germany, which came up. There are certain ways of dealing with that and I think we all know what they are. No big secret. It is a matter of doing it. Suppose you are concerned with Fukushima, also came up. Things to do about that: try to expand the German model to the rest of the world. We know how to do that. Just pick the case! Whatever the case may be, there are usually pretty straightforward ways of dealing with it. There is no magic key that you can turn that solves all problems. But one of the difficulties

with a lot of the activist movements of young people like 1968, you could see right off that 1968 was going to collapse, because there was a sense, which is kind of understandable if you are 20 years old, i.e. that if I do something, everything is going to be wonderful. So if we sit-in on the President's office at the Columbia University for three weeks, there is going to be peace and love in the world. It does not work like that. It is a matter of concerted, dedicated, long-term activism, which over time can have effects. But there is not going to be an instant gratification. There were plenty of things wrong with the old communist parties, we do not have to go into that. But there was one thing right about them: they knew that it is a long-term process, you are going to have to be there all the time. This will be defeated, then you come back the next time, there will always be people around who maintain the tradition of hard work in organizing. Back in the 1930s there were some people who knew that, put out pamphlets, organizing for the next stage. In fact, part of the fear of communist parties in the west was just that. They were too effective at organizing. I mentioned last night that in Germany, for example, in the early post-war period the United States was dedicated to – as they put it – wall off Germany from the Eastern zone. It is the term they used. It is interesting to look at the reasons. The reasons were that they felt that they could not compete with the left labor influences that were coming from the east at that time. So, when you are not able to compete with it you have to wall the west off. And then crush left and labor here. It was done in Germany and a lot of other places. It is mostly wiped out of history. I doubt if you read it in school, but that is what happened. You can find the scholarly work and the documents and so on. And it is precisely for that reason and with all the flaws, terrors and so on of the communist parties, they did provide that cadre of committed organizers and activists, which just stayed there. They were ready for the next phase. As the kind of continuity of activist movements has been broken and each new stage comes along, everyone starts from the beginning. And they are very often driven by young people, but the young people tend typically to expect something to happen fast. We will do something courageous and dangerous and it will all be over. And that does not happen. So, we just have to learn the lessons from history as to what did work. And there are many things that worked. And there is no single answer, but there are almost always specific answers. I do not think that at the level of generality of your question there can be an answer, but if we look at particular cases, I think there are things to do almost always.

Question <02:23:54>:

Does academia work?

Chomsky:

Does academia work? It can. The universities, in many ways, are a lot freer than they were in the 1950s and 60s. There is a long distance to go and there is also regression, but sure there are things you can do in the universities. Actually, students in the university should understand that they are in a period of their lives when they have reached the peak of any freedom they are going to have. They are free of parental control; they are typically not yet in the situation where they have to put food on the table for a family. So you have a lot of options. In fact being at a university offers plenty of freedom, incomparable by most standards. So yes, there are things you can do at the universities, special things.