

Voices of our genes?

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Mark Pagel

WIRED FOR CULTURE

The natural history of human cooperation
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As myths of origins go, Mark Pagel's account of the launch of humans, about 80,000 years ago, is compelling. Humans, goes the narrative, evolved because we developed a capacity for social learning. It is this ability – unique to our species – that allowed us to survive in most of the world's environments. In contrast to even those animals that have developed precursors of culture, we were adept at observing and adapting the very best out of complex actions, which allowed us to build complex societies in a process of cumulative cultural adaptation that selects those solutions that are best suited to our survival in a given habitat.

Crucial for the kind of sophisticated social learning that led us to build our cultures is one innovation that distinguishes us even more drastically from animals than the mere capacity for clever copying: language. This, “the voice of our genes”, Pagel argues, not only permits us to engage in the extensive cooperation needed for the cumulative processes that form culture, but also resolves a central problem inherent in social learning without language – that of visual theft. If observation is sufficient in order to copy problem-solving behaviour, then it is ridiculously easy to “steal” this behaviour. So speaking different languages appears to provide a kind of tribal copyright protection for ideas that might otherwise circulate freely outside one's own society.

This, in addition to the different environments we had to colonize, promoted the development of different cultures associated with small tribal groups, or “cultural survival vehicles”, Pagel thinks. The cooperation and exchange that lie at the heart of human sociability are only possible because of these vehicles that provide us with a shared language and identity. Engaging in reciprocal altruistic behaviour is very dangerous, since only regulated contact can guarantee that the cheater does not always win, and in order to create the mechanisms to develop trust and control needed for this, we need close-knit societies. These cultural survival vehicles are structures that carry replicators or memes – identifying Pagel as a proponent of Richard Dawkin's controversial model of memetics. The memes define our cultural identity, and we pass them on to our children, and they to theirs. They act in the interest of our genes, which dictate that particular cultures lead to the greatest reproductive success in particular habitats.

So far so logical, if one follows the basic premisses. But, as Pagel concedes himself, his story prompts a number of baffling questions: why do we need so many different cultural survival vehicles, far more than might be expected from the diversity of our habitats? Why do we speak so many different languages – more than 7,000, according to estimates? According to Pagel, what we have to say is pretty universal and pretty limited, so what motivates this variety? And why are linguistic and cultural diversity greatest in the tropics, where humans are packed together most densely? Surely, cooperation and reciprocal altruism – so central for the evolution of our societies – would be better served if we removed the obstacles for coop-

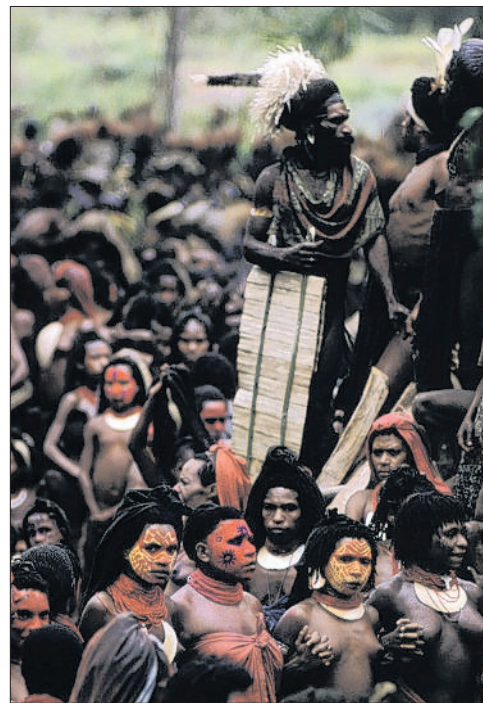
eration between groups by speaking fewer languages?

Pagel popularizes a co-evolutionary approach under which genes and culture shape each other. Such a model of evolution is now adopted by many in the field, but it raises a number of challenges as well, owing to the radically different dimensions of genes and culture. Betraying a lack of engagement with linguistics and social sciences, Pagel's story is riddled with a number of problematic conceptions of the form, function and evolution of languages – a subject that is central to his book.

The paradox that he takes great pains to develop – that we speak so many languages when in fact we are all saying the same things – is a fallacy that results from his reliance on so-called Swadesh lists in order to find out what languages do. These word lists, developed by the American linguist Morris Swadesh (1909–67), comprise 100–200 words, not more, and were explicitly designed to identify those parts of the vocabulary of human languages that are universal because they fulfil the most basic communicative functions (talking about oneself and others, hence the inclusion of pronouns) and not specific to a particular habitat (hence the exclusion of words such as coconut or palm tree). Two hundred words is the upper limit for the lists, because all the other words we use and know are not universal, but specific to particular cultural areas or languages. If one compares languages according to a Swadesh list, they must look very much alike, but this perspective is of course dramatically skewed by the chosen instrument. The question of how many words a speaker of a given language really uses is impossible to answer, because of differences in structure (one language's words are another languages complete sentences), but they are many more than the tiny fraction represented in a Swadesh list. How many words a speaker knows is a different question. But more importantly, this reasoning fails to unearth the tremendous differences between languages, many of which stem from the exposure to different habitats and the development of different cultural techniques. Differences in basic colour term inventories or spatial language and cognition are a telling example, complex taxonomies reflected in how languages classify botanical vocabulary in relation to their interaction with the environment another among the many culture-specific knowledge our languages are full of. An influential article by Nicholas Evans and Stephen Levinson (“The myth of Language Universals” in *Behavioral and Brain Sciences*, 2009) discusses the very limited role that universals play in human languages and demonstrates how great the differences are between

them. The great divergences between languages in structure and vocabulary organization are even more striking if one takes into account that our descriptive knowledge of the world's languages is based on only 10 per cent of the languages spoken today. About the majority of the world's languages, we know very little, and often not more than that they exist. Swadesh's methods for tracing the genealogy of languages back to a common ancestor is not accepted any more among most linguists, although the lists are still used. The second linguist who gets Pagel's attention is Merrit Ruhlen, who uses widely contested methods to prove the genealogical relatedness of languages that most historical linguists today do not see as related.

More importantly, the idea that languages distinguish groups, and that speaking different languages is an obstacle to communication (or a protection from auditory theft) or to cooperation is a fallacy, if a common one. Many researchers from Western contexts who have grown up in the nation states created in the nineteenth century fall victim



caption caption caption

to the ideology that a group, tribe, or society will in general have one language that expresses that group's identity. (The very notion of tribe, as now unanimously accepted by anthropologists, is also an invention of colonial pioneers of the nineteenth century, fuelled by their newly acquired nationalist ideologies.) Yet in the very areas of the world that Pagel uses to illustrate the linguistic diversity that puzzles him so much – Papua New Guinea and Kenya – people living within a few miles of each other speak several different languages.

Multilingualism is mentioned in the preface of Pagel's book as an intriguing indulgence of a group of pastoralists who speak the languages of four other groups of pastoralists with a very similar way of life, instead of forming one larger society and speaking one language, but never taken up again. Well, a social scientist is inclined to answer, maybe they do form a complex society with these

other groups, one that does not rely on one shared language, but on conventionalized interactions and exchanges with the other groups? Even in officially monolingual societies, we differentiate ourselves according to class, gender, geographical area, age and many more characteristics within one society, forming smaller and not mutually exclusive groups marked through speech styles, registers, accents and a multitude of other signals all the time. The same phenomenon exists in societies that are not based on one and only one language. Monolingualism is a relatively recent result of Western-style nation building. It is far from being the global norm, and so speaking only one language should appear as more perplexing than speaking several languages.

Multilingualism, widespread throughout the world, renders essentialist notions of group identity invalid, because in many cases individuals are born into multilingual society and grow up learning several languages from childhood. This is not just an arbitrary fact of being born into a multilingual society (although the staying power of the cultural system in place, functional or not, should not be underrated). Rather, humans become and remain multilingual because of a number of societal practices – exogamous marriage patterns, child fostering, and ritual, professional, economical and religious mobility and exchange patterns beyond language borders. And they change their linguistic repertoires in accordance with changing communicative needs. Although language, like other parts of the cultural system, has traits that are not adaptive (another challenge for a memetic approach), linguistic diversity and multilingualism are to an important extent culturally motivated and go against essentialist notions of homogeneous tribal groups. What does this entail for the notion of a cultural survival vehicle based on stable memes, including languages, that are passed on to one's children?

Finally, Pagel argues that genes and languages are alike because of their temporal stability – genes are replicated with only minimal changes over time, and so are words, although they are uttered exponentially more often than genes are copied. If true, that would make them appear very analogous to genes and favour an analysis in terms of memes. But again, the notion of time stability of languages and Pagel's discussion of an exclusively cladistic model (where languages are classified based on their descentance from a common ancestor and nothing else) is based on highly debated linguistic sources only. Recent findings from various fields of linguistics – pointing to a greater horizontal diffusion between languages than assumed so far in non-Indo-European languages – are not taken up at all. These findings are in line with the multilingual character of the majority of the world's society.

Mark Pagel asks an important question about an area of great fascination for our species: how our genes and our cultures interact in making us who we are. That *Wired for Culture* only provides incomplete answers to this question is a trait it shares with many evolutionary narratives. This points forcefully to the need for modern evolutionary models relying on the involvement of genes and cultural factors, to involve natural and social sciences on a par.