

NOAM CHOMSKY AND THE HUMAN REVOLUTION



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'With one arse, you cannot sit on two horses'

Roma proverb

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ABSTRACT: – In acquiring language, if Noam Chomsky is to be believed, children resemble instinctive and creative anarchists rather than cultural conformists. They don't have to learn the rules: deep down, they know them already. Postulating an innate 'language acquisition device', Chomsky views his work as a contribution to natural science, which is politically neutral. Yet he also expresses the hope that a truly scientific linguistics might indirectly produce political effects, for example by exposing oppressive ideologies or by inspiring resistance to tyranny.

The future of humanity, observes Chomsky in his activist capacity, may depend on a movement of resistance sufficiently powerful to fulfill the enlightenment dream of a 'scientific civilization'. Bringing to completion the evolutionary transition from pre-human to human consciousness and life, this would be accomplished not by modifying our species' genetic potential for speech – but by removing all institutional obstacles to human linguistic and social creativity.

While in his activist capacity, Chomsky in this way links the emergence of linguistic self-organization to social emancipation, in his scientific one he excludes such thinking on principle. The language device of his MIT electronics laboratory is revolutionary, but not in a social or political sense. As if to ensure complete neutrality, language is equated with a natural object in the head, defined in such a way as to exclude activism, social life and even any function in social communication. It is equally cut off from Darwinian evolutionary explanation. Chomsky's critics have been puzzled by these intellectual strategies. This paper is an anthropologist's attempt to understand.

Introduction

Noam Chomsky ranks among the leading intellectual figures of modern times. He has changed the way we think about what it means to be human, gaining a position in the history of ideas – at least according to his supporters – comparable with that of Galileo, Descartes or Newton. Since launching his intellectual assault against the academic orthodoxies of the 1950s, he has succeeded – almost single-handedly – in revolutionizing linguistics and establishing it as a modern science.

Such intellectual victories, however, have come at a cost. The stage was set for the ‘Linguistics Wars’¹ when Chomsky published his first book. He might as well have thrown a bomb. ‘The extraordinary and traumatic impact of the publication of *Syntactic Structures* by Noam Chomsky in 1957’, recalls one witness, ‘can hardly be appreciated by one who did not live through this upheaval’.² From that moment, the battles have continued to rage.

‘Command and control’

How could a technical book on syntax have produced such dramatic effects? By his own admission, the author knew little about the world’s different languages. Indeed, he outraged traditional linguists by claiming he didn’t need to know. Chomsky was not interested in documenting linguistic diversity. Neither did he care about the relationship between language and other aspects of human thought or life. As far as his opponents could see, he was not really interested in linguistics at all. He seemed to be more interested in computers.

In 1955, Chomsky joined the ‘Research Laboratory of Electronics’ at the Massachusetts Institute of Technology. His work was funded by the US military. Chomsky explains:

‘About half the Institute’s budget was coming from two major military laboratories that they administered, and of the rest, the academic side, it could have been something like 90% or so from the Pentagon. Something like that. Very high. So it was a Pentagon-based university. And I was at a military-funded lab’.³

Chomsky clarified his activist convictions immediately on arrival. He recalls:

‘It was a military-financed laboratory, and people routinely went through security clearance procedures. I just refused. I know everyone thought it was kind of weird, because the only effect of it was that I missed out on free trips on military air transport and things like that’.⁴

He didn’t get the free trips, but otherwise encountered no problems. The preface to *Syntactic Structures* concludes:

‘This work was supported in part by the U.S.A. Army (Signal Corps), the Air Force (Office of Scientific Research, Air Research and Development Command), and the Navy (Office of Naval Research); and in part by the National Science Foundation and the Eastman Kodak Corporation’.⁵

Chomsky and his supporters subsequently secured two large defence grants, one for a project based in MIT and the other for research undertaken in the University of California Los Angeles. *Aspects of the Theory of Syntax* contains this acknowledgment:

‘The research reported in this document was made possible in part by support extended the Massachusetts Institute of Technology, Research Laboratory of Electronics, by the Joint Services Electronics Programs (U.S. Army, U.S. Navy, and U.S. Air Force) under Contract No. DA36-039-AMC-03200(E); additional support was received from the U.S. Air Force (Electronic Systems Division under Contract AF19(628)-2487), the National Science Foundation (Grant GP-2495), the National Institutes of Health (Grant MH-04737-04), and the National Aeronautics and Space Administration (Grant NsG-496).’⁶

Several questions arise. Why did Chomsky – an outspoken activist and antimilitarist – take the money? Secondly, what did the military think they were buying? Both questions are sharpened by the fact that MIT at this time had no tradition in linguistics. This confronts us with a third puzzle: why did the military not choose to invest in an institution with a proven record in this field?

Explaining his decision to choose MIT, Chomsky recalls that he felt in no mood to serve in an established department of linguistics. He needed somewhere where original thinking could be freely explored:

‘I had no prospects in a university that had a tradition in any field related to linguistics, whether it was anthropology, or whatever, because the work that I was doing was simply not recognized as related to that field – maybe rightly. Furthermore, I didn’t have real professional credentials in the field. I’m the first to admit that. And therefore I ended up in an electronics laboratory. I don’t know how to handle anything more complicated than a tape recorder, and not even that, but I’ve been in an electronics laboratory for the last thirty years, largely because there were no vested interests there and the director, Jerome Wiesner, was willing to take a chance on some odd ideas that looked as if they might be intriguing. It was several years, in fact, before there was any public, any professional community with which I could have an interchange of ideas in what I thought of as my own field, apart from a few friends. The talks that I gave in the 1950s were usually at computer centers, psychology seminars, and other groups outside of what was supposed to be my field.’⁷

Chomsky was to prove fortunate in his choice of institution. Its resources attracted brilliant students able to contribute enormously to his meteoric rise.⁸ Paradoxically, the military connection also served to enhance Chomsky’s moral and intellectual standing. If he could preserve his anti-militarist commitments despite this institutional link, it would send a reassuring signal concerning the quality of his professional work. Military men don’t subsidise anarchist propaganda. Whatever Chomsky’s politics, the science must surely be good.

If the benefits to Chomsky need little explanation, we are led to our second question. What did the military stand to gain? Apparently, they discerned much promise in Chomsky’s ideas. In a 1971 interview Colonel Edmund P. Gaines explained:

‘The Air Force has an increasingly large investment in so called ‘command and control’ computer systems. Such systems contain information about the status of our forces and are used in planning and executing military operations. For example, defense of the continental United States against air and missile attack is possible in part because of the use of such computer systems. And of course, such systems support our forces in Vietnam.

The data in such systems is processed in response to questions and requests by commanders. Since the computer cannot ‘understand’ English, the commanders’ queries must be translated into a language that the computer can deal with; such languages resemble English very little, either in their form or in the ease with which they are learned and used. Command and control systems would be easier to use, and it would be easier to train people to use them, if this translation were not necessary. We sponsored linguistic research in order to learn how to build command and control systems that could understand English queries directly.’⁹

Generativists were by then engaged in just such a project at the University of California Los Angeles, prompting Colonel Gaines to comment:

‘Of course, studies like the UCLA study are but the first step toward achieving this goal. It does seem clear, however, that the successful operation of such systems will depend on insights gained from linguistic research.....’

The colonel went on to express the Air Force’s ‘satisfaction’ with UCLA’s work.⁹

The language machine

On the eve of the computer age, Chomsky’s *Syntactic Structures* excited and inspired a new generation of linguists because it chimed in with the spirit of the times. Younger scholars were becoming impatient with linguistics conceived as the accumulation of empirical facts about linguistic forms and traditions. Chomsky promised simplification by reducing language to a mechanical ‘device’ whose design could be precisely specified. Linguistics was no longer to be tarnished by association with ‘unscientific’ disciplines such as anthropology or sociology. Instead, it would be redefined as the study of a ‘natural object’ – the specialised module of the brain which (according to Chomsky) was responsible for linguistic computation. Excluding social factors and thereby transcending mere politics and ideology, the reconstructed discipline would at last qualify as a science akin to mathematics and physics.

In science, according to Chomsky, less is more. If a theory is sufficiently powerful and simple, it should radically reduce the amount of knowledge needed to understand the relevant facts. As he explains:

‘.... the amount that you have to know in a field is not at all correlated with the success of the field. Maybe it’s even inversely related because the more success there is, in a sense, the less you have to know. You just have to understand; you have to understand more, but maybe know less’.¹⁰

Syntactic Structures infuriated established linguists – and delighted as many iconoclasts – because its message was that much of the profession’s work had been a waste of time. Why laboriously list and classify anthropological observations on the world’s variegated languages if a simplifying short-cut can be found? In an ice-cool, starkly logical argument that magisterially brushed aside most current linguistic theory, *Syntactic Structures* evaluated some conceivable ways of constructing the ultimate ‘language machine’:

‘Suppose we have a machine that can be in any one of a finite number of different internal states.... the machine begins in the initial state, runs through a sequence of states (producing a word with each transition), and ends in the final state. Then we call the sequence of words that has been produced a “sentence”. Each such machine thus defines a certain language; namely the set of sentences that can be produced in this way’.¹¹

As his argument unfolds, Chomsky rules out his initial crude design for the envisaged machine – clearly, it wouldn’t work. By a process of elimination, he then progressively narrows the range of designs which – on purely theoretical grounds – ought to work. Thrillingly, Chomsky opens up the prospect of discovering in effect ‘the philosopher’s stone’: the design specifications of a ‘device’ capable of generating grammatical sentences (and only grammatical ones) not only in English but in any language spoken (or capable of being spoken) on earth.

Syntactic Structures itself, as it happened, proved unequal to the extraordinary task. Aware of this, Chomsky in his next book proposed a completely different design for his machine – variously known as the *Aspects* model or as the Standard Theory.¹² Two mathematical linguists, Stanley Peters and Robert Ritchie, explored its implications – only to find that the class of grammars captured by the new model was so all-encompassing as to be vacuous. A device built in such a way, they found, would be quite extraordinarily stupid. In fact, it would be unable to distinguish between (a) any conceivable list of strings of symbols (say, all the decimal places of π , divided into arbitrary sequences and enumerated by the value of the products of their digits) and (b) a list of actual strings used by humans for expressing

themselves in, say, English. A ‘not too far-fetched analogy’, as one critic put it, ‘would be a biological theory which failed to characterize the difference between raccoons and lightbulbs’.¹³

Chomsky proceeded as if none of this had any bearing on his work. In a pre-emptive strike, he declared that ‘the gravest defect of the theory of transformational grammar is its enormous latitude and descriptive power’. Constraints would have to be added. ‘Notice that it is often a step forward...’, Chomsky observed, ‘when linguistic theory becomes more complex’.¹⁴ In place of Standard Theory, or ST as it was known, Chomsky now offered the Extended Standard Theory, or EST.

By the late 1970s, however, still further changes seemed required, leading to the Revised Extended Standard Theory, or REST. Realizing that this was still unsatisfactory, in 1981 Chomsky published his *Lectures on Government and Binding*, which swept away much of the apparatus of earlier transformational theories in favour of a much more complex approach.¹⁵ In its ‘Principles and Parameters’ incarnation, the device might arguably have seemed quite encouraging to Colonel Gaines:

‘We can think of the initial state of the faculty of language as a fixed network connected to a switch box; the network is constituted of the principles of language, while the switches are the options to be determined by experience. When the switches are set one way, we have Swahili; when they are set another way, we have Japanese. Each possible human language is identified as a particular setting of the switches – a setting of parameters, in technical terminology. If the research program succeeds, we should be able literally to deduce Swahili from one choice of settings, Japanese from another, and so on through the languages that humans can acquire’.¹⁶

Without abandoning this extraordinary dream, Chomsky has since jettisoned most of the specifics in favour of yet another attempted solution, known as the *Minimalist Programme*.¹⁷ This offers the prospect of building the device in a breathtakingly simple way. Might not the assembly process be as easy as growing a crystal? Or as easy, perhaps, as inducing a living cell to divide? Chomsky explains his thinking in this way:

‘So, is cell division some horrible mess? Or is it a process that follows very simple physical laws and requires no genetic instructions at all because it’s just how the physics works? Do things break up into spheres to satisfy least energy requirements? If that were true, it would be sort of perfect; it’s a complicated biological process that’s going the way it does because of fundamental physical laws. So, beautiful process.’¹⁸

Minimalism sets out from this optimistic assumption: language might be sort of perfect, like cell division. In that case, no complicated blueprint would be required. To build the machine, we would need only the basic principle – which in the case of language seems to be ‘recursion’, nothing more.¹⁹ Chomsky admits that specific languages do seem to present complications. But anomalies shouldn’t distract us – any more than we should be led astray by imperfections in a crystal caused by accidental damage. To grow the crystal properly, we don’t have to anticipate random imperfections in advance.

This new, bare-bones approach strikes many of Chomsky’s colleagues as an astonishing – and arguably refreshing – rupture in his long and remarkable career. In fact, it calls into question ‘almost everything’ he has previously claimed:

‘My own view is that almost everything is subject to question, especially if you look at it from a minimalist perspective.... So, if you had asked me ten years ago, I would have said government is a unifying concept, X-bar theory is a unifying concept, the head parameter is an obvious parameter, ECP, etc., but now none of these looks obvious. X-bar theory, I think, is probably wrong, government maybe does not exist’.²⁰

As Chomsky demolishes these and other familiar landmarks, it becomes difficult to discern what is left of his paradigm as the smoke clears. But then how is the language machine to be built? Is the general idea – the vague principle – in itself enough? Are we any nearer to a concrete solution than before? Minimalism has discarded virtually every detail of the original extraordinary plan. If minimalism itself gets discarded in its turn, the patience of even Chomsky's most trusting supporters may finally run out.²¹

Linguistics as physics

To his academic colleagues in the humanities and social sciences, Chomsky's programme has caused predictable astonishment, exasperation and even outrage. How could Chomsky imagine it possible – even in principle – to construct a 'device' enabling scientists to 'deduce' the languages currently or historically spoken across the world?

In replying to such critics, Chomsky accuses them of not understanding science. To do science, he explains, 'you *must* abstract some object of study, you must eliminate those factors which are not pertinent....' The linguist – according to Chomsky – cannot study humans articulating their thoughts under concrete social or historical conditions. Instead, you must replace reality with an abstract model. 'Linguistic theory', Chomsky declared in 1965,

'is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance.'²³

In an implicit reference to the great Swiss theoretician Ferdinand de Saussure, he invokes the authority of 'the founders of modern general linguistics' in support of this position, adding that 'no cogent reason for modifying it has been offered'.²³

Chomsky's decision, then, is to work with a deliberately simplified model. In subsequently applying it, he makes children acquire language not through successive stages but in an instant.²⁴ The evolutionary emergence of language is also instantaneous.²⁵ Lexical concepts are not historically determined; they are fixed structures genetically installed. How could Pleistocene humans have been endowed with word-meanings for things which didn't yet exist? Chomsky admits that his theory might seem far-fetched. For certain everyday concepts, the difficulties may not be insurmountable. But what about concepts such as 'carburetor' and 'bureaucrat'? Can these, too, have existed during the Pleistocene? After defending his idea in a general way, Chomsky elaborates:

'Furthermore, there is good reason to suppose that the argument is at least in substantial measure correct even for such words as *carburetor* and *bureaucrat*, which, in fact, pose the familiar problem of poverty of stimulus if we attend carefully to the enormous gap between what we know and the evidence on the basis of which we know it. The same is often true of technical terms of science and mathematics, and it surely appears to be the case for the terms of ordinary discourse. However surprising the conclusion may be that nature has provided us with an innate stock of concepts, and that the child's task is to discover their labels, the empirical facts appear to leave open few other possibilities.'²⁶

'Thus Aristotle had the concept of an airplane in his brain, and also the concept of a bicycle – he just never had occasion to use them!', comments Dan Dennett, adding that he and his colleagues find it hard not to burst out laughing at this point.²⁷ Chomsky is here defending a strong form of the so-called 'modular mind' hypothesis, initially inspired by his own postulation of an innate 'language device'.²⁸ Humans, according to Chomsky, speak not for social reasons, but in expressing their individual genetic

nature. Speech is the autonomous output of a specialised computational mechanism – the ‘language organ’ – installed inside the brain of every human on earth.

In his capacity as a natural scientist, Chomsky sees people as ‘natural objects’, their language a ‘part of nature’; linguistics as a discipline ‘falls naturally within human biology’²⁹. However, this is not biology as normally understood. Discussing how language may have evolved, Chomsky suggests:

‘The answers may well lie not so much in the theory of natural selection as in molecular biology, in the study of what kinds of physical systems can develop under the conditions of life on earth...’³⁰

The apparently complicated features of grammar may be ‘simply emergent physical properties of a brain that reaches a certain level of complexity under the specific conditions of human evolution’.³¹ In an echo of the Manhattan project, Chomsky offers his own version of what might be termed the cognitive meltdown theory:

‘We know very little about what happens when 10^{10} neurons are crammed into something the size of a basketball, with further conditions imposed by the specific manner in which this system developed over time. It would be a serious error to suppose that all properties, or the interesting properties of the structures that evolved, can be “explained” by natural selection’.³²

But Chomsky has offered different scenarios. He appears equally happy with the speculation that

‘...a mutation took place in the genetic instructions for the brain, which was then reorganized in accord with the laws of physics and chemistry to install a faculty of language’.³³

As if willing to try anything³⁴, he has recently suggested that language’s recursive structure may have emerged as a spandrel – an accidental by-product – of unspecified other developments connected with, say, navigation or mind-reading.³⁵

For Chomsky, linguistics can aspire to the precision of physics because language itself is a ‘natural object’. As such, it approximates to a ‘perfect system’. Biologists, according to Chomsky, do not expect perfection, which is a distinctive hallmark of physics. He explains: ‘In the study of the inorganic world, for mysterious reasons, it has been a valuable heuristic to assume that things are very elegant and beautiful’. If it is to succeed in connecting sounds with meanings, language must solve a number of technical problems. In an apparent nod toward ‘intelligent design’, Chomsky continues:

‘If a divine architect were faced with the problem of designing something to satisfy these conditions, would actual human language be one of the candidates, or close to it? Recent work suggests that language is surprisingly “perfect” in this sense.... Insofar as that is true, language seems unlike other objects of the biological world, which are typically a rather messy solution to some class of problems, given the physical constraints and the materials that history and accident have made available’.³⁷

Language lacks the untidiness we would expect of an accumulation of accidents made good by evolutionary ‘tinkering’. Characterised by beauty bordering on perfection – bearing the hallmarks of intelligent design – it cannot have evolved in the normal biological way.

It is perhaps easy to understand why computer engineers might find it useful to treat language as a mechanical ‘device’. If, say, the aim were to construct an electronic command-and-control system for military use, then traditional linguistics would clearly be inadequate. The requirement would be for a version of language stripped free of meanings in any human or cultural sense – stripped of metaphor, poetry, humour, politics or anything else not accessible to a machine.

But military figures such as Colonel Gaines were not the only people hoping to benefit from the new approach. What of Chomsky’s other institutional sources of support? And what about his own fiercely

anti-militarist politics? How did an anti-capitalist revolution connect with the ‘revolution’ Chomsky was inaugurating within linguistics? Indeed, can the two sides of Chomsky’s output be reconciled at all? Was the young anarchist tailoring his theories to meet the requirements of his military sponsors – forcing us, perhaps, to question the sincerity of his anarcho-syndicalist commitments? Or did he believe he was taking the money – refusing to let this influence his scientific results – in order to secure the best possible position from which to promote the anarchist cause?

An anarchist education

Born in 1928 in Philadelphia, Chomsky describes himself as ‘a child of the Depression’.³⁸ His politics didn’t have to be learned from books. His family included militant trade unionists:

‘So you knew what a picket line was and what it meant for the forces of the employers to come in there swinging clubs and breaking it up’.³⁹

‘Some of my earliest memories’, Chomsky reminisces, ‘which are very vivid, are of people selling rags at our door, of violent police strikebreaking, and other Depression scenes’.⁴⁰ One incident stands out:

‘I remember I was with my mother on a trolley car. I must have been five years old. There was a textile strike. Women workers were picketing. We just passed by and saw a very violent police attack on women strikers, picketers outside....’⁴¹

The response of these workers at first puzzled the young Chomsky:

‘It was mostly women, and they were getting pretty brutally beaten up by the cops. I could see that much. Some of them were tearing off their clothes. I didn’t understand that. The idea was to try to cut back the violence. It made quite an impression. I can’t claim that I understood what was happening, but I sort of got the general idea. What I didn’t understand was explained to me....’⁴²

The women were in fact ‘hoping the police would be embarrassed and back off. The police beat them up anyway’.⁴³ The scene made an indelible impression.⁴⁴

Between the ages of two and twelve, Chomsky attended the Oak Lane Country Day School in Philadelphia. This was an experimental progressive school which sought to foster non-competitive creativity. Chomsky remembers that the teaching here produced ‘a lively atmosphere’ in which ‘the sense was that everybody was doing something important’. Each child ‘was regarded as somehow being a very successful student’:

‘It wasn’t that they were a highly select group of students. In fact, it was the usual mixture in such a school, with some gifted students and some problem children who had dropped out of the public schools. But nevertheless, at least as a child, that was the sense that one had – that, if competing at all, you were competing with yourself. What can I do? But no sense of strain about it and certainly no sense of relative ranking’.⁴⁵

On later entering a city high school, Chomsky was shocked to discover that none of this was considered normal. In other schools, apparently, competitive dynamics were encouraged and personal creativity suppressed. Chomsky⁴⁶ comments:

‘That’s what schooling generally is, I suppose. It’s a period of regimentation and control, part of which involves direct indoctrination, providing a system of false beliefs. But more importantly, I think, is the manner and style of preventing and blocking independent and creative thinking and imposing hierarchies and competitiveness and the need to excel, not in the sense of doing as well as you can, but doing better than the next person’.

Chomsky is here describing the educational philosophy he would denounce throughout his life.

Chomsky's real education, however, came less from school than from a lively intellectual culture dominated by the radical Jewish intelligentsia of New York. It was, he recalls, a

'working-class culture with working-class values, solidarity, socialist values, etc. Within that it varied from communist party to radical semi-anarchist critique of Bolshevism.... But that was only a part of it. People were having intensive debates about Stekel's version of Freudian theory, a lot of discussions about literature and music, what did you think of the latest Budapest String Quartet concert, or Schnabel's version of a Beethoven sonata vs. somebody else's version'.⁴⁷

At an early age, Chomsky was affected by the outcome of the Spanish civil war. 'The first article I wrote was an editorial in the school newspaper on the fall of Barcelona, a few weeks after my tenth birthday'.⁴⁸ He describes the defeat as 'a big issue in my life at the time'.⁴⁹ Referring to events in Germany and Italy after World War I and in Spain in 1936, Chomsky comments:

'The anarchosyndicalists, at least, took very seriously Bakunin's remark that the workers' organizations must create "not only the ideas but also the acts of the future itself" in the prerevolutionary period. The accomplishments of the popular revolution in Spain, in particular, were based on the patient work of many years of organization and education, one component of a long tradition of commitment and militancy. And workers' organizations existed with the structure, the experience, and the understanding to undertake the task of social reconstruction when, with Franco's coup, the turmoil of early 1936 exploded into social revolution'.⁵⁰

By his twelfth birthday, Chomsky had already rejected the politics of the Communist Party. Inspired by Barcelona's anarchists, he adopted their defeated cause and in subsequent years has never abandoned it.

Chomsky rejected not only Stalinism but also Leninism, which he associated with elitist attempts at mass indoctrination. The Spanish anarchists, he felt, didn't try to educate the masses by imposing a rigid ideology from above. They believed in self-organization and everyone's capacity – once personally and politically liberated – to contribute to the revolutionary cause. 'I do not doubt', Chomsky writes, 'that it is a fundamental human need to take an active part in the democratic control of social institutions'.⁵¹ The 'fundamental human capacity', in his view, 'is the capacity and the need for creative self-expression, for free control of all aspects of one's life and thought'. Contemporary capitalist society ensures rewards for the more selfish tendencies in human nature. 'A different society' however, 'might be organized in such a way that human feelings and emotions of other sorts, say solidarity, support, sympathy become dominant'.⁵³ Chomsky observes:

'It is no wonder that "fraternity" has traditionally been inscribed on the revolutionary banner alongside of "liberty" and "equality". Without bonds of solidarity, sympathy, and concern for others, a socialist society is unthinkable. We may only hope that human nature is so constituted that these elements of our essential nature may flourish and enrich our lives, once the social conditions that suppress them are overcome. Socialists are committed to the belief that we are not condemned to live in a society based on greed, envy, and hate. I know of no way to prove that they are right, but there are also no grounds for the common belief that they must be wrong'.⁵⁴

The disaffected academic

In 1945, Chomsky entered the University of Pennsylvania:

'I entered with a good deal of enthusiasm and expectations that all sorts of fascinating prospects would open up, but these did not survive long, except in a few cases.... At the end of two years, I was planning to drop out to pursue my own interests, which were then largely political'.⁵⁵

While actively opposing the establishment of a Jewish state in Palestine, Chomsky met Zellig Harris, who was prominent in campaigning for Jews and Arabs to join together in liberating Palestine from feudal and colonial oppression. It so happened that Harris was also a charismatic professor of modern linguistics.

Chomsky describes himself at that time as ‘a kind of college dropout, having no interest in college at all because my interest in a particular subject was generally killed as soon as I took a course in it’. Just ‘to have something to do’, however, he decided to study linguistics under Harris, who by now had become a personal friend. Gradually, ‘I got interested in the field and sort of put it at the center of my concerns’.⁵⁶

Although he ‘got interested’, however, Chomsky felt relatively unqualified. His father had been a noted Hebrew scholar, imparting to Noam a childhood interest in historical linguistics and mediaeval Hebrew grammar. But on attending college, he encountered structural linguistics – for which he felt no enthusiasm at all. Neither was he attracted by linguistic anthropology or any of the social or psychological sciences. Under Harris’ influence, he instead took courses in philosophy and mathematics, ‘fields in which I had no background at all, but which I found interesting, in part, no doubt, thanks to unusually stimulating teachers’.⁵⁷

As an anarchist, Chomsky naturally distrusted the state, large institutions in general and the university and all its functionaries. Disaffected intellectuals of this kind, according to one social historian ‘are less vulnerable to the corruption of title and salary because their resistance is moral, almost instinctual’.⁵⁸ Chomsky respected science, especially mathematics and physics. By the same token, he was deeply suspicious of the so-called ‘social sciences’, regarding them as patently ideological. He dreamed of ridding linguistics of such contamination. He would do this by detaching the discipline from its current institutional affiliations and rendering it purely formal – if possible, purely mathematical. Was it no more than a happy coincidence that this was exactly what the nascent computer industry – and its military sponsors – required?

Stimulus and response

Up until this time, speech had been allocated to ‘culture’, in turn thought of as ‘learned behaviour’. During the 1940s and 1950s, the standard paradigm in scientific psychology had been behaviourism – championed in the Soviet Union by Pavlov and in the United States most prominently by B. F. Skinner. Skinner’s new book, *Verbal Behaviour*, claimed to explain language as a set of habits built up over time.⁵⁹ Rats, Skinner showed, can be trained to perform highly complex tasks provided two basic principles are followed. First, the tasks must be broken down into graduated steps. Second, the animal must be appropriately rewarded or punished at each step. This type of learning was termed by Skinner *operant conditioning*. Building on his work with rats, Skinner argued:

‘The basic processes and relations which give verbal behaviour its special characteristics are now fairly well understood. Much of the experimental work responsible for this advance has been carried out on other species, but the results have proved to be surprisingly free of species restrictions. Recent work has shown that the methods can be extended to human behaviour without serious modification.’⁶⁰

Skinner accordingly treated human language in stimulus-response terms, identifying ‘meaning’ with the habituated response of the listener to the speech-stimulus repeatedly heard. Language was conceptualised as structured like a chain, learned by associating one link – via appropriate approval or ‘reinforcement’ – to the next.

This stress on ‘learning’ was, of course, part of a much wider intellectual movement. It was closely linked to the notion of ‘culture’ that had been central to anthropology since the beginning of the twentieth century. Franz Boas and his students had founded cultural anthropology in the United States by forcing a breach with Darwinism and other currents within biological science. They justified this by arguing that ‘human nature’ is a myth: humans can learn virtually any conceivable ‘habit’ or ‘custom’ given appropriate contact, needing external input because they lack the precise instincts of other animals. In Britain, Bronislaw Malinowski and A. R. Radcliffe-Brown echoed these themes, arguing that man’s evolutionary origins were unknowable and in any case irrelevant, breaking with evolutionary theory and instead recommending ‘functionalism’ – a body of knowledge designed specifically to appeal to educators, employers and administrators. Radcliffe-Brown in particular helped redefine social anthropology as an instrument of political coercion. ‘To exercise control over any group of phenomena’, as he explained,

‘we must know the laws relating to them. It is only when we understand a culture as a functioning system that we can foresee what will be the results of any influence, intentional or unintentional, that we may exert upon it.’⁶¹

What the colonial and other authorities needed was an applied science, a rule-book for dealing with indigenous peoples, enabling them to be manipulated in much the same way that natural forces can be controlled and manipulated by knowing the laws of chemistry and physics.

Planners and social engineers – among them Stalin in the Soviet Union – welcomed behaviourism in psychology for similar reasons. Like the new anthropology, the new psychology seemed to offer enhanced techniques for mass education, pacification and control. Stimulus-response psychology, as one historian observes, encouraged industrial managers in the belief that securing co-operative behaviour meant finding in the workforce which buttons to push – and pushing them. Or as Chomsky puts it:

‘Those who rule by violence tend to be “behaviorist” in their outlook. What people may think is not terribly important; what counts is what they do. They must obey, and this obedience is secured by force’.⁶³

Language and social control

Two years after publishing *Syntactic Structures*, Chomsky published his celebrated review of Skinner’s book, *Verbal Behaviour*. He had been wise enough not to take issue with, say, the Marxist-inspired school of child psychology pioneered in the Soviet Union by Lev Vygotsky⁶⁴ or the subtle and fruitful insights developed by the Swiss developmental psychologist Jean Piaget.⁶⁵ Despite major differences with psychoanalysis, these and many other twentieth century psychologists had echoed Freud in accepting that humans, like other animals, must have deep-rooted instincts of some relevance to a study of the mind. Chomsky, however, refrained from acknowledging the existence of such scholars. By singling out behaviourism for attack and ignoring everything else, he succeeded in arranging the battleground to suit his own needs.

It was not difficult for Chomsky to associate the linguistics of his time with behaviourism and totalitarianism. Leonard Bloomfield had been the major figure in American linguistics between the wars. In 1929, he told the Linguistics Society of America:

‘I believe that in the near future – in the next few generations, let us say – linguistics will be one of the main sectors of scientific advance, and that in this sector science will win through to the understanding and control of human conduct’.⁶⁶

Following the Second World War, reviewing the apparently undesirable conduct of large numbers of military personnel and insurgents worldwide, many of Bloomfield's colleagues in the United States saw themselves living 'at a time when our national existence – and possibly the existence of the human race – may depend on the development of linguistics and its application to human problems'.⁶⁷ The wave of McCarthyite witch-hunting which swept North America during the 1950s was in part premised on the belief that critics of 'the American way of life' must clearly have been brain-washed by communists. In this bitter cold-war context, linguistics was seen as a crucial weapon in the world-wide struggle for mastery and control.

Against this backdrop, Chomsky found it easy to present his antithesis as politically attractive and even liberating. Skinner openly advocated transferring his manipulative techniques from laboratory rats to humans. The 'control of the population as a whole', as he would later explain, 'must be delegated to specialists – to police, priests, owners, teachers, therapists, and so on, with their specialized reinforcers and their codified contingencies'.⁶⁸ As the populace seek to avoid punishment, they will hopefully think twice about mounting resistance – thereby internalising the externally imposed rules. Skinner's aim, correspondingly, is to 'design a world in which behavior likely to be punished seldom or never occurs'. He describes this as a world of 'automatic goodness'.⁶⁹ Chomsky comments:

'Extending these thoughts, consider a well-run concentration camp with inmates spying on one another and the gas ovens smoking in the distance, and perhaps an occasional verbal hint as a reminder of the meaning of this reinforcer. It would appear to be an almost perfect world....'⁷⁰

Chomsky's review of Skinner's *Verbal Behaviour* succeeded, it would seem, beyond its author's wildest dreams. Published in the journal *Language* and subsequently splashed across the front cover of *The New York Review of Books*, the 'case against B. F. Skinner' set in motion a tidal wave of revolt against a school of thought increasingly perceived as Orwellian in its project to shape and manipulate human life.

The language instinct

For Chomsky, there could be no middle way. Standard social science – intrinsically behaviourist – viewed language as 'external' to the individual. If that were the case, no child could acquire its natal tongue without repetitive training involving punishments and rewards. In point of fact, no child learns language this way. If the source of language isn't 'external', then obviously it must be 'internal'. The child's pre-installed, genetically specified creativity should simply be allowed to grow.

Chomsky is withering in his response to the notion – still prevalent in left-liberal circles to this day – that a child must be taught its natal tongue through training and example:

'Attention to the facts quickly demonstrates that these ideas are not simply in error but entirely beyond any hope of repair. They must be abandoned, as essentially worthless. One has to turn to the domain of ideology to find comparable instances of a collection of ideas, accepted so widely and with so little question, and so utterly divorced from the real world. And, in fact, that is the direction in which we should turn if we are interested in finding out how and why these myths achieved the respectability accorded to them, how they came to dominate such a large part of intellectual life and discourse. That is an interesting topic, one well worth pursuing....'⁷¹

How can language be an ordinary acquired skill? What kind of 'skill' is it when humans everywhere in the world 'learn' it in basically the same way and in equal measure? Languages – Chomsky and his supporters point out – are not like other cultural patterns. They are not more or less complex, more or less sophisticated, according to the level of technological or other development. While differing from one another grammatically and in other ways, every human language is an equally intricate, complex intellectual system; none can be described as more or less sophisticated or 'advanced'.

In all cultures, moreover, people speak fluently regardless of social status, training or education. There is an innate biological schedule for language acquisition, specifying at what age a new language can easily be mastered and at what age the task becomes virtually impossible. While young children take quickly and easily to learning a new language, adults encounter immense difficulties, often making recurrent basic errors and revealing a permanent tell-tale accent even despite years of trying. Such children not only learn easily: in linguistically impoverished environments, they may creatively invent improvements, developing a language more systematic than any they have heard. It is as if they knew by instinct how a proper language should be structured, anticipating regularities and establishing them inventively where necessary.⁷²

The human vocal tract is a complex arrangement – a combination of disparate structures whose original evolutionary functions certainly had no connection with speech.⁷³ But with its independently controllable parts, the tract as it now exists appears well designed to transmit strings of digitally encoded information accurately and at very high speeds. This, too – as Chomsky's colleague Lenneberg⁷⁴ was among the first to stress – illustrates that there is such a thing as human nature. No child needs to be taught to babble, any more than it needs instruction in suckling at the breast. The rhythmic lip and mouth movements are instinctive and enjoyable for their own sake. Given even a minimally loving and stimulating environment, the next transition – from babbling to mature speaking – occurs equally naturally. Like the transition from crawling to walking, it is just part of growing up.

The syntactical skills of children mastering a language, Chomsky points out, are acquired with extraordinary rapidity and in unmistakably creative ways. The child is not just assimilating knowledge or learning by rote: on the contrary, what comes out seems to exceed what goes in. Children hear relatively few examples of most sentence types, are rarely corrected, and encounter a bewildering array of half-formed sentences, lapses and errors in the language input to which they are exposed. Yet despite all this, they are soon fluent, creatively producing sentences never heard before, knowing intuitively which sequences are grammatical and which are not. In Chomsky's words:

‘The fact that all normal children acquire essentially comparable grammars of great complexity with remarkable rapidity suggests that human beings are somehow specially designed to do this, with data-handling or ‘hypothesis-formulating’ ability of unknown character and complexity.’⁷⁵

It is as if humans had an *instinct* for language.

A human revolution?

In accepting military funding for his early language research, Chomsky risked being accused of political corruption. How could an anarchist do such a thing? As if fending off such attacks, Chomsky went out of his way to clarify his political stance. Showing unusual courage, he inspired and organised draft resistance and other forms of direct action aimed at disrupting the United States' war effort in Vietnam. Defying the law and spending time in a police cell, he achieved a place high on Richard Nixon's ‘enemy list’ of extremely dangerous artists and intellectuals.⁷⁶

As the political system is currently constituted, Chomsky argues, policies are determined by representatives of private economic power. In their institutional roles, these individuals ‘will not be swayed by moral appeals’ but can only be affected by the ‘costs consequent upon the decisions they make’.⁷⁷ Chomsky's stance seemed vindicated when, after the Tet offensive of 1968, the joint Chiefs of Staff pointed out that the deployment of additional troops to Vietnam was being hampered by the need to ensure that ‘sufficient forces would still be available for civil disorder control’ at home.⁷⁸ During these and subsequent years, no American public figure did more to put the record straight on the United States' invasion of Vietnam than Noam Chomsky. Other left-wing intellectuals may not have felt quite

the same need to deny personal culpability for their country's actions around the world. Chomsky experienced this need as intimate and morally inescapable.

However, simply to explain his political stance was not enough. Chomsky's overall programme had to appear consistent. He could hardly afford to let his left-wing critics get away with the suggestion that although his political views were progressive, his transformational grammar was – to quote George Lakoff – 'as much part of the intellectual establishment as General Motors is a part of the military-industrial establishment'.⁷⁹ Chomsky's anarcho-syndicalism and antimilitarism had to be constructed as consistent with his linguistics. Somehow, the corporate backed and financed 'cognitive revolution' in psychology and related sciences had to be presented as intrinsically liberating and consistent with Chomsky's political beliefs.

He did not have to look far for a solution. Chomsky projected the 'language device' of his electronics laboratory into the brain of the human child. In real life, the human brain is not composed of wires or switch-boxes of the kind a 1950s computer engineer might devise. But if Chomsky's electronic 'device' could henceforth be conceptualised as a feature of the maturing human brain, it would nonetheless solve a number of pressing problems.

Central to anarchism is the celebration of spontaneity and self-organization. It must have occurred to Chomsky that a machine defined as autonomous – as freely controlling its own 'creative' output – would fit into the anarchist scheme of things. Chomsky could now claim that his commitment to what looked like a box of electronic tricks had a deeper political significance. The commitment in reality was to a resistant and creative human nature. Children don't need to be taught language by external pressure or example because – thanks to the special 'device' in their brains – they know the basics already. We 'can know so much', as Chomsky explains,

'because in a sense we already knew it, though the data of sense were necessary to evoke and elicit this knowledge. Or to put it less paradoxically, our systems of belief are those that the mind, as a biological structure, is designed to construct'.⁸⁰

If human mental nature is intricately structured and resistant, it must set limits to authoritarian control:

'If, indeed, human nature is governed by Bakunin's 'instinct for revolt' or the 'species character' on which Marx based his critique of alienated labor, then there must be continual struggle against authoritarian social forms that impose restrictions beyond those set by 'the laws of our own nature', as has long been advocated by authentic revolutionary thinkers and activists'.⁸¹

Chomsky has little patience with those who oppose him on this point:

'Yes, I speak of human nature, but not for complicated reasons. I do so because I am not an imbecile, and do not believe that others should fall into culturally imposed imbecility. Thus, I do not want to cater to imbecility. Is my granddaughter different from a rock? From a bird? From a gorilla? If so, then there is such a thing as human nature. That's the end of the discussion: we then turn to asking what human nature is'.⁸²

Moving onto the offensive against his left-liberal critics, Chomsky speculates as to why they should advocate imbecility in such matters:

'For intellectuals – that that is, social, cultural, economic and political managers – it is very convenient to believe that people have 'no nature', that they are completely malleable. That eliminates any moral barrier to manipulation and control, an attractive idea for those who expect to conduct such manipulation, and to gain power, prestige and wealth thereby. The doctrine is so utterly foolish that one has to seek an explanation. This is the one that intellectual and social history seem to me to suggest'.⁸³

Chomsky is here resorting to historical materialism, although he probably would not wish to call it that. When a socially entrenched theory turns reality on its head, it cannot be understood rationally or on its own terms. The problem is not purely intellectual. Even the most intelligent people can succumb to ‘cultural imbecility’ when it serves their interests to do so.

Fortunately, continues Chomsky, the cultural theorists are wrong. Humans do possess an innate and resistant nature. It is thanks to this fact that revolution remains possible at all. As we learn a language, according to Chomsky, we are not cultural conformists. The child becomes fluent not in response to external constraints but in expressing its inner creativity:

‘If some individual were to restrict himself largely to a definite set of linguistic patterns, to a set of habitual responses to stimulus configurations.... we would regard him as mentally defective, as being less human than animal. He would immediately be set apart from normal humans by his inability to understand normal discourse, or to take part in it in the normal way — the normal way being innovative, free from control by external stimuli, and appropriate to a new and ever-changing situation’.⁸⁴

Celebrating a rebellious human nature, Chomsky repudiates the pessimistic view that humanity’s ‘passions and instincts’ will forever prevent enjoyment of the ‘scientific civilisation’ that reason might create. He concludes instead that ‘human needs and capacities will find their fullest expression in a society of free and creative producers, working in a system of free association....’ ‘Success in this endeavour’, as he puts it,

‘might reveal that these passions and instincts may yet succeed in bringing to a close what Marx called the “prehistory of human society”. No longer repressed and distorted by competitive and authoritarian social structures, these passions and instincts may set the stage for a new scientific civilization in which “animal nature” is transcended and human nature can truly flourish’.⁸⁵

It would be the origin of the species all over again.

Parallel worlds

If science is to remain true, insists Chomsky, it needs a protected space, free of all political pressure. Its purposes are not human ones; science operates on another level. Science cannot give meaning to human experience; it cannot teach us how to live. Unlike religion or literature, science simply bypasses those issues that most concern humans. Intellectuals who claim otherwise are posturing instead of doing science:

‘If someone can come up with a nontrivial theory that has some bearing on matters of human concern, with conclusions of any credibility that would alter the ways in which I or others view these matters without access to the “theory”, I’d be the first to immerse myself in it, with delight. What I find, however, is intellectuals posturing before one another. Maybe that’s my inability to discern important things, but if so, it should be possible to explain this to me. Many people in the academic and political left complain about my “non-theoretical” stance, as do those elsewhere. But so far, no one has even tried to respond to this very simple challenge that any sane person would make, as far as I can see. What am I to conclude from that?’⁸⁶

Scientific socialism made the claim that science is politically revolutionary. However, that intellectual movement has patently failed. The quest for authoritarian control is the *raison d’être* of ideologists who continue to invoke the name of Marx. It is therefore no accident that their writings are convoluted, jargon-ridden and evasive. Chomsky comments:

‘There are things that we ought to be able to talk about in ordinary, simple words. There’s nothing terribly profound here, as far as I know. If there is, nobody has discovered it. We

ought to be able to talk about these things in simple, straightforward words and sentences without evasion and without going to some expert to try to make it look complicated....⁸⁷

However, this doesn't apply to work in linguistics, which is 'a totally different thing'.⁸⁸ Science is unavoidably complicated and often difficult for ordinary people to understand. Linguists are no different from physicists in this respect. They have the right to exclude from their debates anyone who hasn't mastered the field.⁸⁹

It is clear that Chomsky's twin discourses – one activist and transparent, the other scientific and correspondingly opaque – reflect the fact that he has a foot in both camps. As one sympathetic biographer explains:

'If the importance of Chomsky's formal linguistic work is acknowledged...by a group of scientists, his political commentaries get a good reception from a very different audience. His political works and speeches are typically not welcomed by those in positions of authority and power ('managers').... But they get a surprisingly warm reception from much of their intended audience – workers, unionists, students and so on'.⁹⁰

Chomsky makes no secret of the tensions produced in him by such a life:

'Now exactly how one can maintain that sort of schizophrenic existence I am not sure; it is very difficult. It's not only a matter of too much demand on one's time. But also a high degree of ongoing personal conflict about where your next outburst of energy should go'.⁹¹

Asked by an interviewer to explain his prodigious output despite such difficulties, Chomsky replies:

'As far as I know, I have only one talent. I'm not trying to be modest. I think I know what I'm good at and what I'm not good at. The one talent that I have which I know many other friends don't seem to have is I've got some quirk in my brain which makes it work like separate buffers in a computer. If you play around with a computer you know you can put things in different places and they just stay there and you can go back to them whenever you feel like it and they're there. I can somehow do that'.⁹²

In his professional capacity, Chomsky works alongside colleagues who may be involved in, say, running the CIA. In 1965, he reminds his activist audience, the Indonesian Communist Party – 'the party of the poor' – was so popular that it stood a chance of winning a free election. In a pre-emptive strike, the CIA organised a military coup resulting in what the *Times* called admiringly a 'staggering mass slaughter' of several million peasants. Chomsky comments:

'The CIA pointed out in its report, which has since come out, that the slaughter that took place ranks up with the Nazis and Stalin. They were very proud of it, of course, and said it was one of the most important events of the century'.⁹³

Chomsky's anger appears poignant in the light of an interviewer's query about an old personal friendship. The friend in question was a former MIT provost. When Chomsky was being interviewed in 1995, the friend had recently been appointed Director of the CIA. Chomsky recalls:

'We were actually friends and got along fine, although we disagreed on about as many things as two human beings can disagree about. I liked him. We got along very well together. He's very honest, very direct. You know where you stand with him. We talked to each other. When we had disagreements, they were open, sharp, clear, honestly dealt with. I found it fine. I had no problem with him. I was one of the very few people on the faculty, I'm told, who was supporting his candidacy for the President of MIT'.⁹⁴

Despite this support, Chomsky's nominee didn't get the job. His problem, Chomsky explains, was 'faculty opposition'.

Chomsky, then, was not just flitting between worlds. He had nudged himself between colliding tectonic plates. He could not conceivably have introduced his CIA colleague to an audience of revolutionary anarchists. Conversely, it becomes clear why Chomsky is so unenthusiastic when his activist supporters strive to connect politically with his work at MIT. 'If there is a connection', he cautions,

'it is on a rather abstract level. I don't have access to any unusual methods of analysis, and what special knowledge I have concerning language has no immediate bearing on social and political issues. Everything I have written on these topics could have been written by someone else. There is no very direct connection between my political activities, writing and others, and the work bearing on language structure....'⁹⁵

Chomsky's need to keep his two audiences apart may in fact help explain his repeated insistence that 'the search for theoretical understanding pursues its own paths, leading to a completely different picture of the world, which neither vindicates nor eliminates our ordinary ways of talking and thinking'.⁹⁶ It is hard to see how he could say anything else.

The myth of social science

Chomsky's solution was to portray social science – premised on the idea that human nature doesn't exist – as so worthless and reactionary as to be beyond the pale. Specialists within the arts and humanities, according to Chomsky, say things so nonsensical that the only way to explain them is to assume motives in terms of politics and power.⁹⁷ This commonsense sociological analysis served an important function, legitimizing Chomsky's blanket rejection of social perspectives within linguistics.

Writing of school education of the kind typical in the United States, Chomsky terms it 'a period of regimentation and control, part of which involves direct indoctrination, providing a system of false beliefs'.⁹⁸ Other components of the system have the same basic function:

'Over sixty years ago, Walter Lippmann discussed the concept of "the manufacture of consent," an art that is "capable of great refinements" and that may lead to a "revolution" in "the practice of democracy." The idea was taken up with much enthusiasm in business circles – it is a main preoccupation of the public relations industry, whose leading figure...described "the engineering of consent" as the very essence of democracy.'⁹⁹

Chomsky notes that from the turn of the century until the present day, manipulation of public opinion was the object of an ideological industry both unrelenting and diverse, ranging from schools to the 'mass media and beyond. As an AT&T vice president explained in 1909, 'the public mind.....is in my judgment the only serious danger confronting the company.' 'The idea', continues Chomsky,

'was also taken up with vigor in the social sciences. The leading political scientist Harold Lasswell wrote in 1933 that we must avoid "democratic dogmatism," such as the belief that people are "the best judges of their own interests." Democracy permits the voice of the people to be heard, and it is the task of the intellectual to ensure that this voice endorses what far-sighted leaders know to be the right course. Propaganda is to democracy what violence is to totalitarianism. The techniques have been honed to a high art, far beyond anything that Orwell dreamt of. The device of feigned dissent, incorporating the doctrines of the state religion and eliminating rational critical discussion, is one of the more subtle means, though more crude techniques are also widely used and are highly effective in protecting us from seeing what we observe, from knowledge and understanding of the world in which we live.'

For Chomsky, the only channels of communication which are free from such contamination are those of genuine natural science. Chomsky disagrees passionately with those social theorists – including

historians of science – for whom science itself is just another form of oppressive ideology. He admits that such suspicions have long found favour among his fellow-anarchists:

‘Within the anarchist tradition, there’s been a certain feeling that there’s something regimented or oppressive about science itself, that we should break free of the oppressive structures of scientific thinking, and so on. I’m totally out of sympathy with that attitude. There are no arguments that I know of for irrationality. I don’t think the methods of science amount to anything more than being reasonable, and I don’t see why anarchists shouldn’t be reasonable’.¹⁰⁰

With the rise of postmodernism, Chomsky complains, science has become viewed as just another form of manipulative ideology. Whereas in the 1930s, he notes, progressive intellectuals were still running education classes for ‘the workers’ and writing books with titles such as ‘Mathematics for the Millions’, everything has now gone into reverse:

‘Today’s counterparts of these ‘30s left intellectuals are telling people, *You don’t have to know anything. It’s all junk, a power play, a white male conspiracy. Forget about rationality and science.* In other words, put those tools in the hands of your enemies. Let them monopolize everything that works and makes sense’.¹⁰¹

Chomsky passionately opposes the idea that ordinary people needn’t learn anything but can think what they like. Instead of urging us to ‘break free of the oppressive structures of scientific thinking’, he recommends respecting and upholding precisely those structures. For Chomsky, indeed, there is no other road to freedom. The compatibility between anarchist politics and science is proven by numerous precedents including the work of Pyotr Kropotkin, whose great book, *Mutual Aid – a celebration of self-organization in nature* – was ‘perhaps the first major contribution to “sociobiology”’.¹⁰²

Chomsky cautions, however, that there is one problem. While anyone can be an activist, this does not apply necessarily to science. Chomsky explains:

‘As part of the human biological endowment, the scientist is endowed with a certain conceptual apparatus, certain ways of formulating problems, a concept of intelligibility and explanation, and so on. Call this the science-forming capacity. As in other cases it may contain hidden resources that come to be recognized and used as the contingencies of life and experience permit, so access to this endowment may change over time. But we may assume it to be fixed, in the manner of the language faculty’.¹⁰³

The science-forming capacity is genetically fixed. But rather as the language faculty needs an environment to set its parameters, so the science-forming faculty must be supplemented with ‘certain background assumptions’, these being determined by ‘the state of current scientific understanding’. ‘So supplemented,’ Chomsky continues,

‘the science-forming capacity addresses a query posed in terms accessible to it, or it formulates a query using its own resources, not at all a trivial task; the science-forming capacity then seeks to construct a theoretical explanation that will respond to this query. Its own internal criteria will determine whether the task has been successfully accomplished. If it is, the background assumptions may change, and the science-forming capacity is now prepared to face other queries, perhaps to formulate others that it will itself proceed to address’.

The language faculty belongs to everyone by birthright – a fact which distinguishes it from the science-forming faculty:

‘For problem solving and theory construction there is nothing so specific. The problems we face are too varied, and the differences among people who face them are far more striking, though it is worth emphasizing that those who share the same background assumptions can generally understand a proposed theory and evaluate it even if they did

not construct it themselves and perhaps lacked whatever special abilities are involved in doing so’.

The science-forming faculty is individual, like its linguistic counterpart. Social engagement is not required: the faculty works all by itself. However, its output may lead indirectly to important social benefits – such as truthfulness and honesty in academic life. In science, nature itself tends to ensure truthfulness. In the humanities, by contrast, there is no such constraint – people can say whatever they please. In the humanities, scholars tend to feel threatened by science *precisely because* of its intrinsically honest, creative and co-operative nature. Equally, they feel threatened by ideas which are genuinely new. Similar attitudes may sometimes afflict natural science, Chomsky concedes. But at least ‘the sciences do instil habits of honesty, creativity and co-operation’, features considered ‘dangerous from the point of view of society’.¹⁰⁶ A student in a university physics department will hardly survive without being questioning; in the ‘ideological disciplines’, by contrast, originality is discouraged. Chomsky complains that in the ‘domain of social criticism the normal attitudes of the scientist are feared and deplored as a form of subversion or as dangerous radicalism’.¹⁰⁷ For Chomsky, the culture of science is the real ‘counter-culture’ to the reigning ideology.¹⁰⁸

In recent decades, historians of science have clarified the social and political processes through which research agendas are set and ‘facts’ correspondingly selected and constructed.¹⁰⁹ For many anthropologists, the concept of a monolithic, unitary knowledge-form known as ‘science’ has yielded to a more pluralistic vision of multiple ‘sciences’ fashioned for diverse social purposes. The mythic constructions of Western ‘science’, it is widely argued, prevail over indigenous alternatives because their supporters can lay claim to disproportionate levels of economic and military power.¹¹⁰

Chomsky does not hold this view. Since Copernicus and Galileo, we have known that the earth is round and that it encircles the sun – facts which remain true regardless of anyone’s tribal or religious beliefs to the contrary. For Chomsky, political pluralism doesn’t license unqualified persons to intrude as they please into scientific debates. Those who have not mastered the relevant literature – internalising its concepts and terms – have nothing of interest to contribute and should therefore expect to be excluded:

‘Look, in the physical sciences there’s by now a history of success, there’s an accumulated record of achievement which simply is an intrinsic part of the field. You don’t even have any right to enter the discussion unless you’ve mastered that. You could challenge it, it’s not given by God, but nevertheless you have to at least understand it and understand why the theories have developed the way they have and what they’re based on and so on. Otherwise, you’re just not part of the discussion, and that’s quite right’.¹¹¹

Not part of the discussion

This brings us to the nub of the matter. According to Chomsky, the so-called ‘social sciences’ amount only to political ideology, a defect extending naturally to sociologically conceived versions of linguistics. Consequently, it is right to exclude such perspectives from discussion. Those who fail to understand this clearly haven’t mastered certain foundational concepts intrinsic to the field. For Chomsky, ‘society’ is not a valid scientific concept. No natural language should be conceptualised as belonging to a social group. Neither should we imagine that in acquiring linguistic competence, children need *social relationships* – science cannot say anything about such phenomena. ‘Mind’ has no necessary connection with ‘society’. To study mental phenomena is to examine aspects of brain structure and function. Ignoring the so-called ‘social sciences’, Chomsky’s dream is to unify the sciences by integrating linguistics into an expanded version of physics:

‘The world has many aspects: mechanical, chemical, optical, electrical and so on. Among these are its mental aspects. The thesis is that all should be studied in the same way, whether we are considering the motion of the planets, fields of force, structural formulas for complex molecules, or computational

properties of the language faculty'.¹¹²

Consistently with this project, Chomsky defines language as 'an individual phenomenon, a system represented in the mind/brain of a particular individual',¹¹³ contrasting this with the earlier view of language as 'a social phenomenon, a shared property of a community'. Saussure distinguished between *langue* (language) and *parole* (speaking). The first is language as a stable system. In Saussure's words:

'It is the social side of speech, outside the individual who can never create nor modify it by himself; it exists only by virtue of a sort of contract signed by the members of a community'.¹¹⁴

The problem with such usage, Chomsky complains, is that it 'involves obscure sociopolitical and normative factors'¹¹⁵ – about which science can have nothing to say.

Chomsky denies the relevance of social factors even when considering language acquisition by the human child. The infant's linguistic capacities, he explains, cannot be taught. Instead, they must be 'allowed to function in the way in which they are designed to develop'.¹¹⁶ After briefly discussing this topic, he concludes:

'I emphasized biological facts, and I didn't say anything about historical and social facts. And I am going to say nothing about these elements in language acquisition. The reason is that I think they are relatively unimportant'.¹¹⁷

Superficial irrelevancies aside, Chomsky views language acquisition as independent of experience:

'No one would take seriously a proposal that the human organism learns through experience to have arms rather than wings, or that the basic structure of particular organs results from accidental experience. Rather, it is taken for granted that the physical structure of the organism is genetically determined...'¹¹⁸

Human mental structures develop in the same way. 'Acquisition of language', concludes Chomsky,

'is something that happens to you; it's not something that you do. Learning language is something like undergoing puberty. You don't learn to do it; you don't do it because you see other people doing it; you are just designed to do it at a certain time'.¹¹⁹

Since language isn't social, it follows logically that its function can't be social communication. Language, as Chomsky has recently clarified,

'is not properly regarded as a system of communication. It is a system for expressing thought, something quite different. It can of course be used for communication, as can anything people do – manner of walking or style of clothes or hair, for example. But in any useful sense of the term, communication is not *the* function of language, and may even be of no unique significance for understanding the functions and nature of language'.¹²⁰

One's hair style can be used to make a statement, but that isn't what hair is for.

Chomsky in political perspective

Let us retrace our steps. Consider Chomsky the young anarchist, faced with the problem of breaking into academia. Given his outspoken views, how was he to overcome the many obstacles that would naturally be placed in his way?

It would appear that Chomsky found a way of turning his apparent political handicap into an advantage. Financially and institutionally, the requirement – he knew – was for an agenda the precise reverse of anarchosyndicalism. The 1950s represented the dawn of the new computer age. Key intellectual and

technical developments were being funded by the American military. These and other corporate forces required a new version of cognitive and linguistic science, having little in common with what they saw as Marxist-inspired versions of sociology or anthropology. What was needed was a psychology and a linguistics completely stripped of social content or political awareness – a version of these disciplines rigorously re-engineered and fine-tuned to serve the computer age in the name of ‘cognitive revolution’. But how could the left’s ‘natural’ ascendancy in these disciplines be overturned? Corporate America needed someone of intellectual integrity and – preferably – of unimpeachable *political* integrity to act as its standard-bearer in organizing the necessary *coup*. Ideally, this person should not only be ‘left-wing’ in an ordinary, run-of-the-mill sense. The perfect candidate would be *sufficiently* left-wing to outflank everyone else in the race. Chomsky in 1957 was the right person arriving in the right position at exactly the right time.

In the event, Chomsky forged an anti-behaviourist coalition linking much of the academic left with those corporate forces – including the military – who were underwriting the development of the nascent computer industry. It was an unholy alliance, and as such was destined to fall apart once the behaviourist enemy had been overthrown. Jerome Bruner recalls:

‘Now let me tell you first what I and my friends thought the revolution was about back there in the late 1950s. It was, we thought, an all-out effort to establish meaning as the central concept in psychology – not stimuli and responses, not overtly observable behaviour, not biological drives and their transformation, but meaning.we were not out to “reform” behaviourism, but to replace it’.¹²¹

‘The cognitive revolution as originally conceived’, Bruner continues, ‘virtually required that psychology join forces with anthropology and linguistics, philosophy and history, even with the discipline of law’.¹²²

Once behaviourism had been toppled, however, Chomsky clarified that this was not his vision at all. As Bruner explains:

‘Very early on.....emphasis began shifting from ‘meaning’ to ‘information’, from the *construction* of meaning to the *processing* of information. These are profoundly different matters. The key factor in the shift was the introduction of computation as the ruling metaphor and of computability as a necessary criterion of a good theoretical model’.¹²³

Information, as Bruner points out, is a term designed to be *indifferent with respect to meaning*.¹²⁴ In computational terms, information comprises an already precoded message in the system. Meaning is preassigned to messages. It is not an outcome of computation nor is it relevant to computation save in the arbitrary sense of assignment:

‘According to classic information theory, a message is informative if it reduces alternative choices. This implies a code of established possible choices. The categories of possibility and the instances they comprise are processed according to the “syntax” of the system, its possible moves. Insofar as information in this dispensation can deal with meaning it is in the dictionary sense only: accessing stored lexical information according to a coded address.’¹²⁴

In integrating his new version of linguistics with computer science, Chomsky dispensed with concepts such as ‘intention’, ‘context’ and ‘meaning’ in favour of an insistent and relentless focus on ‘syntax’. It was Alan Turing’s great discovery that machines can be designed to evaluate any inference that is ‘formally valid’ – that is, valid *by virtue of the internal syntax of the pre-installed code*. No machine can genuinely talk, because speaking entails understanding what other speakers may have in mind as they draw on their memories and experiences of themselves and others on the biological, social, cultural, religious and other levels inhabited by human minds. Machines are and always will be hopeless at passing themselves off as humans. But, as Fodor points out,

‘you can build them so that they are quite good at detecting and responding to syntactic properties and relations. That, in turn, is because the syntax of a sentence reduces to the identity and arrangement of its elementary parts, and, at least in the artificial languages that machines compute in, these elementary parts and arrangements can be exhaustively itemized, and the machine specifically designed to detect them’.¹²⁵

Such a system, however, cannot cope with vagueness, with polysemy or with metaphoric or connotative connections – in other words, with the stuff of human language. Consequently, Chomsky and his followers simply stopped talking of meaning – replacing the idea with “computability” instead. Linguists now spoke not of intention, belief or agency but of mechanical ‘inputs’ and ‘outputs’ – notions not too different, as Bruner points out, from the ‘stimuli’ and ‘responses’ of the behaviourists who were supposed to have been overthrown.¹²⁶

Writing of Chomsky’s overall scientific contribution, Geoffrey Leech comments:

‘It has the advantage of maintaining the integrity of linguistics, as within a walled city, away from the contaminating influences of use and context. But many have grave doubts about the narrowness of this paradigm’s definition of language, and about the high degree of abstraction and idealization of data which it requires’.¹²⁷

Child-language specialist Elizabeth Bates complains of the ‘scorched earth’ policy deployed by Chomsky and his allies to keep the opposition at bay.¹²⁸

While the overthrow of behaviourism was widely celebrated, the ‘revolution’ intended by Chomsky’s corporate sponsors had nothing to do with the establishment of a science of human meaning. As these forces championed Chomsky in steering the ‘cognitive revolution’ along channels narrowly defined by their specific commercial and political goals, the intellectuals who had supported generativism ‘from the left’ felt betrayed. Had they been able to unite, they might have comprised a formidable intellectual and political force. In the event, however, Chomsky’s politics served him and his sponsors well. Left-wing resistance to Chomsky’s science was always tempered by respect for his moral and political integrity. How do you attack an ‘enemy’ who is on your own side? The ambivalence ended up simply paralysing the opposition, whose splits and disagreements left Chomsky with a free hand – which he used quite mercilessly. It is fair to say that most of those linguists and other creative thinkers whose contributions were excluded by Chomsky had political sympathies not vastly different from his own. Together, they could have mounted an impressive intellectual defence of the unity and autonomy of science. In the event, it was Chomsky’s defection that sealed their fate. Alienated from the academic mainstream, this talented individual was in effect selected by corporate America to do an extraordinary double-act, playing the role of chief enforcer for the new corporate science at home – while using this very status to gain a hearing as the most eloquent academic critic of U.S. policies elsewhere across the globe.

The human revolution

It might be wondered where all this leaves us. Must Chomsky’s life’s work be jettisoned? Was it all just a colossal mistake?

Chomsky’s great problem is that the world has moved on. Natural science can no longer be flatly, mechanistically counterposed to social science. The whole of Darwinian evolutionary theory is nowadays deeply social: its subject, after all, is competition and co-operation.¹³⁰ To many of its practitioners, Darwinism is the basis for a new kind of social science – this time, genuinely scientific. Evolutionary psychology is social, as is behavioural ecology.¹³¹ We now possess a rich scientific literature which has clarified what may be truly distinctive about human nature. There exists one consensually agreed candidate for a rubicon separating human from primate cognition and it is

recursion: humans are equipped to represent their own mental processes *as represented in the minds of others*.¹³² Any rational account of the evolution of language must surely take note of this discovery.¹³³ Or are the scientists who have clarified this crucial point just practising an ideological deception – concealing the fact that deep down, they wish only to join the managerial élite?

Chomsky responds by dismissing this whole body of theory as irrelevant, rejecting it in favour of his own idea – that there was some kind of happening in one person’s head:

‘Actually you can use language even if you are the only person in the universe with language, and in fact it would even have adaptive advantage. If one person suddenly got the language faculty, that person would have great advantages; the person could think, could articulate to itself its thoughts, could plan, could sharpen, and develop thinking as we do in inner speech, which has a big effect on our lives. Inner speech is most of speech. Almost all the use of language is to oneself, and it can be useful for all kinds of purposes (it can also be harmful, as we all know): figure out what you are going to do, plan, clarify your thoughts, whatever. So if one organism just happens to gain a language capacity, it might have reproductive advantages, enormous ones. And if it happened to proliferate in a further generation, they all would have it’.¹³⁴

For Chomsky, then, there was a revolution. It was sudden, dramatic and utterly changed the world. But it had no connection with anything which had gone before, none with anything which interests us today – and anyway was confined entirely to the head.

Many find it difficult to imagine where this idea could have come from. It certainly fails to connect with any part of evolutionary science. Does it, then, connect with physics? With psychology? With brain neurophysiology? With anything at all? If it doesn’t, we are left with no choice but to adopt Chomsky’s own explanatory strategy. When a belief has all the appearance of ‘culturally imposed imbecility’, we turn straight to politics and power.

For over half a century, Chomsky resisted the prevailing authorities more courageously than any other single academic. He established himself as corporate America’s sharpest internal thorn, its most indefatigable moral conscience. But resistance on all levels is perhaps too much to be expected of any single individual. Could he retain his political integrity and consequent moral self-esteem? Maybe that, for him, was the main thing. Maybe the authorities would turn a blind eye to his un-cooperative politics if he proved helpful to them in other respects. Caught between tectonic plates of this kind, almost any intellectual will surely crack:

‘You begin to conform, you begin to get the privilege of conformity. You soon come to believe what you’re saying because it’s useful to believe it, and then you’ve internalized the system of indoctrination and distortion and deception, and then you’re a willing member of the privileged élites that control thought and indoctrination. That happens all the time, all the way to the top. It’s a very rare person, almost to the point of non-existence, who can tolerate what’s called “cognitive dissonance” – saying one thing and believing another. You start saying certain things because it’s necessary to say them and pretty soon you believe them because you just have to’.¹³⁵

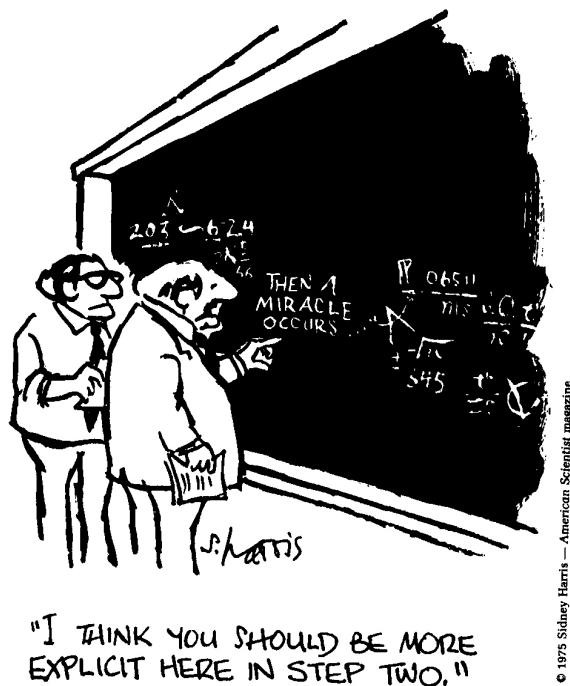


Figure 2.4

Implicitly in the 1960s and more explicitly as time passed, Chomsky pursued to its ultimate conclusion the logic from which he had set out. Language isn't social. It's all in the head. We use it for talking to ourselves. It emerged in an instant. We know nothing about that event. Speculation about it has no place in serious scholarship and no bearing on matters of human concern. No statement on the subject can be more than a fable, with the exception of the following authoritative one: whatever it was, it was no social revolution. Having made his peace in this way, the Galileo of our age would honour the unspoken concordat. The forces of unreason didn't put him under house arrest. They didn't threaten him with torture. Instead, they offered him a job. Having accepted, he was hardly in a position to change his mind.

Beginning in the early 1990s, however, official natural science began facing embarrassments unforeseen when these arrangements were made. The 'selfish gene' revolution in the life sciences transformed the intellectual landscape. Pressed by the religious right, Darwinians came under renewed pressure to prove that they could account for the main thing – human language and mind. As an avalanche of books, articles and conferences breached the former academic taboo on theories of language origins – an injunction which had effectively banned debate since 1865¹³⁸ – Chomsky's room for manoeuvre all but disappeared. A fable would have to be told. Corporate science, he knew, could stomach cognitive meltdown, a gene for lateralisation, catastrophic macro-mutation, miraculous exaptation – in short, any and every conceivable possibility except the obvious one. The excluded concept certainly had a place in Chomsky's mind, but only in a separate buffer. Revolution had to be kept out of MIT science.

Like Descartes before him, Chomsky didn't wish to be hounded by the ecclesiastical authorities. He wanted them off his back. Descartes' solution had been to give them the soul, keeping only the body for science. In this way, he founded what to this day remains the settlement we call 'natural science'. Natural science is the outcome of Descartes' contract. It is the agreement to restrict investigation to the body rather than the soul. To be more accurate: it is the agreement to restrict investigation to those matters least likely to upset the authorities. The authorities must be served by giving them control: first, control over the forces of nature; second, control over what science can and cannot say; third, control over education and society as a whole.

‘There’s no more morality in world affairs, fundamentally, than there was at the time of Genghis Khan’, Chomsky complains.¹³⁷ Faced with mounting opposition, today’s evil empire must work hard if it is to continue with this trick. More and more effectively must it divorce natural science from the humanities, theory from practice, mind from body – and language from its capacity to connect our dreams. Within linguistics, the instigators of this split are the usual suspects, about whom Chomsky can tell us much. There is no narrowly theoretical solution to the problem.¹³⁹ ‘What matters’, as Chomsky says,

‘is whether we can awaken ourselves from the nightmare before it becomes all-consuming, and bring a measure of peace and justice and hope to the world that is, right now, within the reach of our opportunity and our will’.¹⁴⁰

Whether or not language was born in a revolution, we certainly need one now.

Postscript

Nothing in this paper proves that the human revolution happened. Even if we suppose it did, that in itself doesn’t explain how the complexities of syntax evolved. Such issues are beyond this paper’s scope. The difficulties facing linguistics as a discipline are obviously enormous, at times seemingly insurmountable. I will have succeeded, however, if I have persuaded the reader of their political and ecclesiastical source.

Further recommended readings are listed below. I conclude by summarising my own understanding of Jean-Jacques Rousseau’s *The Social Contract* and *Essay on the Origin of Language* – essays which in my view do solve the problem of the origins of language, at least in principle. Could it have been for political and ecclesiastical reasons that his writings have been feared and ignored?

* * * * *

Society, according to Rousseau, becomes established through the world’s first Social Contract. Once this is in place, men’s bodies are no longer free. Before acting on an impulse, each must consult his sense of duty – his understanding of what the contract entails. Although experienced as a loss on one level, the sacrifice turns out to be an inestimable gain on another. To check one’s passions is to give pause for thought. Thought itself, moreover, now acquires new scope. Released from the body, it turns to the realm of possibilities. These include dreams beyond any one individual’s imagining, since the collective has infinitely greater power.

To gain access to this power, each must know how to agree, to navigate within the contractual realm, to view himself as one among equals, to carry consent, to embody the universal will. This, for Rousseau, is the uniquely human gift. Bestowed in exchange for commitment to the contract, it is the new and legitimate sovereign – the voice of reason enthroned.

How does language emerge? Its raw materials, says Rousseau, are gesture and song. Language in its civilised form has changed much since it first emerged. But even as we speak in this civilised and artificial age, we retain a link with nascent man and his wild songs. We remain the expressive animals we always were – forced to render our rude gestures more abstract as logic displaces emotion in the settlement of internal affairs.

In working all this out, Rousseau was left with just one intellectual puzzle. For language to be effective, the Social Contract must already have been in place. But in order to agree on that Contract, men first had to be able to speak. Aware of what seemed to him an insuperable conundrum, Rousseau was content to let it lie.

His mistake had been to forget half the human race. He had imagined a revolution won only by men, whose task was to impose on themselves the required transcendence of their former being. It shouldn't have been two centuries before this elementary oversight was put right.

[For a referenced version, see <http://homepages.uel.ac.uk/C.Knight>]

* * * * *

‘All the acts of the drama of world history were performed before a chorus of the laughing people. Without hearing this chorus we cannot understand the drama as a whole.’

Mikhail Bakhtin, *Rabelais and his World* ¹⁴⁰

Further reading

The human revolution: classic texts

Christopher Boehm (1999) *Hierarchy in the Forest* (Cambridge, MA: Harvard University Press). Apes are not egalitarian. They live under what humans would experience as tyrannical régimes. Human hunter-gatherers are determinedly egalitarian. They maintain a hierarchy, but in reverse – dominance is exercised self-consciously by the entire community, restraining anti-social behaviour by individuals. Egalitarianism doesn't just happen; it is the product of collective intentionality. For a stable reverse hierarchy to be achieved, the basic flow of power in society must be reversed. The counter-dominants must be able to form a moral community, develop an egalitarian ethos – and deliberately take charge of their own fate. If this can be done, language and culture will result. Chimpanzees can sometimes exert significant control from below. They may express antiauthoritarian feelings, defending one another bravely against aggression from a dominant male. But they can't deploy these instincts in redesigning their society in accordance with a moral vision. Human collective action makes possible such redesign. Once the egalitarian blueprint is in place, a unified moral community can deal with any individual, no matter how strong, who attempts to violate the law. One question remains. Did egalitarianism arrive through revolution or through gradual, piecemeal change? The answer is: ‘Probably revolution’. Tyrants do not willingly surrender their power.

Camilla Power and **Leslie Aiello** (1997) Female proto-symbolic strategies, in Lori Hager (ed.), *Women in Human Evolution* (London & New York: Routledge), pp. 153-171. Life in increasingly large and complex social groups began placing increasing demands on social cognition. Evolving females could enhance their fitness by giving birth to larger-brained babies. But this strategy entailed costs – big-brained babies are slow to mature and expensive to feed.

Beginning nearly two million years ago, mothers balanced their budgets by becoming larger in size, developing more efficient bipedalism, reducing gut size to release energy for the brain and travelling greater distances in search of more nutritious food. They also shared out the burdens of childcare, beginning to evolve the menopause so that grandmothers could help.

Stage two – the immediate build-up to revolution – began about half a million years ago. The new tactic was to begin economically exploiting males. Previously, these had provided little more than sperm. Now, females needed sustained mating-effort in the form of foraging provisions. They could influence male behaviour in the required direction by modifying their own sexual displays.

Ovulation was progressively concealed, compelling males to stay around longer to achieve impregnation. But the phasing out of ovulation produced a potentially unwelcome side-effect. Males shifted attention to menstruation, which divulged critical information about which females were fertile and which were not. Males who could single out and monopolize an imminently fertile female might enhance their fitness at the expense of time spent with pregnant and nursing females. For the mothers threatened with abandonment, the solution was to take pre-emptive action, combining as protective relatives to control access to their daughter, sister or niece. They had to coerce her into staying with them, denying male access except on their terms. Dominant males would still seek to divide them, using biological distinctions to separate the desired from the undesired. To avoid exploitation – to avoid being impregnated and left holding the baby – the collective had to decisively blur all such lines, preventing any male from picking and choosing on the basis of discernible menstrual blood. Any local supplies of red pigment would have helped in this respect, allowing the rebellious coalition to paint up indistinguishably. This is how red ochre is still used by southern African hunter-gatherers, well into the ethnographic present. The Middle Stone Age ochre record can also be interpreted in this light. Once humans were using cosmetics to construct shared fictional domains, the transition to culture had been achieved.

John Maynard Smith and Eörs Szathmáry (1995) *The Major Transitions in Evolution* (Oxford: W. H. Freeman). During the history of life on earth, there have been major changes in the way genetic information is organized and transmitted between generations. Such major transitions include the origin of life itself, the first eukaryotic cells, reproduction by sexual means, the first appearance of multicellular organisms, the development of co-operation between animals and, finally, the transition to human society and culture. Each new level of informational complexity emerges not independently but as part of a corresponding level of organizational complexity. Each occurs as a step in the evolution of cooperation. There are striking similarities between steps – for example, between the union of replicating molecules to form chromosomes and of cells to form multicellular organisms. Because similar principles operate in the case of each transition, understanding any single event sheds light on all the others. A common theme is that entities that could replicate independently – ‘selfishly’ – before the transition are permitted to replicate afterwards only as part of a larger whole. Why, then, does selection between entities at the lower level not disrupt selection at the higher one? The answer is that it does, which is why no transition of this kind can be gradual. When the conditions for a transition are ripe, the new system can work only once everything has fallen into place.

John Searle (1995) *The Construction of Social Reality* (London: Penguin), pp. 39-40. Consider a pre-human tribe that builds a wall around its territory. It is big enough to keep intruders out and insiders in. Now suppose the wall gradually decays leaving only a line of stones. Imagine everyone continues to recognize this as marking the boundary in some important way. For example, the inhabitants only cross over under special conditions, and outsiders can only cross if this is acceptable to the inhabitants. The line of stones now has a function that is performed thanks not to physics but collective intentionality. Unlike a high wall or a moat, the remnant can do nothing by virtue of its physical constitution. The result is, in a very primitive sense, symbolic. The line of stones performs the same function as a physical barrier. But it does not do so in virtue of its physical construction, but because it has been

collectively assigned a new status, the status of a boundary marker. The truly radical break with other forms of life comes when humans, through collective intentionality, impose meanings of this kind.

Marshall Sahlins (1960) The origin of society. *Scientific American* 203(3): 76-87. ‘The way people act, and probably have always acted, is not the expression of inherent human nature. There is a quantum difference, at points a complete opposition, between even the most rudimentary human society and the most advanced subhuman primate one. The discontinuity implies that the emergence of human society required some suppression, rather than a direct expression, of man’s primate nature. Human social life is culturally, not biologically, determined... The decisive battle between early culture and human nature must have been waged on the field of primate sexuality... Sex is not an unmitigated social blessing for primates. Competition over partners, for example, can lead to vicious, even fatal, strife. It was this side of primate sexuality that forced early culture to curb and repress it. The emerging human primate, in a life-and-death economic struggle with nature, could not afford the luxury of a social struggle. Co-operation, not competition, was essential. Culture thus brought primate sexuality under control. More than that, sex was made subject to regulations, such as the incest tabu, which effectively enlisted it in the service of co-operative kin relations. Among subhuman primates sex had organized society; the customs of hunters and gatherers testify eloquently that now society was to organize sex – in the interest of the economic adaptation of the group... Culture is the oldest “equalizer”. Among animals capable of symbolic communication, the weak can always collectively connive to overthrow the strong. ... In selective adaptation to the perils of the Stone Age, human society overcame or subordinated such primate propensities as selfishness, indiscriminate sexuality, dominance and brute competition. It substituted kinship and co-operation for conflict, placed solidarity over sex, morality over might. In its earliest days it accomplished the greatest reform in history, the overthrow of human primate nature, and thereby secured the evolutionary future of the species’.

Leon Trotsky (1969 [1937?]) *In Defence of Marxism* (London: New Park Publications), pp. 69-70. ‘Every educated person since Darwin has labelled himself an “evolutionist”. But a real evolutionist must apply the idea of evolution to his own forms of thinking. Elementary logic, founded in the period when the idea of evolution did not yet exist, is evidently insufficient for the analysis of evolutionary processes. Hegel’s logic is the logic of evolution. Only one must not forget that the concept of “evolution” itself has been completely corrupted and emasculated by university professors and liberal writers to mean peaceful “progress”. Whoever has come to understand that evolution proceeds through the struggle of antagonistic forces; that a slow accumulation of changes at a certain moment explodes the old shell and brings about a catastrophe, revolution; whoever has learned finally to apply the general laws of evolution to thinking itself, he is a dialectician, as distinguished from vulgar evolutionists’.

Émile Durkheim (1963 [1898]) La prohibition de l’inceste et ses origines. *L’Année Sociologique* 1: 1-70. Reprinted as Émile Durkheim, *Incest: The nature and origin of the taboo*, trans. E. Sagarin (New York: Stuart). In establishing the first sexual taboos, women did not leave matters in men’s hands. If they were to establish that some things were sacred, they first needed to ‘set apart’ their own bodies.

Periodically, the entire female population would metamorphose into other-worldly beings. These were invested ‘with an isolating power of some sort, a power which holds the masculine population at a distance....’ The most fearsome such power was menstruation, whose monthly onset mysteriously enabled women to exercise a ‘type of repulsing action which keeps the other sex far from them’. To ensure compliance, women exploited male anxieties about blood. Intercourse during women’s special time might leave visible stains, interpretable as evidence for a murderous crime. ‘It is from this that exogamy and the serious penalties which sanction it are derived. Whoever violates this law finds himself in the same state as a murderer. He has entered into contact with blood’.

Sigmund Freud (1965 [1913]) *Totem and Taboo* (London: Routledge). Sigmund Freud (1991 [1932]) Why war? (letter to Albert Einstein, September 1932) in A. Richards and A. Dickson (eds), *The Penguin Freud Library* 12, pp. 349 – 362. Language, religion and civilisation emerged out of conflict culminating in sexual revolution. The instigators were a band of brothers frustrated at being excluded by their father from access to the local females. Confident of numerical superiority, they attacked the tyrant, killed him and devoured his flesh. So as to avoid internal fights and preserve their most valuable gain, their own solidarity, they then renounced any interest in the local females – who included their own mothers and sisters. Establishment of this taboo was the origin of the concept of social justice, which entails making sacrifices designed to put pressure on others to do the same. Now as in the distant past, law is the creative violence of the global community, upholding such justice. The League of Nations must outlaw war, denying the right of violence to individual states.

Frederick Engels (1972 [1884]) *The Origin of the Family, Private Property and the State* (New York: Pathfinder Press) (including Engels [1876] The part played by labour in the transition from ape to man). Once men began walking upright, they had free hands and so could perform labour. As they began co-operating together in socially useful tasks – instead of competing sexually as apes do – they arrived at the point where ‘they had something to say to one another’. Apes lack speech because they have nothing to communicate which cannot be signalled better in other ways. The principles of human social organisation could not have evolved from those of apes because they are ‘incompatible things’. For human society to have emerged, ape-like sexual conflict must have generated a crisis whose solution was a qualitative leap. Co-operative sisterhoods resisted being monopolised by a single jealous male. The burdens of childcare led them to seek multiple male support – previously excluded by the dominant male’s jealousy. Bringing sexual privatisation to an end, they attached themselves to ‘whole groups’ of well-armed, mutually tolerant warriors attentive to female needs. Out of this co-operative arrangement came language, economics and a new kind of family, the matrilineal clan, which systematically reversed the former logic of male dominance. Historical time is spiral-shaped. The impending revolution will establish communism not as a novelty but as a revival, in a higher form, of the liberty, equality and fraternity of the ancient clans.

Karl Marx (2000 [1844-1847]) ‘On James Mill’; ‘The German Ideology’ in D. McLellan (ed.), *Karl Marx: Selected Writings* (Oxford: University Press), pp. 131, 183. When bourgeois commodity

exchange alienates us from one another, the ‘only intelligible language that we speak to one another consists in our objects in their relationships to one another. We would not understand a human speech and it would remain ineffective....’ Human speech can be restored only by restoring human relationships, whether on a personal level – or universally, through world-wide communist revolution. It was by establishing trust and interdependence that early humans first constructed language out of the materials provided by physical sounds: ‘From the start, the “spirit” is afflicted with the curse of being “burdened” with matter, which here makes its appearance in the form of agitated layers of air, sounds, in short, of language. Language is as old as consciousness, language is practical consciousness that exists also for other men, and for that reason alone it really exists for me personally as well; language, like consciousness, only arises from the need, the necessity, of intercourse with other men. Where there exists a relationship, it exists for me: the animal does not enter into “relations” with anything, it does not enter into any relation at all. For the animal, its relation to others does not exist as a relation. Consciousness is, therefore, from the very beginning a social product, and remains so as long as men exist at all’.

G. W. F. Hegel (1949 [1807]) *The Phenomenology of Mind* (London: Allen & Unwin) p. 75. ‘For the rest it is not difficult to see that our epoch is a birth-time, and a period of transition. The spirit of man has broken with the old order of things hitherto prevailing, and with the old ways of thinking, and is in the mind to let them all sink into the depths of the past and to set about its own transformation. It is indeed never at rest, but carried along the stream of progress ever onward. But it is here as in the case of the birth of a child; after a long period of nutrition in silence, the continuity of the gradual growth in size, of quantitative change, is suddenly cut short by the first breath drawn – there is a break in the process, a qualitative change – and the child is born. In like manner the spirit of the time, growing slowly and quietly ripe for the new form it is to assume, disintegrates one fragment after another of the structure of its previous world. That it is tottering to its fall is indicated only by symptoms here and there. Frivolity and again ennui, which are spreading in the established order of things, the undefined foreboding of something unknown – all these betoken that there is something else approaching. This gradual crumbling to pieces, which did not alter the general look and aspect of the whole, is interrupted by the sunrise, which, in a flash and at a single stroke, brings to view the form and structure of the new world’.

Jean-Jacques Rousseau (1966 [1750]) *Essay on the Origin of Languages*, in J. H. Moran and A. Gode (trans.) *Two Essays on the Origin of Language: Jean-Jacques Rousseau and Johann Gottfried Herder* (Chicago and London: University of Chicago Press), pp. 1 – 74. Jean-Jacques Rousseau (1973 [1762]) *The Social Contract*, in J.-J. Rousseau, *The Social Contract and Discourses*, G. D. H. Cole (ed.) (London and Melbourne: Dent), pp. 179 – 309. Man’s primitive cries underwent radical transformation when the Social Contract was established and society thereby inaugurated. As equal citizens, mutually bound, men were now obliged to consider duty before acting on impulse. Under these conditions, language – previously instinctive and song-like – became rational for the first time, unfortunately at the cost of its former emotional appeal.

Appendix I

A summary of three positions on language evolution

Noam Chomsky (2002) *On Nature and Language* (Cambridge: Cambridge University Press). Something extraordinary must have happened. It is a waste of time to ask what it was. We can be sure of just two things. First, it happened inside someone's head and not in the wider world. Second, no contemporary activist should worry about it. Scientists will invent just-so stories if you ask them, but no secular story about language's origin – not even a true one – could have any bearing on matters of human concern. Language is a digital computer. A divine architect appears to have put it there.

Steven Pinker (2003) Language as an adaptation to the cognitive niche, in M. H. Christiansen and S. Kirby (eds), *Language Evolution* (Oxford: Oxford University Press), pp. 16-37. Steven Pinker (1994), *The Language Instinct* (London: Penguin). Language is special. But nothing special happened to put it in our heads. It's a waste of time to ask exactly what triggered the transition or how it worked. Darwinians don't ask those kinds of questions. Some people imagine that the uniqueness and apparent inexplicability of language presents a challenge to standard Darwinism. 'But, in fact, if human language is unique in the modern animal kingdom, as it appears to be, the implications for a Darwinian account of its evolution would be as follows: none' (1994, p. 342).

The relevant question is whether language is adaptive. It clearly is. It's an adaptation to the very special 'cognitive niche' which our species has entered. By connecting up with this niche, language enables us to tap into a public reservoir of information at no personal cost – information which others may have laboured to accumulate first-hand. Admittedly, relying on strangers for uncorroborated second-hand information wouldn't be adaptive in a Darwinian world. Apes are Machiavellian, highly competitive and would lie through the teeth if they possibly could. But humans are a co-operative species. We generally avoid telling lies to one another. We know that if we did, sanctions would follow. Those whom we deceived would publicly expose us and cut us out of the loop.

Co-operation of this kind is easy to explain. It arises from two absolutely boring, absolutely commonplace Darwinian principles. The first is 'kin selection' – nepotism. The second is 'reciprocal altruism' – you scratch my back and I'll scratch yours. These principles are found throughout the natural world. Because of them, you don't need regulations to get people to co-operate. You could deregulate everything, right across the planet, and co-operation would continue as before.

Some people object that chimpanzees, too, have kin selection and reciprocal altruism. So why didn't they get to be a co-operative species? Why didn't they evolve anything resembling language? Do they inhabit 'the cognitive niche'? If not, why not? If this niche exists for them, why haven't they adapted to it one bit? Bothered by all this, the same irritating people ask what was so special about humans or how they got to be in their special niche. But Darwinians don't have to invent origins scenarios: we just have to show that language is adaptive, which it is.

Chris Knight (forthcoming) *The Human Conspiracy: Speech, deception and the 'selfish gene'* (London and New Haven: Yale). Something extraordinary did happen and we need to know what it was. It was

clearly a revolution and clearly social. Combining words in this way may cause alarm in some quarters. But we are scientists. If it turns out that the earth moves, so be it. If the authorities experience a problem, it's not ours but theirs.

Appendix II

Recent developments

The Human Revolution, edited by Paul Mellars and Chris Stringer, was published in 1989 (Edinburgh: Edinburgh University Press). Much has changed since then. In particular, we now know that the crucial transition was achieved not by Europeans some 30,000 years ago but by Africans manufacturing and using red ochre crayons at least 100,000 years before that date. We owe this archaeological discovery to my former research student, Ian Watts. We owe our theoretical understanding of early cosmetic usage to Camilla Power. A popular summary of our research and that of colleagues is Kate Douglas, Painted ladies (*New Scientist* October 2001, pp. 42-5). Chapters by Ian Watts and Camilla Power can be found in Robin Dunbar, Chris Knight and Camilla Power (eds) (1999), *The Evolution of Culture* (Edinburgh: Edinburgh University Press). For the interdependence of language and religion see Roy Rappaport (1999), *Ritual and Religion in the Making of Humanity* (Cambridge: Cambridge University Press). For an incisive critique of the current state of language origins research, see Rudolf Botha (2003) *Unravelling the Evolution of Language* (Oxford: Elsevier) Other publications are available at <http://homepages.uel.ac.uk/C.Knight> and <http://radicalanthropologygroup.org>

Appendix III

Language and the human revolution

Chris Knight (2002) Language and revolutionary consciousness, in A. Wray (ed.) *The Transition to Language* (Oxford: Oxford University Press), pp. 138-160

----- (2000) Play as precursor of phonology and syntax, in C. Knight, M. Studdert-Kennedy and J. R. Hurford (eds), (2000) *The Evolutionary Emergence of Language: Social function and the origins of linguistic form* (Cambridge, Cambridge University Press), pp. 99-119.

----- (1999) Sex and language as pretend-play, in R. Dunbar, C. Knight and C. Power (eds), *The Evolution of Culture* (Edinburgh: Edinburgh University Press), pp. 228-47.

----- (1998) Ritual/speech coevolution: a solution to the problem of deception, in J. R. Hurford, M. Studdert-Kennedy and C. Knight (eds), *Approaches to the Evolution of Language: Social and cognitive bases* (Cambridge: Cambridge University Press), pp. 68-91.

Synopsis: The key factor driving humanity toward revolution was sexual conflict. Heavily child-burdened females could no longer afford to be exploited by dominant, philandering males. When threatened with unwanted sex, females therefore joined together with sons and brothers to mount resistance. The aim was to prevent out-group males from impregnating females and then abandoning them in favour of opportunities elsewhere. Anyone attempting to impose that Darwinian strategy would now face a wall of resistance. Menstruation was the flash-point, since it alerted philandering males to a potential opportunity – an imminently fertile female had entered or re-entered circulation. To prevent the enemy from competing to monopolise the female concerned, pregnant and nursing mothers ganged up on her and took control. Collective counterdominance now put inter-female sexual competition into reverse gear. Instead of signalling to males what they wanted to hear, women competed to signal ‘*Wrong sex, wrong species, wrong time*’. This was the signature of their new god, the utterly wrong-way ‘trickster’. He dissolves power; he makes people laugh. Henceforth, women would seek sex, but

only on their terms – choosing partners willing to hunt and bring back meat for all to share. Now that biology was ‘wrong’, humanity had entered a shared virtual world.

The sex-war will not end while the leisured sex keeps winning. There is a reason for this: women just can’t afford to lose. Burdened already by pregnancy and childcare, they must resist being economically exploited as well. The contradictions are resolved when victory goes to the other side, with ‘violence’ directed playfully by females against males. This event doesn’t lead to the killing or rape of the defeated sex, as is alleged in tribal myths about a ‘primitive matriarchy’. It leads simply to ‘bride-service’ – humanity’s earliest system of production, distribution and exchange. The beneficiaries are men’s own offspring, making it the kind of warfare which fathers should conspire to lose. The species arrives, finally, on a stable political plane.

The outcome is co-operation across the board – a morally self-regulated world. The objects making up a moral universe are contractual and institutional, not material. When navigating within such a landscape, voices cannot threaten, seduce, reassure or alarm. All moves are imaginary, as in a game of chess. Physical reality still exists, but the mind is no longer trapped in it. Instinctively, as if recalling a childhood game, we exchange nods and winks – dots and dashes in a secret code – speaking volumes because we are of one mind.

Notes and references

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3. N. Chomsky (1996). *Class Warfare* (Interviews with David Barsamian) (London: Pluto Press), p. 102.
4. Op. cit., p. 98.
5. N. Chomsky (1957) *Syntactic Structures* (The Hague: Mouton), p. 1.
6. N. Chomsky (1965) *Aspects of the Theory of Syntax* (Cambridge, Mass.: MIT Press), p. iv.
7. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) London: Serpent's Tail), pp. 15-16.
8. F. J. Newmeyer (1986) *The Politics of Linguistics* (Chicago & London: The University of Chicago Press), p. 84.
9. Op. cit., pp. 85-6. This source of funding was initially very helpful to Chomsky but dried up completely in the late 1960s. Had the military been expecting from Chomsky a real 'command and control' machine, they would have been disappointed – he couldn't deliver anything workable and anyway wasn't interested. What corporate America got from Chomsky were long-term institutional gains in terms of how science was defined, not devices which could be manufactured or patented.
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12. N. Chomsky (1965) *Aspects of the Theory of Syntax* (Cambridge, Mass.: MIT Press).
13. E. Bach (1974) Explanatory inadequacy, in D. Cohen (ed.), *Explaining Linguistic Phenomena* (New York: Wiley), p. 158. Cited in R. A. Harris (1993) *The Linguistics Wars* (New York and Oxford: Oxford University Press), pp. 179-180. See S. Peters and R. Ritchie (1971) On restricting the base component of transformational grammar, *Information and Control* **18**: 493-501; S. Peters and R. Ritchie (1973) On the generative power of transformational grammars, *Information Sciences* **6**: 49-83; S. Peters and R. Ritchie (1973) Nonfiltering and local-filtering transformational grammars, in J. Hintikka et al. (eds) *Approaches to natural language: Proceedings of 1970 Stanford Workshop on Grammar and Semantics* (Dordrecht, Netherlands: Reidel), pp. 180-94.
14. N. Chomsky, 1972 [1967-1969]. *Studies on semantics in generative grammar* (The Hague: Mouton), pp. 125-6. Since Chomsky denies the relevance of Peters-Ritchie, it is worth quoting Frederick Newmeyer, then a strong supporter of Chomsky. 'The Peters-Ritchie findings', he writes, 'served as silent witness to almost all of the significant work in syntax in the 1970s. There was hardly a paper written that did not appeal to the increased restrictiveness of the theory that followed as a consequence of the adoption of the [Peters-Ritchie] proposals.... Constraint after constraint was put forward to limit the power of the grammar'. F. J. Newmeyer (1980), *Linguistic Theory in America* (New York: Academic Press), p. 176. For discussion, see R. A. Harris (1993) *The Linguistics Wars* (New York and Oxford: Oxford University Press), p. 293n.
15. N. Chomsky (1981) *Lectures on Government and Binding* (Dordrecht: Foris).
16. N. Chomsky (2000) *New Horizons in the Study of Language and Mind* (Cambridge: Cambridge University Press), p. 8.
17. N. Chomsky (1995) *The Minimalist Programme* (Cambridge, MA: MIT Press).
18. N. Chomsky (2002) *On Nature and Language* (Cambridge: Cambridge University Press), p. 103.
19. M. D. Hauser, N. Chomsky and W. Tecumseh Fitch (2002) The faculty of language: What is it, who has it, and how did it evolve? *Science* **298**, 1569-1579.
20. N. Chomsky (2002) *On Nature and Language* (Cambridge: Cambridge University Press), p. 151.
21. F. Newmeyer (2003) Review article. *Language*, **79**(3), 583-599.
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23. N. Chomsky (1965) *Aspects of the Theory of Syntax* (Cambridge, MA: MIT Press), pp. 3-4.
24. N. Chomsky (1976) *Reflections on Language* (London: Fontana), p. 15.
25. N. Chomsky (2002) *On Nature and Language* (Cambridge: Cambridge University Press), p. 148.
26. N. Chomsky (2000) *New Horizons in the Study of Language and Mind* (Cambridge: Cambridge

- University Press), pp. 64-66.
27. D. Dennett (1991) *Consciousness Explained* (London, Penguin), pp. 192n-193n.
 28. J. Fodor (1975) *The Language of Thought* (Scranton, PA: Crowell); J. Fodor (1983) *The Modularity of Mind* (Cambridge, MA: MIT Press).
 29. N. Chomsky (1976) *Reflections of Language* (London: Fontana), pp. 186, 123.
 30. N. Chomsky (1988) *Language and Problems of Knowledge* (The Managua Lectures) (Cambridge, MA: MIT Press), p. 167.
 31. N. Chomsky (1991) Linguistics and cognitive science: problems and mysteries, in A. Kasher (ed.), *The Chomskyan Turn: Generative Linguistics, Philosophy, Mathematics, and Psychology* (Oxford: Blackwell), p. 50.
 32. N. Chomsky (1976) *Reflections on Language* (London: Fontana), p. 59.
 33. N. Chomsky (1998) 'Language and Mind: Current thoughts on ancient problems'. Part I & Part II. Lectures presented at Universidad de Brasilia, published in *Pesquisa Linguistica* 3, 4, p. 17. Page reference is to the English manuscript. Quoted in R. P. Botha (2003) *Unravelling the Evolution of Language* (Oxford: Elsevier), p. 181.
 34. Op. cit., p. 181. The word 'fable' is Chomsky's own.
 35. M. D. Hauser, N. Chomsky and W. Tecumseh Fitch (2002) The faculty of language: What is it, who has it, and how did it evolve? *Science* 298, 1569-1579.
 36. N. Chomsky (2000) *New Horizons in the Study of Language and Mind* (Cambridge: Cambridge University Press), pp. 106-33.
 37. N. Chomsky (1996) Powers and Prospects. Reflections on Human Nature and the Social Order (London: Pluto Press), p. 30.
 38. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 13.
 39. N. Chomsky (1991) Transcript, 'Reflections on the Gulf War' (Cambridge, MA: MIT), 21 May 1991, p. 9. Quoted in M. Rai (1995) *Chomsky's Politics* (London and New York: Verso), p. 7.
 40. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 13.
 41. N. Chomsky (1996) *Class Warfare* (Interviews with David Barsamian) (London: Pluto Press), p. 93.
 42. N. Chomsky (1991) Transcript, 'Reflections on the Gulf War' (Cambridge, MA: MIT), 21 May 1991, p. 9. Quoted in M. Rai (1995) *Chomsky's Politics* (London and New York: Verso), p. 9.
 43. M. Christy (1989) Conversations. *Boston Globe*, May 31. Quoted in M. Achbar (1994) *Manufacturing Consent. Noam Chomsky and the media* (Montreal: Black Rose Books), p. 46.
 44. It is perhaps relevant to recall that in the Igbo Women's War of 1929, tens of thousands of women had a similar idea as they gave leadership to a widespread anti-colonial revolt. Defiantly body-painted and naked to the waist, they faced British machine guns with unsurpassed courage. They were, of course, gunned down. A survivor commented: 'I was surprised to see the soldiers fire as we were women we call ourselves vultures we did not think soldiers would fire at us'. By identifying with these traditionally sacred birds – another species, another sex – the women had thought they would be inviolable. See M. Perham (1937) *Native Administration in Nigeria* (Oxford: Oxford University Press), p. 209; quoted in C. Power (2001) 'Beauty Magic: Deceptive sexual signalling and the evolution of ritual' (unpublished Ph.D. thesis, University College London), pp. 326-8. The tactic can sometimes work. In July 2002, hundreds of women resisting pollution of the Niger Delta hijacked a boat and occupied the local headquarters of the oil company Chevron. The women stayed put, trapping seven hundred Chevron staff and blocking the arrival of helicopters, planes, and boats loaded with fresh supplies. If the company didn't listen, the singing women declared, they would humiliate the men in the worst possible way – they would take off their clothes. 'Stunned security staff didn't know what to do'. After ten days, the company backed down. S. Shah (2004) *Crude: The story of oil* (New York: Seven Stories Press), pp. 100-01.
 45. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 5.
 46. Op. cit., p. 6.
 47. N. Chomsky (1990) Transcript, interview by David Barsamian, 2 February, p. 5. Quoted in M. Rai (1995) *Chomsky's Politics* (London and New York: Verso), p. 8.
 48. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 13.
 49. R. F. Barsky (1997) *Noam Chomsky: A Life of Dissent* (Cambridge, MA: MIT Press), p. 16.
 50. N. Chomsky ((1973) *For Reasons of State* (New York: Pantheon), pp. 371-72. Quoted in C. P. Otero (1981) Introduction, N. Chomsky, *Radical Priorities* (Montreal: Black Rose Books), p. 31.
 51. N. Chomsky (1981) *Radical Priorities*. C. P. Otero (ed.) (Montreal: Black Rose Books), p. 224.

- Quoted in M. Rai (1995) *Chomsky's Politics* (London: Verso), p. 103.
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54. N. Chomsky (1976) Language, Development, Human Intelligence, and Social Organization. Reprinted in *The Chomsky Reader* (1988) J. Peck (ed.) (London: Serpent's Tail), p. 192.
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58. R. Jacoby (1987) *The Last Intellectuals: American Culture in the age of Academe* (New York: Basic Books), pp. 96-97.
59. B. F. Skinner (1957) *Verbal Behavior* (New York: Appleton Century Crofts).
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61. A. R. Radcliffe-Brown (1960 [1929]) Historical and functional interpretations of culture in relation to the practical application of anthropology to the control of native peoples (Abstract of paper read before the Fourth Panpacific Science Congress, Java) in A. R. Radcliffe-Brown, *Method in Social Anthropology* (Selected Essays) (Bombay: Asia Publishing House).
62. R. A. Harris (1993) *The Linguistics Wars* (New York and Oxford: Oxford University Press), p. 55).
63. N. Chomsky (1988 [1984]) The manufacture of consent, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 131. Chomsky forgets to mention that his words work equally well in reverse: *dictatorships aiming to minimize force tend to be 'mentalist' in their outlook. What people's bodies get up to is not terribly important; what counts is what they think. They must consent, and this consent is secured by systematic deceit.* In his activist and journalistic capacity, Chomsky's entire focus is on deceit. In his scientific work, the topic features nowhere at all. Chomsky argues that if you are doing natural science, nature herself keeps you honest.
64. See for example L. S. Vygotsky (1987) *The Collected Works of L. S. Vygotsky, Volume 1: Problems of General Psychology*, translated by N. Minnick (New York: Plenum Press).
65. See for example J. Piaget (1929) *The Child's Conception of the World* (London: Kegan Paul, Trench, Trubner & Co).
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71. N. Chomsky (1988) *Language and Problems of Knowledge* (The Managua Lectures) (Cambridge, MA: The MIT Press), pp. 137-138.
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76. R. F. Barsky (1997) *Noam Chomsky: A Life of Dissent* (Cambridge, MA: MIT Press), p. 124.
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78. M. Rai (1995) *Chomsky's Politics* (London: Verso), p. 115.
79. G. Lakoff (1971) Forward, in A. Borkin et al. *Where the rules fail: A student's guide* (An unauthorized appendix to M. K. Burt's 'From Deep to Surface Structure') (Bloomington: Indiana University Linguistics Club), pp. i-v, ii.
80. N. Chomsky (1976) *Reflections on Language* (London: Fontana), p. 7.
81. N. Chomsky (1976) *Reflections on Language* (London: Fontana), p. 133.

82. N. Chomsky (1992) Letter to R. F. Barsky, 15 December. Quoted in R. F. Barsky (1997) *Noam Chomsky: A Life of Dissent* (Cambridge, MA: MIT Press), p. 208.
83. Op. cit.
84. N. Chomsky (1972) *Problems of Knowledge and Freedom* (London: Fontana), p. 100.
85. N. Chomsky (1976) *Reflections on Language* (London: Fontana), p. 134. Note Chomsky's argument that revolutionary social change might liberate distinctively human aspects of our genetic nature. For the application of this idea to the origins of language, see C. Knight (2002) Language and revolutionary consciousness, in A. Wray (ed.), *The Transition to Language* (Oxford: Oxford University Press), pp. 138-160. The point of interest here is that while Chomsky supports this idea in his activist capacity, he vehemently opposes it in his scientific one.
86. N. Chomsky (1995) Letter to R. F. Barsky, 31 March. Quoted in R. F. Barsky (1997) *Noam Chomsky: A Life of Dissent* (Cambridge, MA: MIT Press), p. 212. The human revolution is, of course, exactly the kind of scientific contribution Chomsky claims never to have heard of. If the theory proved true, its message would be that revolution works. If sufficient opposition were mounted by the devil, the consequent turmoil might even *start* the revolution, initially within the scientific community and then.... Who knows?
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88. Op. cit, p. 26.
89. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 16.
90. J. McGilvray (1999) *Chomsky. Language, mind, and politics* (Cambridge: Polity Press), p. 13.
91. N. Chomsky (1988) *Language and Politics*, C. P. Otero (ed.) (Montreal: Black Rose Books), pp. 98-99.
92. N. Chomsky (1996) *Class Warfare* (Interviews with David Barsamian) (London: Pluto Press), p. 15.
93. Op. cit., pp. 37-8.
94. Op. cit, p. 101.
95. N. Chomsky (1979) *Language and Responsibility* (Interviews with Mitsou Ronat) (New York: Pantheon), p. 3.
96. N. Chomsky (1995) Language and Nature. *Mind* **104**(413), pp. 1-61, 8.
97. R. F. Barsky (1997), *A Life of Dissent* (Cambridge, MA: MIT Press), p. 208. There is, of course, something of a contradiction here. Apparently, sociology is fine when Chomsky does it. What makes it fine is that he doesn't get involved in theory.
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104. Op. cit.
105. Op. cit., p. 157.
106. B. Tonkin, 'Making a difference', *City Limits* (London), 26 January-2 February 1989, p. 58. Quoted in M. Rai (1995) *Chomsky's Politics* (London: Verso), p. 137-8.
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110. D. Haraway, op. cit. L. Nader (1996) (ed.) *Naked Science: Anthropological Inquiry into boundaries power, and knowledge* (London & New York: Routledge).

111. N. Chomsky (1988) Interview, in *The Chomsky Reader*, J. Peck (ed.) (London: Serpent's Tail), p. 16.
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113. N. Chomsky (1988) *Language and Problems of Knowledge* (The Managua Lectures) (Cambridge, MA: MIT Press), pp. 36-37.
114. F. de Saussure (1974 [1915]) *Course in General Linguistics*, W. Baskin (trans.) (London: Fontana/Collins), p. 14.
115. N. Chomsky (1988) *Language and Problems of Knowledge* (The Managua Lectures) (Cambridge, MA: The MIT Press), p. 37.
116. Op. cit. p. 173.
117. Op. cit.
118. N. Chomsky (1976) *Reflections on Language* (London: Fontana), pp. 9-10.
119. N. Chomsky (1988) *Language and Problems of Knowledge* (The Managua Lectures) (Cambridge, MA: MIT Press), p. 174.
120. N. Chomsky (2002) *On Nature and Language* (Cambridge: Cambridge University Press), p. 76.
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122. Op. cit., p. 3.
123. Op. cit., p. 40.
124. Op. cit., p. 4.
125. J. Fodor (2000) *The Mind Doesn't Work That Way. The Scope and Limits of Computational Psychology* (Cambridge, MA: MIT Press), p. 13.
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127. G. Leech (1983) *Principles of Pragmatics* (London: Longman Linguistics Library), p. 3.
128. E. Bates (1984) Bioprograms and the innateness hypothesis. *Behavioral and Brain Sciences*, 7, 180-190.
129. I was initially tempted to call this paper 'Revolution and counterrevolution in the work of Noam Chomsky'. But that would be unfair. Chomsky has generated an enormous creative energy by positioning himself between these opposing forces and it is not my aim to accuse him of political insincerity. His *Hegemony and Survival* (London: Penguin, 2004) is perhaps the most moving, powerful and courageous of all his political contributions, suggesting – as I would like to believe – that in the internal battle here described, it is the anarchist visionary whose agenda ultimately wins out.
130. R. L. Trivers (1985) *Social Evolution* (Menlo Park, CA: Benjamin/Cummings).
131. L. R. Barrett, R. I. M. Dunbar and J. Lycett (2002) *Human Evolutionary Psychology* (Basingstoke and New York: Palgrave).
132. S. Baron-Cohen (1995) *Mindblindness. An essay on autism and theory of mind* (Cambridge, MA: MIT Press). M. Tomasello (1999) *The Cultural Origins of Human Cognition* (Cambridge, MA: Harvard University Press).
133. Under pressure from two Darwinian collaborators, Chomsky has recently conceded that recursion is a feature of social cognition. However, intersubjectivity is barely hinted at, distinctively human mind-reading being only a passing reference, tucked away among alternative candidates for an evolutionary precursor to linguistic recursion, such as 'navigation'. See M. D. Hauser, N. Chomsky and W. Tecumseh Fitch (2002) The faculty of language: What is it, who has it, and how did it evolve? *Science* 298, 1569-1579.
134. N. Chomsky (2002), *On Nature and Language* (Cambridge: Cambridge University Press), p. 148.
135. M. Achbar (ed.) 2004 *Manufacturing Consent: Noam Chomsky and the media* (Montreal and New York: Black Rose Books), p. 170.
137. Op. cit., p. 158.
138. When the Société de Linguistique de Paris was established in 1865, its statutes expressly forbade papers on the origins of language. See J. H. Stam (1976) *Inquiries into the origins of language* (New York: Harper and Row), p. 255.
139. K. Marx (2000 [1845]), 'Theses on Feuerbach', in D. McLellan (ed.) *Karl Marx: Selected writings* (Oxford: Oxford University Press), pp. 171-73.
140. N. Chomsky (2004) *Hegemony or Survival: America's quest for global dominance* (London: Penguin), p. 237.
140. Mikhail Bakhtin (1984 [1965]) *Rabelais and his World* (Bloomington: Indian University Press), p. 474.

