

Evolution of Culture and Cultures

Lecture, Amsterdam 18 September 2009

Cultural evolution is the continuation of biological evolution by other means. This is a familiar allusion to the famous saying attributed to Clausewitz about war and politics.

It is an appealing phrase, elegantly put. In my talk I shall explore its implications. In the first to parts I shall discuss the two basic concepts and their history, first evolution, and then culture. In the third part I shall link the idea of cultural evolution to a series of events that I call ‘the expansion of the anthroposphere’ - that is, the increasing human presence in and imprint upon the biosphere.

PART ONE: EVOLUTION

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So, first the concept of ‘evolution’. When I was a student of social psychology at the University of Amsterdam in the 1950s, my teachers seldom spoke of ‘evolution’, and if they did it was with reservations. We students took over this lack of interest. Of course we all knew that the modern industrial world we lived in had not come out of the blue, but had sprang from previous conditions. We knew several terms to deal with this insight. We could acknowledge that there was a *historical* dimension to human society, or we could adopt a *developmental* perspective, viewing the process of modernization as a series of stages. ‘Historical’ was a concept that was congenial to the humanities, while ‘development’ seemed to be more suitable for the social and behavioural sciences. It did not occur to us that there was a third way to approach the past: by thinking in terms of ‘evolution’.

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Why should ‘evolution’ have become so completely out of fashion - not just at the University of Amsterdam, but in departments of sociology and anthropology all over Western Europe

and the United States? For us today, and especially now that we are celebrating the ‘Darwin year’, this is a puzzling question. It is all the more puzzling, since the very idea of evolution originated in the social sciences.

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Before turning to the career of the concept of evolution in the social sciences let me say a few words about the history of evolutionary thought in general. In the Western European tradition, with which I am most familiar, we can find a few ideas put down by some Greek and Roman writers which can be read as anticipations of evolutionary thinking. In the entire literature of ‘classical antiquity’, however, their writings represent the voice of a tiny minority.

Most philosophers of the time would have readily acknowledged that the world was continually changing. But, living in an agrarian society, they experienced change the way farmers do: as cyclical processes. Although everything is in flux, everything always returns to its former state, in an eternal rhythm - as day turns into night and night turns into day again, as the seasons come and go, as the tides alternate. Only a few thinkers dared to go beyond the cyclical model and to conceive of ‘evolution’. We now celebrate Lucretius as the most eminent of them; but his contemporaries thought that he and his like were dangerous atheists, and the early Christian church condemned him as a heretic and a lunatic.

Fortunately, in the process of cultural transmission, Lucretius’ great didactic poem *On the Nature of Things* has somehow been preserved. It has - miraculously - ‘survived’. But, to borrow another term from biology, the tradition of evolutionism has remained recessive for millennia, and if in recent times it has become dominant in some circles, those circles are still small.

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The modern interest in evolution became first manifest in the middle of the 18th century. As a symbolic date we can take December 11, 1750 when the later statesman Turgot, then 23 years old, drew attention to the idea in a stunning public lecture at the Sorbonne. Turgot began with the popular notion that the world was full of cyclical rhythms: the tides, the movements of the moon, the seasons. But then he added there was one exception: human society. In human society the combination of reason, passions and liberty was producing a steady advance in

knowledge and living conditions. The advances might be slow and uneven, but they were undeniably real.

Turgot did not use the term 'evolution', nor did his followers such as Condorcet and Auguste Comte who elaborated the idea of gradual but uneven progress in human society in a general theory of stages. In Scotland Adam Ferguson and others did similar work with similar conclusions, emphasizing the interplay of intentional human actions and their unintended outcomes. Around the same time, geologists, from James Hutton to Charles Lyell, were making exciting discoveries about a very ancient past. The earth crust turned out to be much older than theological calculations based on the Bible had suggested, and it contained fossils pointing to the existence of life forms now no longer seen. For all of them, however, it proved difficult to depart from an overarching cyclical steady state model and accept a radically evolutionary perspective.

It was only in the middle of the nineteenth century that the sociological and the geological strands of thought were combined in a universal model of perpetual structured change - in human society, on planet Earth, and (Darwin's great contribution) in life on Earth. Darwin himself thought of his theory primarily as a theory of 'natural selection'. In *The Origin of Species* he used the word 'evolution' only sparingly, in the sense that was still most conventional in his day, referring to the evolution of languages or religions. It was Herbert Spencer, sociologist and philosopher and generalist *pur sang*, who elevated 'evolution' to a concept of synthesis at the highest possible order. In Spencer's grand conception, the process of evolution pervaded the whole universe, not as a random succession of changes, but leading, at every level, to transitions from 'homogeneous' to more 'heterogeneous' conditions, from the simple to the complex, always veering toward greater differentiation and integration.

Spencer's influence dwindled soon after his death in 1903. In sociology and anthropology his eclipse certainly had to do with the rising standards of professional scholarship: too many ethnographic mistakes and pieces of sloppy reasoning were found in his writings and those of his followers. But at least as important as those scholarly shortcomings were the ideological objections to evolutionist thinking in the social sciences in general. The evolutionist approach was associated with a 19th century belief in progress, with white middle-class supremacy and colonialism and racism. It was considered particularly painful that the so-called savages who

were depicted as representing the most primitive stages in human evolution were actually people living either within or at the margins of western colonial empires.

At a more theoretical level, the social evolutionists were also accused of teleology: the unwarranted belief that humanity's march was leading towards a goal, an end (the English language is nicely ambivalent on this score). The embarrassment caused by all these allegations led to an almost complete abandonment of the concept of evolution in anthropology and sociology. The concept was left to the natural sciences, especially biology.

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But now, in the 21st century, and especially in this Darwin year, the air is buzzing with the idea of evolution, and we sociologists can join the celebrations and proudly refer to our evolutionist predecessors, and we may even claim that it was they who originally put the whole idea on the intellectual map.

Should we now reclaim the concept? Should we say that the biologists have hijacked it, and we want it back? Fortunately ideas are not the sole property of certain academic groups. We sociologists and anthropologists, and social scientists in general, can acknowledge that the biologists have greatly enriched our understanding of evolutionary processes, and re-introduce the concept into our own fields.

I see two reasons for doing so. One is the exemplary function the term has for biology as an organizing theoretical principle. Not only sociology, but the social sciences in general are badly in need of a general theory, if only to bring into the open how the various human sciences, and their objects of study, are interrelated. Bringing the concept of evolution back in may sound to many sociologists like letting in a Trojan horse filled with scientific radicals, a fifth column of sociobiologists who consider all social studies to be a branch of biology. Much more is to be said, however, for a less defensive argument: that an evolutionary perspective can bolster the claims on relative autonomy for the social sciences, by showing how all fields of science and scholarship fit, in the sense already outlined by Auguste Comte, into the same spectrum of expanding human knowledge.

A second reason for adopting an evolutionary perspective again is its function for a wider public, to serve as an alternative to the many myths of creation circulating among humankind - not only about the creation of the world but also about the creation of particular peoples and nations. All those creation myths are, as the word already indicates, fanciful and unproven; moreover, they are ethnocentric, and their function has always been to strengthen

ethnocentrism. The theory of evolution, by contrast, is not committed to any particular people, nation or religion.

PART TWO: CULTURE

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The words people, nation, and religion bring us directly to the world of culture.

What do we mean by ‘culture’? In 1952 the anthropologists Kroeber and Kluckhohn collected over 150 definitions of varying length; that was more than fifty years ago, and even then their collection was already far from being complete. A recent contribution has been made by Richerson and Boyd in their book *Not by Genes Alone: How Culture Transformed Human Evolution*. I quote: ‘Culture is information capable of affecting individuals’ behaviour that they acquire from other members of their species through teaching, imitation, and other forms of transmission’.

This is, I think, a satisfactory definition. Unfortunately I am less happy with another statement in the first chapter of *Not by Genes Alone*: ‘culture is part of biology’, printed in italics. I find this a rather odd statement, for two reasons. The first reason is grammatical: biology may be part of culture, but culture is not a part of biology. Botany and zoology are parts of biology, but plants and animals are not; nor is culture. The second reason for me to take issue with the statement is substantive. The idea that not only the capacity *for* culture but also the contents *of* culture are biological phenomena, is in my view untenable. It testifies to a biologists’ hubris that has found a brilliant expression in Richard Dawkins’ book *The Blind Watchmaker* where he claims that even the most complicated textbook in physics is a product of human brains and therefore a ‘biological’ object.

‘We animals are the most complicated things in the known universe’ is the opening line of *The Blind Watchmaker*. It is one of the few first sentences of a book that I know by heart, because it is so cleverly constructed - concise, with every word well chosen and put in the right order. I regret, however, that while Dawkins clearly demonstrates that the living objects studied by biologists represent a level of complexity that cannot be reduced to the laws of physics, he fails to continue his argument with the observation that the objects (the phenomena) studied in the social sciences and the humanities may be too complex to be fully explicable by the laws of biology.

Of course cultural objects, such as a physics textbook, are products of human brains. But would closer knowledge of the physiology of the human brain reveal the contents of that textbook? An important clue lies, I think, in the difference between the singular and the plural form of 'brain' or 'brains'. A physics textbook, even if it has been written by one single author, is not merely the product of that author's brain but of a great many brains, many of which belonged to individuals who already have been dead for many years. Any textbook author is, in the words of the sociologist Randall Collins, 'assimilating the arguments of intellectual networks whose history stretches back for generations' (p. 861).

Culture may indeed be regarded as a product of human brains, but then of human brains connected by networks in which information is exchanged and transmitted from individual to individual, and from one generation to the next. It is continually sustained, and modified, by 'collective learning' - a concept used by the world historian David Christian as a central concept for understanding the course of human history.

Collective learning is social learning, being both inter-individual and inter-generational. Culture, I think, is best understood as the result of collective learning, and the *capacity* for collective learning can then be seen as a prerequisite for culture. A great deal of collective learning takes place almost automatically, without reflection.

Take walking. I have sometimes been told by English friends that there is a Dutch way of walking (lifting our heels slightly higher than British people do). Perhaps there is; but what I find more relevant is that walking, like so many other human activities, reflects a subtle mixture of genetic and cultural programming. At some evolutionary juncture in a distant past our ancestors have acquired the capacity to walk upright at an even pace, and ever since children have learned to realize this inborn capacity by learning to walk the way they saw their parents do it.

This may sound as a trivial example. But as the anthropologist Marvin Harris wrote in the first sentence of his book about *Our Kind*: 'In the beginning was the foot'. The capacity for learning to walk on two legs with their hands free for carrying things, combined with the evolving more general ability to learn from each other and to pass the information on to the next generation, [this capacity] enabled our early hominin ancestors, first of all, to maintain themselves, to survive, and next, to gain control over increasingly more resources and to exploit them. Sticks and stones, bones and antlers, entrails and skins, the hominins invented ways to use all these materials to their own benefit - as weapons, tools, vessels, clothing. The

implements they learned to handle amply compensated for their physical weaknesses such as a lack of sharp teeth and claws. *Culture became the major source of human power*. As the Dutch astronomer Anton Pannekoek shrewdly observed, whereas all other animals were stuck for a lifetime with the same somatic equipment that allowed only a fixed repertoire of standard responses to challenges from the environment, the two-legged hominins could pick their tools and weapons as the situation required and, moreover, employ them in unison, in co-ordinated social action.

Co-ordination was greatly enhanced by what became the core of human culture: speech. Even more important than walking was talking. As Norbert Elias notes in his still highly stimulating book *The Symbol Theory*: 'Languages enable humans to transmit knowledge from one generation to another and this makes it possible for human knowledge to grow. No other animal species has the natural means for knowledge increase' (p. 32). In the capacity for language, anatomy and physiology on the one hand, and culture on the other, initially probably co-evolved in tandem. It seems a chicken-egg question which came first: the biological equipment required to utter and understand linguistic symbols or the elaborate systems of symbols we call languages.

Languages enormously facilitated the capacity for collective learning, the prerequisite for culture. Once the capacity to learn a language had become a general characteristic of humankind [the first formation of linguistic regimes was done, so to speak], this capacity continued to be a precondition for further cultural evolution - a precondition, but not a propelling force. In my concluding remarks I shall explore the idea that *that* role may have been played by shifts in power balances.

PART THREE: EVOLUTION OF CULTURES AND CULTURE

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In view of the time, my remarks have to be very brief. I hope the power-point projection can spare me some verbal explications.

The screen shows three concentric circles. Together they represent the anthroposphere, the over-all scene of cultural evolution. I confine myself to ten brief comments.

COMMENT 1. There is a time dimension in the figure. The inner circle is the oldest; it represents the first socio-ecological regime established by hominins or humans, the fire

regime. The middle circle represents a second regime, established at a much later stage, the agrarian regime. The outer circle refers to the youngest socio-ecological regime, the industrial regime. [What the figure does not show is the greatly accelerating pace in the emergence and spread of regimes.]

COMMENT 2. The succession of the three regimes is chronological and, in an even stronger sense, phaseological: it follows a certain developmental logic of phases. It is inconceivable that the three regimes might have emerged in a reverse order. No modern industry could have arisen without agriculture, no agriculture would have been possible without control over fire.

COMMENT 3. Of course, each of the three stages or phases is clearly distinct from the other two. The world with only a fire regime was a world without agriculture. The world with only fire and agriculture was a world without modern industry. But there are also some remarkable similarities.

Thus, for each phase we can logically assume *and* empirically observe three sub-phases. There was a time when there were no hominin or human groups with regular control over fire. Then, one or a few groups did have fire. Eventually all groups had fire.

The same succession of three sub-stages from ‘none’ via ‘some’ to ‘all’ occurred in the next two stages: it applies to the stage of agrarianization [I call it so in analogy to ‘industrialization’; the term covers the entire range of the emergence and the continuing development and diffusion of agriculture and livestock raising].

And again, to the stage of industrialization. First there were no groups with modern mechanical industry, then some, and by now there are no groups left that have stayed completely beyond the reach of industrialization.

These are striking regularities which raise intriguing problems about the transitions, from the first to the second sub-phase (from ‘no groups with’ to ‘some groups with’, and from the second to the third sub-phase (from ‘some with’ to ‘all with’, or ‘none without’). [The implications are far-reaching. The ancestors of our earliest ancestors had lived without fire for hundreds of generations. Why is it that after some groups began to live with fire eventually no hominid or human groups without fire survived?]

COMMENT 4. At the core of each new regime were cultural innovations that, directly or indirectly, added to the power of human groups, first of all in their relations to other animals, later also increasingly in their relations to other human groups.

I suggest as a general hypothesis that the innovations in human behaviour that stood the best chance of ‘surviving’ and determining the further course of cultural evolution were those innovations that brought about major changes in balances of power. Those innovations were consolidated and ‘institutionalized’ that either brought gains in power for some human groups or offered accommodation to power losses that ensued for others.

Each time, the gains in power or the accommodation to power losses reinforced new forms of behaviour that were experienced as the best possible adjustments to the newly created circumstances .

COMMENT 5 The principle of power gains and losses applies to all three regimes. In my book on *Fire and Civilization* I have discussed the impact of the fire regime for the power balance between humans and other animals. I shall not repeat that argument, but I wish to make two remarks that are not in the book:

First, two new books have been published in 2009 with daring ideas about the earliest domestication of fire.. According to the primatologist Richard Wrangham this may well have been no less than 1.8. million years ago. The anthropologist Frances Burton pushes the date even further back, to several millions of years. Both authors strongly suggest that the cultural innovations of regular fire use and cooking have influenced the further evolution of the human anatomy and physiology.

[Both authors will attend a conference in Amsterdam in December about Fire in Human Evolution, Human History, and Human Society.]

Second, I think it is worth noting that the domestication of fire involved the discovery of the value of fuel. Our early ancestors learned (without of course using those concepts) that dead organic matter (wood) could be used as a source of energy. Many thousands of generations later humans have learned to exploit other fuels as well: coal, oil, gas. None of those fuels ever had any use for any other large animal; for humans in our age they have become indispensable.

COMMENT 6. As the example of fuel shows, while successful innovations give human groups greater control over certain resources, they also make those group more dependent on those very resources - and not just on the resources as such but also on other groups that control access to the resources. This too can be posited on logical grounds, and confirmed by empirical evidence.

It would be wrong to think that we humans have traded in our dependency on ‘nature’ for a dependency on ‘culture’. We have added a new dependency, and now live in a state of double dependencies: on ‘culture’ and ‘nature’. In the course of cultural evolution, both dependencies have increased - although at the level of the average individual experience this is hardly noticeable; to the contrary, dependency on ‘nature’ seems to have diminished. For a long time, the importance of socio-ecological regimes has been pushed into the background, ‘behind the wings’ of society.

COMMENT 7. Again, for all three stages we can posit and observe alternating waves of divergence and convergence in cultural evolution. If an innovation emerged for the first time in a particular group, that group became different from other groups in this respect. If increasingly more other groups adopted the same practice, convergence would become the dominant trend.

COMMENT 8. The agrarian era gave rise, not only to different local and regional cultures. In addition to this form of ‘horizontal’ diversity, a form of ‘vertical’ diversity evolved. All advanced agrarian societies, from Mesopotamia to Mexico, from Persia to Peru, spawned remarkably similar systems of social stratification, characterized by a culture of command and leisure at the top, and work and obedience at the bottom. As the sociologist, Gerhard Lenski, notes, the energies of the ruling groups ‘were ...turned from the conquest of nature to the conquest of people’. The concomitant division into two dovetailing cultures with a clear power dimension is at least as important and theoretically interesting as the more familiar ‘horizontal’ diversity of cultures.

COMMENT 9. An inherent feature of cultural evolution is that it can go potentially much faster than genetic evolution. Yet, at first, the pace was very slow. This does not necessarily indicate a lack of potential on the part of individuals. Even in historical times, neither Julius Caesar nor Napoleon ever learned to drive a car. I don’t think this was due to an innate incapacity; but their culture literally did not provide a vehicle for them to learn it. The networks to which they were connected were smaller and less specialized and did not generate the accelerating pace of changes that became characteristic of the industrial age. But at every stage, change triggered change. Increasingly, the bulk of stimuli for innovations have come from within the anthroposphere; but, as we are all aware today, the environment can reciprocate with a vengeance.

COMMENT 10. All innovations have began somewhere, at a specific location. Some, like the use of fire, have become universal. Therefore, cultural evolution is both specific and universal, it involves cultures as well as culture. [I thought I owe you this explanation of the title of my talk, which has now nearly reached its end.]

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FINAL COMMENT. Finally, I return to Spencer's Grand Hypothesis. To many of you it may sound too grand, and highly implausible. We are hearing complaints all the time about the loss of cultural diversity caused by modernization and globalization. The variety of languages is an obvious case: it is under severe pressure. Yet, at the same time we also hear complaints about the increasing complexity of modern life: the crisis in the banking system, the perpetuating arms races, worries about possible climate change, global pollution, worldwide inequalities, persisting in spite of protestations that they are intolerable, competing national ideologies and religious creeds, incontrollable migration streams and tragic refugee deadlocks – there is hardly any sphere of modern social life that we might confidently call *not* complicated. The process of differentiation is perhaps nowhere as patently noticeable as in the sciences, where at every research front specialization is proceeding relentlessly, producing ever more finely differentiated networks of knowledge. At the same time, amidst all these processes of differentiation a need for integration or synthesis is felt, and not only felt but often met - as, I hope, in this conference.