On the Nature of Communication

Thomas Michael Gross

Abstract

人間は言語を使用してコミュニケーションをする。人間社会では，人間はコミュニケーションで協力を調整し，それによって相手の信頼性を判断する。協力と信頼性の間には，密接な関連があり，そこに人間の本性が表現されている。コミュニケーションの重要さを理解するため，まず人間の本性を理解しなくてはいけない。この本性には差別主義も含まれている。人間の本性と言語の起源を進化論的な立場から述べ，何故，外国語教育がより補強されなければいけないか，その理由をあげる。

In 1768 Louis-Antoine de Bougainville discovered the island of Tahiti. Although de Bougainville was careful to describe the people of Tahiti, his shipmates described them as beautiful, amorous, scantily clad, peacable asf. These reports reached Paris and there caught the attention of Denis Diderot who was a close friend of Jean-Jacques Rousseau. Rousseau had published a treatise called "Discours sur l'origine de l'inégalité parmi les hommes" (discourse on inegality among humans) in 1755 which was very *en vogue* at the time the reports about Tahiti reached France. In his treatise — also called his "second discourse"— Rousseau argued that humans were corrupted by culture and by nature were "noble savages." The reports from Tahiti were understood as empirical proof that this was indeed the case. This was also confirmed by James Cook who visited Tahiti in 1769. In particular a John Hawkesworth who had the task of writing Cook's journal emphasized that Tahitians knew no cold, hunger, hard work, and no shame. Suddenly, South Pacific motives sprang up in the arts and were everywhere.

However, on Cook's second voyage to Tahiti a different picture began to emerge: Tahitians practised human sacrifices, and their priests infanticide. Quarrels between groups were so intense that they amounted to vicious wars. The society consisted of a very rigid hierarchy. Gender-related taboos — such as women not being allowed to eat in the presence of men — were strictly enforced. The natives

displayed a constant disregard for the possessions of the visitors. When these matters were reported back to Europe, Napoleon I. had already started to create new problems for her, and the message from the South Pacific did not hit home.

In the meanwhile, natural sciences made huge progress. Notably in biology, it was in 1859 that Charles Robert Darwin published his book "On the origin of species by the means of natural selection or the preservation of favoured races in the struggle of life" that layed the foundation of what is called "the theory of evolution." Darwin was heavily influenced by Thomas Robert Malthus' book "An essay on the principle of population" in 1803 which was concerned with relations between population size, its growth, and food resources. Malthus himself was influenced by Adam Smith who contributed two important works: "The theory of moral sentiments" in 1759 and his most famous "An inquiry into the nature and causes of the wealth of nations" in 1776. Smith's works are again influenced by David Hume's work titled "A treatise on human nature" of 1739/40, and Hume follows right in the footsteps of Thomas Hobbes. Hobbes wrote with an extraordinary scientific spectrum but is most known for his political works. In 1640 he wrote "The elements of law natural and politic" for which he was forced to leave England. At the end of his 11 year stay in Paris he wrote his most famous "Leviathan" in 1651. In Hobbes' "Leviathan" humans are described as completely opposed to Rousseau's "noble savage." In "Leviathan," nature is not a state of neverending bliss, but rightout war. Only group institutions with rigid sets of rules prevent humans from conforming to their violent nature, said Hobbes.

Hobbes and Rousseau have become the cornerstones of two irreconcilable positions : Hobbes' adherents claim that human behaviour is evil and has to be tamed by culture. Those who favour Rousseau believe the opposite: humans are basically good, and only become evil under the oppression of culture. Therefore, the academic stand-off between Hobbes and Rousseau centers on a very old philosophical debate: namely whether humans are by nature good or evil. Depending on the outcome, theories on human ethics and morality change significantly. If the human nature is basically good, then ethics has no problem, but moral theories must show why people do evil things and how society contributes to that. If the human nature is basically evil, ethics has a problem, since it must show how virtues and good deeds are justifiable as good on the basis of human nature. In modern sociological terms, this debate does not implicitly center on human morality anymore, but in general on human behaviour. This is called the "nature-culture" or "nature-nurture" debate. Culturalists claim that human behaviour is learned by exposure to a social environment, and that evil is transmitted from society or the social environment to the individual. Naturalist claim the relevant parts of human behaviour have evolved and are thus instincts, and that these instincts have in the long run evolved from selfishness.

From the 1860's to the beginning of the 20th century, the theory of evolution gradually took hold in the academic circles — however, mostly for the reasons that it seemed to provide a rational base for eugenics. Amid rising popular, political and academic support for eugenics in particular in Germany, the German sociologist Franz Boas claimed in the 1920's that only culture affected human behaviour. His disciple Margaret Mead went to Samoa in 1925 and returned with tales similar to those of de Bougainville and Cook. But in 1960 Derek Freedman who had spent a much longer time in Samoa than had Mead, refuted her claims. Samoans were not different than for instance Europeans, rather in some respects even worse. For example, rape was so common on Samoa that it had one of the highest rates of rape in the world. In 1987, a former informant of Mead came forward and admitted that she and her

friend had basically lied to Mead about their own culture. Thus, a paradise was lost in the Pacific.

However, far from being refuted, culturalism even gained a foothold in the natural sciences. Burrhus Frederic Skinner introduced behaviourism into psychology with his two famous works "Verbal behaviour" in 1957 and "Contingencies of reinforcement" in 1969. Behaviourism basically claims that behaviour is only a learned reaction to environmental stimuli. It was the famous linguist Avram Noam Chomsky who scientifically refuted behaviourism in his linguistic works, and more specifically in his 1966 "Cartesian linguistics. A chapter in the history of rationalist thought." Yet behaviourism is still taught, and it does not lack funding resources.

At the centre of the "nature-culture" debate lies an important question: What are human beings? Culturalism tries to answer this question by analyzing the social, political and technological environment of humans under the assumption that only these factor into forms of human behaviour. Naturalism works with the assumption that human behaviour is forged by evolved instincts and tries to find instances where the evolution of human instincts made sense concerning an earlier development level of humans.

The problem, however, is that culturalism has yet to come up with a single environmental explanation of how human behaviour takes shape. Naturalism, on the other hand, has developed a very consistent picture of the human nature based on the theory of evolution. Take for instance jealousy. Culturalism considers jealousy as a kind of aberration that complicates life in a civil society — which by the way is true. Culturalists hold that jealousy is developed in a society as a response to the pressure to view mates as property. Property can be stolen, and thus must be watched, and it is viciously fought over when endangered. They further claim that if the society were different, jealousy would not occur. Naturalists contend that jealousy occurs in every human society known — regardless of how the society is made up. They hold that jealousy is a human behaviour that evolved very early in human evolution. Since virtually every human is jealous — or at least understands the concept — all humans are descendents of jealous humans. Concludingly, jealousy is a successful evolutionary concept for human beings which means that those human beings who were more jealous than others had an evolutionary advantage. Naturalists then proceed to develop a scenario in which to have the jealousy trait is advantagous. They find that jealousy is a relevant trait for humans when they live in small groups of 50 to 60 with steadily shifting alliances, a wide range of physical movement, a delicate balance of reputations, and very cautious decisions on whom to take as a mate. Hunter-gatherers live that way, and it is an established fact that all humans evolved from humans with that way of living.

What culturalism is in particular unable to explain is human cooperation. While it is true that also some animal species cooperate it is virtually always kinship cooperation. Human cooperation works above the level of kinship. Culturalism ascribes the trait of human cooperation to general human goodness — which of course is no explanation at all. Naturalists have delved deep into biology to find out that every living organism is above all selfish. In some species such as ants and termites that selfishness is very cleverly concealed by genetics but it is still there. Humans are no exemption for they are selfish too. However, humans evolved in closely knit groups where selfishness is soon warped into cooperation. Hunting is a good example. It takes a certain amount of man power to bring down a big animal, and some men are good at finding an appropriate prey, others are good at stalking it, others again are good at making the kill, while others may be good at skinning the animal or processing it. If one man

were so selfish as not to engage in cooperation in hunting, he will have to hunt smaller prey or end up with less time on his hands than his fellows. This is what is meant by "division of labour." Division of labour makes further sense because of David Ricardo's "law of comparative advantage." It states that if for instance a person A is very good at fulfilling two different tasks X and Y while a person B is only average at doing X and Y, it is a comparative advantage for *both* A and B if A does only X, and B only Y because they get more out of it. Since capabalities are not evenly balanced but rather across the board, division of labour is a decisive technique in building human societies. For instance, if I am very good at skinning an animal but only average at killing it, and you are good at killing an animal but only average at skinning it, we are better of if you take the lead in the kill, while I command the skinning. This advantage must be so evident, that we both adhere to the division of the task, since we both want meat *and* skin and bones. If the agreement works, you and I develop reputations for our specific abilities and for our mutual cooperation. Steady reputations evolve trust. Trust is a so highly developed behaviour that we trust people we meet for the first time. Of course, trust is also broken, but humans police it by managing reputations. The better your reputation, the more people trust you. Reputations can be managed and exploited like material goods; in fact reputation is a currency. Your market value rises and falls according to how trustworthy and cooperative you behave.

Even though, humans strive to be regarded as trustworthy and cooperative not because that is intrinsically good, but because they are still selfish, and being considered as trustworthy and cooperative serves their own personal purposes: I cooperate with you because it is best for me, not because it is best for you. But if it is best for you, too, you will keep cooperating with me which is still better for both of us.

However, there is also a downside. Trust — the currency for cooperation — must be policed lest freeloaders spoil the system. The effective human device for this task is a good memory. Human brains developed rapidly once division of labour was in place, simply for the reason that still everybody first served their own needs. Humans are very adept at persuading — with a decidedly deceptive streak — *and* at uncovering lies. There is even a slight gender preference in the way that men are better at deceiving while women are better at looking through deceits. In tests, it has been shown that humans are much better than chance at deciding whether people they have never met before are trustworthy or not. Human mimics and gestures are tightly packed bundles that communicate our dispositions, and we have learned to virtually read each other's minds. The fact that human communication is always contaminated by a speck of deception amounts to enormous evolutionary pressure to find out that speck of deceit — which in turn puts pressure on the deceiving mind. Alas, there is a limit to what memory can take. Humans have evolved in rather closely knit groups of no more than 60 persons. Even today, the average human has no more than 60 well known acquaintances — including kin and friends. Most task-specific organizations such as comitees, board meetings etc. do not surpass that number.

Along with the evolution in close groups of a limited number of members, humans have also evolved "groupishness." Groupishness is the strong feeling of belonging to a specific group accompanied by aversion of anything and anybody that does not conform. And — by the way — groupishness begets conformism, a trait that is particularily strong in humans. Conformism has important benefits too, but its primary social function is tighten group cohesion. Groupishness is observed in every ape species with the particular twist that groupishness is more pronounced in males than in females. Ape males never

leave their group of birth while females once fertile wander off to join other groups — a mechanism that prevents inbreeding. That phenomenon can still be observed in humans. In the overwhelming number of societies, females join the family of their husband. This means that also in humans male groupishness is stronger than in females. There is, however, one trait that humans do not share with apes. Apes direct their groupish hostility only against individuals of other groups, not against other groups themselves. Chimpanzees engage in regular gang warfare in which groups of 10 to 12 males venture to the boundary of their territory to hunt single individuals of another group. In the case they find one, they hunt it down and kill it. However, humans further engage in antigroup hostilities. We do not make halt at the individual level, we go for the genocide. Antigroup groupishness is not found in apes, but in dolphins. Male bottlenose dolphins spend their time in close and small groups of up to three. These triads share a female — if accessible. If not, a triad approaches another triad and persuades it to help stealing a female that is guarded by a third triad. If they succeed, the second triad gets nothing — but the payoff of future help from the first triad. This is something humans also engage in: groups cooperate with other groups in order to achieve a goal that each group could not have reached on their own. Most often these intergroup engagements are directed at another group. For example, two or more civil liberty groups may join hands over a specific issue against for instance a government agency — even though they may be at odds over other issues.

In apes, groupishness ties in with territoriality. All apes are territorial, and thus humans are too. This is a rather dangerous trait in modern man, since the world population is rather large, while the amount of available territory is not. Territorial instincts bind groupishness to a location which in turn becomes gradually regarded as something worth to defend. Population growth pressures groups into expanding their territories which is something that causes significant problems. The sense of territoriality is incremental, though. Nomads and hunter-gatherers are not settled like farming societies, but they are still territorial in the way that they do not wander freely all over the globe. Hunter-gatherers like the ! Kung move around in the Kalahari, but not in all of Africa. Good hunting places are more often visited than bad ones. However, the increasing territorialization around nomad and hunter-gatherer cultures force them slowly but steadily into settling down. However, territory has also good points. Once territory becomes property, humans develop a responsibility caring for their property. All development projects everywhere in the world have failed where territory was free to use, since it was not cared for. This is the main reason why communism does not work. Dolphins — although meta-groupish like humans — on the other hand are not territorial at all, and the concept of fighting over a piece of land — or ocean in their case — would be incomprehensibly alien to them.

And that is the downside: groupishness — in particular mixed with territoriality — is *the* root of racism and war. In every culture, behaviour like local — and thus territorial — patriotism is known, where one village is pitted against its neighbor village, where one family feuds with another asf. But groupishness can be made to transcend the immediate group to which we belong, although the effect of groupishness gradually evaporates. The civil war in Northern Ireland — although fought between people speaking the same language, and with virtually the same social and historical background — has lasted much longer than the Cold War, a stand-off by the mega-groups NATO and Warsaw Pact. However, the limit seems to be the planetary level. Once a world government will be in place — if it ever will — the main problem will be the identification of its subjects with it. Since a unified world has

no outgroup to turn against, human nature prevents this world from being unified in any form. The only other — though probably less desirable — possibility is the advent of an extraterrestial species broadly equivalent to our own capabilities in language and technology.

According to the naturalists' view of human nature, a picture emerges that leaves room for grave concern as well as cautious hope. On the one hand, human beings have evolved to be very good team players. Team play is managed and policed through the marketplace of reputations. Every concerted action is an investment into existing reputations. Their sense of belonging is strongly developed. Humans have — regardless of their specific society — established rituals to enhance group cohesion, be it a dance ritual of some tribe in Africa or the custom of going out for a beer in Japanese companies. Conformism is a trait that buys directly into group cohesion. People do what their peers do, because established ways of doing things are there for the reason that they have proved successful. Humans are good at managing their territories, provided they are their properties. This is — if thoroughly understood — a very promising way leading to a reduction of environmental pollution and to a more harmonious existence with other species on this planet. Humans are also masters of the division of labour, and thus able to assign tasks according to the most pronounced capabilities of individuals. This enhances an individual's chances of increasing his market value, since what he does best not only does him best but also his group.

But on the other hand, humans get a Faustian bargain. Policing of reputations leds to gossip. One need only look at TV programs and newspapers to catch a glimpse of what sells. Groupishness breeds prejudice and hostility towards anything different, and is thus the leading cause of racism — in particular in societies where men tend to move less or not at all out of their groups. Conformism can take the direct route to stupidities, be it high-sole boot fashion or consenting to genocide. The exaggerated sense of territory as property can lead to all forms of economic hardship and dependency — for all those who do not own property. Studies also show that gender related discrimination is significantly higher in settler cultures than in roving ones. Territory can not simply be split between partners who want to divorce. This is one reason why in most settled cultures women own jewellery. Territoriality is furthermore the principal motive for war. The mixture of groupishness and conformism is highly volatile, and cleverly recognized by propagandists through the ages.

Perhaps the most disturbing fact is that everybody is that way. There are simply no exceptions. The reason why culturalism is still so pronounced in the social sciences and humanities, is simply that it presents humans with an utopian view of themselves. It would be very assuring, if indeed culturalism were right. However, in the most basic of human social habits, societies do not differ — something that is simply not mentioned. As Matt Ridley (1996: 6) writes:

> The conventional wisdom in the social sciences is that human nature is simply an imprint of an individual's background and experience. But our cultures are not random collections of arbitrary habits. They are canalized expressions of our instincts. That is why the same themes crop up in all cultures - themes such as family, ritual, bargain, love, hierarchy, friendship, jealousy, group loyalty and superstition. That is why, for all their superficial differences of language and custom, foreign cultures are immediately comprehensible at the deeper level of motives, emotions and social habits.

If we want to change the way we are, it is best to face what our nature holds in store in ugliness and build an environment to restrain these dark forces. Since we have also good sides, it is sensible to exploit them. For instance, due to our trait of conformism, we can easily adapt to foreign cultures. Every — for example — Japanese person can go to Europe, and she will not find herself deeply perturbed that Europeans have marriages too. There is practically nothing in basic social habits, a complete foreigner cannot understand in any given culture. This raises the question why so much time, money and man power is spent to teach comparative culture classes at universities. The minute cultural differences that are taught in these classes are so irrelevant that they already become misleading. The simple fact such a curriculum exists implies that there are fundamental cultural and social differences between cultures that can only be bridged through academic immersion in the subject. That — in itself — is an expression of groupishness since it seems to indicate that other cultures are so incomprehensible as to require a rational effort to understand them.

The only indisputable difference between different cultures is language. Language is the main carrier of communication concerning cooperation and thus, coordination of tasks. The inability to converse in the culture's linguistic medium in which a person has to act, significantly decreases her opportunities and her options to take advantage of the marketplace of reputations. That is the second main reason why foreigners are discriminated against in any given culture. But here is also a glimpse of daylight. Increased schooling in foreign languages will necessarily lead to a decrease in any form of racism. To understand this significant insight requires some explanation on language.

Language like any other human behaviour has evolved. The only distinction to other behaviours is that languages of earlier stages in the evolution cannot be observed. The reason for this is that writing as a more permanent linguistic encoding technique has been developed rather lately. The curious fact in linguistics is that no languages currently in use on earth are primitive. Although it is commonly thought that languages spoken in advanced cultures are necessarily more advanced than languages in primitive cultures, this assumption is wrong.

A look at natural languages gives us convincing clues that:

1. there is no language that does not use passive voice, although functions of passive voice can differ in different languages. For instance, genuine Japanese passive voice as can be observed in Classical Japanese, conveyed spontaneity rather than focus shift from the object. The forms of passive that are encountered in Indoeuropean languages have been introduced into Japanese in the beginning of the Meiji period, and their use has gradually increased.
2. there is no language that does not use the technique of pronominalization. Furthermore, all usages of coreferent pronouns can be explained by *three* principles of *one* theory. Coreferent pronouns cannot appear together with their reference expression in the same immediate cycle, and they cannot be placed at a higher hierarchical level in the sentence structure *and* precede their reference elements. If pronouns are anaphors, they *must* appear in the same immediate cycle as their reference element.
3. virtually all languages contain a strong localistic element. For instance, although German and Japanese are not related in terms of existing language families, temporal expressions are marked exactly like local expression in both German *and* Japanese. This can even extend to concrete and

abstract expressions such as *in this book/religion.*

4. coordination is a technique that is present in every language. It is an ingenious technique that extraordinarily increases the speed of communication. In all languages, coordination requires basic syntactic or procedural changes that sometimes significantly corrupt sentence structures. But these changes are paid off by the increased speed.
5. change of word order is also a technique that virtually every language employs. The pay-off is to be able to say and understand something slightly different by using the same words or phrases in a differnt order.
6. without exception every language is hierarchically structured and uses phrases.

The properties 1-6 all relate to the structural level of natural languages. But even on the semantic level, there are strong indications that all natural languages share basic concepts. In the 1969 study "Basic Colour Terms: their universality and evolution," the linguists Brent Berlin and Paul Kay showed that the existence of colour terms such as *red, blue, black* etc. are statistically governed by a very strict, open ended semantic continuum. If a language has only two colour terms, these terms are always *black* and *white*. If it has three, the third term is always *red*. If it has four colour terms, the fourth term is either *green* or *yellow*, and if it has five terms, it has both *green* and *yellow*. If it has six colour terms, the sixth term is always *blue*, and if it has seven terms, the seventh is always *brown*. The eigth term may be either *pink, purple, orange or grey*.

This is an extraordinarily surprising fact considering that language communities are basically at liberty to name colour terms at will. I.e. although the phonological form of colour terms is basically free, their introduction into a language is governed by the continuum outlined above. The freedom of phonological form should lead us to believe that there is a semantic freedom in terms of reference. Although it is true that languages use colour terms with a different reference range, for instance Japanese *ao* for the spectrum between *green* and *blue*, or Modern Welsh *glas* for a range from *green* over *blue* to *grey*, peak reference in languages centers at around the same wavelength. Peak reference means that members of one language community locate the typical usage of a colour terms in the same wavelength range on a colour scale when tested. If peak references for the same colour term in different languages are compared, the references are almost the same.

In his 1997 book "The Symbolic Species," Terrence William Deacon explains why this came to be so. Two issues are of primary importance: the way the brain transforms light frequency into subjective colours, and how this process influences the colour association and the evolution of colour terms in a language community. Colour is an important feature of visual perception because it maximizes distinctive experiences of photons striking the cones of the retina in different wavelengths. The signals from three different kind of cones are pitted against each other which is called *opponent processing*, and as a result a difference signal is achieved. This signal corresponds best with the colour discriminations humans actually see, and this process determines colour complementarity. Colour complementarity is a feature deriving from the colour perception of the human brain that acts as a bias towards linguistic colour discrimination. It is no coincidence that the linguistic colour continuum exhibits arrays of complementary colours from beginning to end: the first two colours (*black* and *white*) are complementary, and so are the third (*red*) and *green*, and *yellow* and the sixth colour (*blue*). So,

seemingly, if there is already a colour *yellow* in a language, the colour complementarity bias will pressure the next colour to be acquired to be the complementary colour of *yellow*, namely *blue*. This has to do with memory since all colours on either side of complementary *blue* towards *yellow* are likely to be less well remembered that complementary *blue* itself.

Deacon uses this example as the outset of an intruiging theory of how the brain and human languages have co-evolved. Before going into this, it must be remarked first of all that, unlike other human features and capacities, language is not widely considered as having evolved in the same manner as for instance the human eye, digestive system, mating strategies or child rearing. Only two decades ago, human language was not considered as having evolved at all, but rather as a counter example to the theory of evolution. This idea goes all the way back to Noam Chomsky and his concept of generative grammar as a universal grammar (UG). UG argues as follows: natural languages are extraordinarily complex and in spite of its complexity children learn their respective mother tongues in a very short time. On top of that, the linguistic input children receive from the environment — in particular from their mothers which is then called "Motherese"— is very limited and substandard, even faulty in grammatical terms, so that it is unimaginable how children acquire such a complete competence in their mother tongues in such a short time. Although astonishingly inept in many trivial tasks, young children seem to be linguistic savants. Thus, UG claims, the basis for this linguistic competence must already reside in the brain. In other words, the main grammatical features of human languages are hardwired into the human brain practically from conception, and the environmental input only triggers which natural language will be acquired by the child. This can be proved by the fact that when the linguistic environment changes — say from English to Chinese — during a very early period, a child will acquire the medium of the new linguistic environment as a mother tongue.

Since no language has been discovered that can be considered linguistically primitive, UG argued that there has not been a gradual process of increasing complexity in language that is typical for other evolved complex systems. Such were — and are — the arguments that deemed human language as a capacity that had not evolved, and was — and is — thus considered as a counter example to the theory of evolution. However, the 1990 study "Natural Language and Natural Selection" by Steven Pinker and Paul Bloom was highly publicized and reversed the assumption of the inevolvability of language in wide circles of the linguistic community. One of the principal problems that baffle linguists and evolutionary scientists is how to imagine a gradual process of a increasing complexity in human language. This topic, however, is not new to the theory of evolution as a general issue. Stephen Jay Gould, an acclaimed evolutionary palaeontologist, has made this problem famous with the expression "What good is five precent of an eye?". Gould basically claims that no biological complex feature has evolved in a gradual manner, but in series of bursts or jumps. In other words, the evolution of a complex system is triggered by severe changes in the environment that exert a new and very strong adaptational pressure. Those systems that survive this pressure have increased their complexity not only by a fractional but by a significant degree. This notion has become famous as the "Theory of punctuated equilibria." Under this view, a complex system has no incentive to change as long as its environment is in equilibrium with the capabilities of the complex system. This is reasonable because any structural change requires the diversion and redistribution of energy, and since energy is the principal fuel of life, redirecting energy is exhibited rather sparingly.

One of the most striking misconceptions in the discussion of language evolution is the fact the human linguistic faculty is viewed as basically the same as for instance the human visual apparatus. While there is no doubt that in order to use language as efficiently as humans do the human upper body must be severely modified, and comparisons with other ape species show that they do no possess organs modified and adapted for speech, the problem that the language faculty and language are not equivalent goes quite unnoticed. The evolution of organs from one stage to the next takes a very long time, while languages change much faster. This can be easily seen if one looks at the modern and ancient languages and modern and ancient humans. While the latter have not changed at all, the former have changed beyond comprehensibility.

Therefore, inquiries into the evolution of language must distinguish the human linguistic faculty from the languages themselves. Languages are complex systems, and as separate systems quite autarkic from each other, and they should be considered as an object of evolution in its own right. However, maintains Deacon that languages and the brain as the site of the human linguistic faculty have of course co-evolved. This insight offers a novel approach to the problem because it not only allows the question of how the human brain may have evolved to adapt to language, but also the reverse: how did languages evolve to adapt to the human brain. The point of co-evolution that Deacon persistently stresses is that languages and the human brain are pre-adapted to each other.

This assumption has some far-reaching consequences. First of all, pre-adaptation of a language to the human brain means that a language is suitably well adapted to be transmitted through the only channel it can go: children's brains. At the age when young children usually acquire language they do not exhibit much practical intelligence in other areas that astounds us as much as their — seemingly unreasonably fast — linguistic progress. However, if the assumption holds that languages are pre-adapted to be acquired rather fast by children, then we need not consider children as linguistic savants but as rather inept in virtually every other area that requires intelligence. This would bring our view of children's overall intelligence in line with their linguistic intelligence.

The second consequence is the necessity to look at languages not as formal systems but as quasi-biological entities that have perfectly well evolved to fit a niche. In order to have achieved this they must exhibit properties that must perfectly fit young children's brains. These properties must then be simple rather than extraordinarily complicated as UG claims.

If languages are viewed as quasi-biological systems, it makes some sense to map their acquisition stages as quasi-embryologic stages. It is well known that a lot of organs go through earlier evolutionary stages during their embryologic development. The human eye, for instance, goes through all evolutionary stages during embryologic development — but of course much faster. Languages exhibit similar features. Pronominalization, i. e. the use of pronouns and anaphors, is acquired later than reference expressions, namely nouns, proper nouns and noun phrases. Coordination is acquired when basic sentence structure patterns can be activated. And phrase building does not commence before a basic lexicon as been acquired.

Biological organs sometimes exhibit features that seem to be awkward with respect to their purpose. For instance, the human upright walk and stance, is a physically very unstable posture, and the human body is not a good design for walking and standing as it does. The reason for this is that evolutional change has to work with what it already has. The solution for the human body was to change the pelvis

in order to let it rotate more freely and thus accommodate an upright walk. However, there is a feeling of makeshift about it. We should expect to find similar makeshift phenomena in languages, and indeed they are there. Coordination, for instance, is a very important adaptation that enables humans to transmit significantly more information by saying insignificantly more. However, coordination has eluded a coherent grammatical analysis for a long time because the makeup of coordinated structures is so difficult to describe — in any linguistic theory. The structural genotype of languages is characterized by the features *linearity* and *one-dimensionality*. Phrase structure combined with hierarchy is the most important tool to ensure that linearity is guaranteed. However, the structural phenotype of coordinated structures severely compromises the linearity feature because coordination does not exhibit either proper phrase structures or proper hierarchies. However, coordination makes use of *recursivity* insofar as secondary elements of a coordinated structure are syntactically formed according to the same macro-rule as primary elements. Thus, coordination employs the more abstract version of a property that all languages exhibit while it violates other linguistic building principles.

The third consequence concerns the treatment of the development of different languages as a process similar to biological speciation. New species develop through all kinds of events: members of the same species might be separated into two or more groups through geological or meteorological events. Once separated, it is reasonable to assume that a new species will develop since the environment differs from the genuine one in which the species had developed. Speciation is fluid with no initial distinct borders between neighbor species, but it is also a gradual process that — once in motion — will separate a new species from its original species further until interbreeding becomes impossible. Further, the genetic setup of the original species will still play an important role into which direction the new species will evolve. To give an extreme example: it is impossible that separated members of a — for instance — predatory and solitary species will evolve into a social and aquatic species in short time.

The same holds for languages, too. R.M.W. Dixon has outlined such a linguistic scenario in his 1997 book "The Rise and Fall of Languages." Members of one linguistic community become separated — which constitutes the punctuation of the linguistic equilibrium — and gradually the language used by both sub-communities becomes two different languages. This process is the very gradual reconstitution of two separate linguistic equilibria. This theory accounts for the relatedness of different languages as well as its biological counterpart explains the relatedness of different species. It also explains — again in concordance with its biological counterpart — why members of one linguistic community cannot understand exactly 50% of the language of another linguistic community. They understand either not much or very much, but not exactly half. It also makes intuitive sense since closely related languages can be learned faster by members of their respective communities than languages that are further apart.

The fourth consequence is that all languages are related although it remains a fact that there exist languages with very unique features that are not easily understood or learned by members of other linguistic communities. However, one a global linguistic scale, every language can be learned regardless of one's mother tongue. A human language that cannot be learned by members of other linguistic communities has yet to be discovered. In evolutionary terms, this means that the idea of convergent evolution in linguistics is ridiculous if one considers that there are about 6000 different languages in use around the globe. However, it is also true that a good technique is discovered more than once.

The human trait of groupishness makes use of language to promote itself. However, it must be noted

that languages themselves cannot be considered as sharing this trait. From a viewpoint that assumes that languages are quasi-biological entities that proliferate simply be being successfully acquired by children, it makes no sense for a specific language to confine itself to a singular community. It is quite the opposite: the more children learn this language, the better for this particular language.

However, human groupishness exerts a lot of pressure on languages. After all, languages are the principal carriers of communication, and communication is the principal device being used to gauge reputations. Distrust originates from the initial unability to gauge an unknown person's reputation. This — for humans — strategic problem is solved quite easily if there are no barriers to communication. Futhermore, language is probably the most important factor in group identification. It acts as a powerful cohesive agent in large meta-groups and as an equally powerful excluding agent against outgroups. This fact constitutes the most important reason why cultures that forcefully invade other cultures have tried to suppress the use of the native tongues.

Where there is no language barrier between two nations, political and cultural inclusion works much faster, as can be seen with the infamous "Anschluss" of Austria by the Third Reich in 1938. There was practically no resistance among the Austrian populace which hailed the new "leader"— who by the way was an Austrian by birth. This event served for the inclusion of a paragraph in the Austrian constitution that prohibits any form of reunification with Germany — an issue that was on the political agenda when Austria made its bid to enter the European Union.

On the other hand, where different language cultures exist within one political union, constant conflicts can be seen. Good examples are — among others — French speaking Quebec in Canada, German speaking Southern Tirole in Italia, Basque speaking regions in France and Spain, and the divided people of the Flamic speaking northern region and the French speaking southern region in Belgium. The language struggle in Belgium is so intense that even village officials are required to speak both French and Flamic.

This phenomenon, however, is not confined to natural languages, but also to regiolects and sociolects. Subcultures tend to distance themselves from their incorporating language culture by a significantly altered use of the language — linguistically speaking: mostly in lexical terms. Youth slang is often incomprehensible to the older generations, and thereby a group distinction is introduced. Young people often view older people with similar notions that oppressed cultures have towards their oppressors.

It is here where the Faustian deal humans get regarding their nature repeats itself in a different fashion: on the one hand languages — although they themselves are not groupish — facilitate cultural diversity, and thus also cultural exclusion and differentiation simply because they have gone through a linguistic speciation process. But on the other hand, all languages can be learned by all humans. The only way to break through the linguistic exclusion that a foreign language presents is to speak that particular language. It is very reasonable to assume that if a foreigner speaks and understands the native language to a considerable degree, the native language cannot act as an excluding agent anymore, and groupishness on the side of the natives is subdued. A further benefit is that the foreigner can act as her own free agent on the marketplace of reputations. Vouching — although a much employed technique — becomes unnecessary which is desirable because vouched persons can be easily perceived as powerless to act on their own. That necessarily decreases their reputational market value. Persons must

be at liberty to act on their on own in order to acquire reputations which in turn make them relevant and responsible parts of their — in particular working place — environment. Not speaking or ineptly speaking a foreign language has immediate consequences. However intelligent and versed in important matters, people that cannot intelligibly converse in a foreign language culture are perceived as much less intelligent than they would care to be. There is no implict or explicit malice involved. It is the human sense of groupishness through which these perceptions are channeled. And it is no solution to demand that the host culture's people should please try to subdue their racist and derogatory feelings — although of course they should. Remember that the misperceived person is a foreigner and as such her sense of conformism will start to act. She will be virtually helpless and very probably not even realize her conformist behaviour, as much as the natives are helpless and probably not realize their own feelings towards her, since both conformism and groupishness are hardwired into the human nature. Thus, the possibility of even a slightly hampered communication provides immediate benefits.

This insight requires a second look at language acquisition and foreign language learning and teaching. Linguistic psychology indicates four different stages in language development. The first stage lasts from the later period of gestation up to three years. In this period phonetic, basic grammatical and simply lexical routines take form. The second stage lasts from three to about seven years. In this period grammatical routines are perfected and the lexicon expands exponentially. For native speakers, the linguistic development process stops here. Children who are exposed to a mixed language environment, and who have acquired their mother tongue, learn a foreign language almost with native proficiency between eight and twelve years. However, they will not be able to fully master a foreign language if they should be exposed to it from the age of twelve to 15 years. After the fourth stage native proficiency is virtually impossible.

The question that immediately arises is whether we act appropriately on this knowledge. The answer is negative — although this knowledge has been around the block for almost two decades. In a tie-in with studies on learning success of other subjects such as natural sciences or mathematics it is evident that there is no need to have a prolonged curriculum of these subjects over the whole time of school. The last three or four years of high school — in other words after the linguistically critical age of 15 years — would be sufficient to teach and learn science subjects with no loss of proficiency as compared to school systems today. If so done, it would leave — though not sufficient, but much — more time to teach foreign languages if possible from preschool on until the age of 15. That means a time frame of at least ten years which is enough to learn three foreign languages to the level where more than just simple conversations become possible.

From the age of 15 onwards it then becames possible to teach some scientific subjects in a foreign language. This greatly increases linguistic proficiency. This is already done in countries such as for instance the Philippines and Singapore — with considerable success.

Foreign language education is not only one of the principal keys to the solution of many problems that are caused by human groupishness, but also for any individual's economic survival and success in the future. Education itself contains a highly multiplying factor: if a person with a high education works in an environment that is characterized by a high level of education, she becomes even more valuable. You simply get more out of combined knowledge. Knowledge must be communicated, and this is done

by using language. The less well knowledge can be communicated the less valuable it becomes. This is not immediately noticeable, but it will become so. The industrial and financial world is going global, and since this is the area in which white-collars are to be found, this further pronounces the necessity of foreign language proficiency.

That does not necessarily mean foreign language skills in general. Language is only the tool for communicating ideas, but high knowledge of a foreign language does not necessarily turn you into a person who is able to communicate relevant information. An equally important point is to emphasize communication skills in general.

Passive communication skills comprise the abilities to summarize and concentrate information you have access to, and to make proposals based on the available information. Although a good grasp of the language used is necessary, you have to have the further ability of processing information — fast and reliably.

Active skills comprise the abilities to present information in a convincing and — possibly — truthful manner. This means that the information presented must be comprehensive, relevant to a given topic, concise, structured, reliable asf. A further active skill requirement is the ability to anticipate counter-arguments or doubts, and to defend your presentations and ideas.

Only if passive and active communication skills tie in, can they be called *opinion formation* skills. These skills do not figure largely in university education, but they will have to in the future to ensure the *employability* of graduates. Since companies cannot guarantee life time employment anymore due to fierce global competition, the aim of individuals will not be getting into a company and staying there for the rest of their lives, but rather to be able to hold a job anytime during their work lives. Therefore, the burden on universities intensifies because they are the main institutions that provide the education required for white-collar jobs. If universities do not manage to live up to that demand, parents and students as investors in education will think twice whether they want to invest in at least four years of university level education.

Higher education has one large limitation: it takes more time to get an education that enables an individual to successfully compete for well-paid jobs than is economically feasible as an investment return. And as a principle, there is no prospect of intermediate returns. This means that a half-finished education is worthless, and as a consequence it must be finished. In quite a lot of high-technology countries, higher education is private which means that it is not for free but rather quite expensive. Consequently, individuals who seek higher education and are prepared to pay a lot of money for it are entitled to an education that makes them competitive. The competitiveness of graduates ensures the competitiveness of educational institutions. Therefore, this issue is something that any institution of higher education must be prepared for if it wants to stay competitive.

As the situation presents itself now, it is reasonably fair to assume that the trait of human groupishness that constitutes the origins of racism and that has caused much suffering is on the retreat. A look at the political landscape seems to indicate otherwise, as new, comparatively small countries with a single cultural identity began to emerge after the collapse of the Soviet empire. And the same will probably happen to the other very large communist country if the reigns of the government should slip. But this will be a transition period. Commerce is going global, and there is no greater incentive for humans than

economic success. If in a situation of global employability economic success — and thus survival — can only be achieved by being competitive on a global scale, acquiring an education that is aimed at these global challenges is required. In the preliminary scenario, the ultimate goal of such an education means foreign language proficiency. A vast number of individuals being able to enter any culture and not being excluded because their foreign language proficiencies are good, will gradually reduce the power of languages as exclusive agents. Once this barrier is broken down, humans can perhaps start to shape a global society.

Literature :

Berlin, Brent & Kay, Paul (1969): *Basic Colour Terms: their universality and evolution.* Berkeley, University Press.

Deacon, Terrence William (1997): *The Symbolic Species. The co-evolution of language and the brain.* New York: Norton.

Dixon, R.M.W. (1997): *The Rise and Fall of Languages.* Cambridge: University Press.

Pinker, Steven & Bloom, Paul (1990): Natural Language and Natural Selection. In: *Behavioral and Brain Sciences* 13. 704–784.

Ridley, Matt (1996): *The Origins of Virtue.* Penguin.