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Introduction: The Evolution of Cooperative Communication

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‘Selfish gene’ Darwinism differs from earlier versions of evolutionary theory in its focus on one key question: Why cooperate? The faculty of speech which distinguishes *Homo sapiens* from other species is an aspect of human social competence. By inference, it evolved in the context of uniquely human strategies of social cooperation. In these chapters, therefore, Darwinism in its modern, socially aware form provides our theoretical point of departure.

Where, previously, attention has focused on speech as the biological competence of individuals, here our themes are social. To study communication is inevitably to study social structure, social conflict, social strategies, social intelligence. Communication, as Robbins Burling observes in the next chapter, ‘does not begin when someone makes a sign, but when someone interprets another’s behaviour as a sign’. Reminding us of this elementary principle, Burling spells out the logical corollary: where the evolution of language is concerned, it is comprehension, not production, which sets the pace. Even a purely instrumental action, after all, may be read by others as a signal. Where this has evolutionary significance, instrumental behaviour may then undergo modification in the service of novel, socially conferred, signalling functions. Chomsky’s focus upon the innate creativity of the speaker has been enormously productive. But over evolutionary time, Burling points out, ‘the only innovations in production that can be successful, and thus consolidated by natural selection, are those that conform to the already available receptive competence of conspecifics’. If Burling is correct, then that syntactical structure which so radically distinguishes speech from nonhuman primate signalling must have become progressively elicited and then consolidated by generations of comprehending listeners. First, conceptual complexity is ‘read into’ signalling by the attentive mind reader; subsequently, the signaller – given such encouragement – may succeed in externalising aspects of that complexity in the signal itself.

Consistent with this scenario, one possible speculation is that speech emerged in the human lineage thanks to novel levels of care, solicitude and understanding shown by mothers toward immature offspring. Drawing on Tomasello's work, Burling cites the infant chimpanzee 'nursing poke' – a conventionalised begging gesture suggestive of a human speech act. To this might be added the 'head nod', 'head shake', 'wrist flap' and 'tap/poke' – cognitively expressive gestures, each with its own meaning, used by immature apes in playful interaction with each other or with mothers (Blount 1990: 429). Poignantly, however, such incipiently symbolic signs do not survive into adulthood. As potential 'memes', therefore, they lack any prospect of being passed on. Each mother-infant dyad or immature peer group is condemned within each generation to 'reinvent the wheel'.

Associated with this is a social fact: whereas the human infant may anticipate long-term kin-based solicitude, benefiting from social provisioning well beyond infancy, the young chimp, from around age five, must fend for itself. Deprived of the prospect of caring support, it abandons the now irrelevant nursing poke along with any other subtle indications of need. Given the competitive exigencies of impending adulthood, the best preparatory training for the ape youngster may in fact be to *avoid* excessive reliance on cooperative understanding from others. From this perspective, elaboration of symbolic potential as young apes mature appears constrained less by cognitive deficits than by a decisive *social* one: the obvious absence, in the wild, of any unconditionally supportive or caring audience. Why bother to elucidate one's aims or interests to others who may at best show indifference – or at worst exploit such intelligence for their own ends?

Jason Noble takes up the theme of cooperation versus competition to ask whether a 'pure' state of competition is consistent with any kind of signal evolution at all. He sets out to test a theory first proposed by John Krebs and Richard Dawkins (1978), according to whom conflict in the animal world leads to costly, manipulative signalling. Noble's simulations suggest that contrary to these authors' expectations, intensification of competition does not culminate in maximally manipulative, inefficient signals. Rather, the outcome is simply a breakdown in all communication. If empirically confirmed, this would endorse the more traditional standpoint of theoretical linguistics, linking communication with shared interests. However, we need not assume generalised social harmony. According to Zahavi and Zahavi (1997), even violent antagonists may communicate on the basis of interests which they share. Predator and prey, for example, may share an interest in avoiding a chase if the potential victim is able to demonstrate that pursuing it would be a waste of time. Likewise, human military combatants may seek to retain at least certain honest channels of communication to avoid costly misunderstandings.

From all this, it would appear that there is no ultimate incompatibility between Noble's findings, Zahavi's and the tenets of Krebs and Dawkins. In the real world, both competition and cooperation may prevail simultaneously, albeit on different levels. Babblers collectively 'mobbing' a predator, for example, are on one level cooperating. Yet on another, they are competing in advertising to one another their ability to afford taking such risks (Zahavi and Zahavi 1997).

Dessalles (1998) roots speech evolution in a comparable dynamic, in which status-seeking individuals compete to emit signals perceived as relevant by their peers. Dissolving simplistic dichotomies, such behaviour might be termed 'competition to cooperate'. Consistent with Krebs and Dawkins, however, is the finding – confirmed from all sides – that fast, cheap, efficient communication presupposes at least *some level* on which interests converge. Signals become costly and inefficient – culminating eventually in physical violence – in proportion as mutual conflict on that level intensifies.

In his contribution to this volume, Dessalles sets out to delineate more precisely the cooperative social matrix in which speech must therefore have evolved. With Dunbar (1996), Deacon (1997) and many others, he posits an evolutionary background in which increasingly large, stable coalitions engage in group-on-group competition and local conflict. The decisive selection pressure is status-linked social inducement to provide information relevant to the concerns of one's own group. Dessalles accepts that such coalitionary activity amounts to cooperation, driven by strategies of reciprocal altruism which are a precondition for the evolution of speech. In his view, however, speaking as such is *not* reciprocal altruism.

A speaker, according to Dessalles, does not donate valuable information on a tit-for-tat basis, checking to ensure repayment in kind. Rather, it is listeners – not speakers – who are left to pay the costs of checking up on cheats. This is because, whether honestly or dishonestly, speakers are always striving to persuade their audience to reward them with status. Those coalitions which can award such status, according to Dessalles, are 'groups of individuals showing solidarity in action, i.e. being able to take collective decisions'. In competing against the out-group, each coalition seeks to allocate *internal* status exclusively in return for relevance. Rather than displaying altruism, therefore, conversationalists like contestants in any competitive board game – strive to win through linguistic 'moves' capable of earning status while diminishing the relative significance of rival contributions.

Why is it that within human coalitions, status is earned this way – whereas in ape society it may be earned more effectively by manipulation or concealment of relevant information? In suggesting an answer, Dessalles points to the intrinsic dynamic of group-on-group conflict, whose effect may be to progressively

exclude physical aggression and/or manipulative signalling from the sphere of *in-group* communication. 'In primate societies, the company of strong individuals is much sought after. From the perspective we propose, relevant information may have replaced physical strength as a determining factor in the decision to join a coalition and remain in it'. As threats and correspondingly exploitative signals become reserved for outsiders, internal status – emancipated from determination by such factors – becomes allocated on quite different grounds. Internally, signallers may now avail themselves of a novel opportunity – to compete in producing messages valued by other members of their group. As Dessalles concludes: 'Social status among humans is not extorted by brute force. It emerges from others' willingness to establish social bonds with you. The decision to become closer to somebody is taken according to definite criteria. Linguistic relevance may be an essential component of this choice'.

Adopting the same perspective with respect to coalitionary dynamics, status and relevance, Camilla Power reminds us of the evolutionary centrality of sexual and reproductive strategies. In Power's model as in those of Dunbar (1996) and Knight (1991), the stable coalitions responsible for speech arise out of long-term strategies of reciprocal altruism *between females*. A key area of potential conflict between females is the issue of differential male sexual attention and associated provisioning. In particular, according to Power, pregnant and nursing mothers may experience younger and/or imminently fertilisable local females as a sexual threat. In Power's model, they respond by coercively controlling and bonding with pubescent females from the moment of menstrual onset. Signals of imminent fertility, which might potentially incite males to differentially target menstruants, are now deliberately scrambled.

On this basis, Power explains the ethnographic pattern in which first menstrual onset in pubescent girls triggers coercive initiation into a ritual group. Although the subjects of such treatment surrender freedom of movement and incur numerous immediate costs, in the longer term these should be outweighed by benefits. Each menstruant will one day be a nursing mother herself, whereupon she will reap the benefits of a coalitionary strategy aimed at preventing younger or more attractive female rivals from gaining disproportionate provisioning and attention. Moreover, the costly and often painful process of initiation has intrinsic value, acting as a demonstration of personal commitment. Here is Power's answer to Dessalles's question about how listeners can check up on 'cheats' – speakers who falsely gain status by faking the relevance of their utterances. In Power's model, nobody even listens to speakers who have not already paid the costs of initiation into the secret society or coalition. Gossip depends on the relationships of trust that are established as commitment to the sisterhood is signalled via hard-to-fake, costly display. Relevance-based in-group status allocation operates only within such a framework.

Power demonstrates the precision with which this model's expectations match details of the ethnography of women's 'secret' language use in the context of African initiation rites. In her case studies, however, in-group solidarity is neither uniform nor unconditional. Instead, ritually bounded coalitions do show internal status differentials. Depending on their status, speakers can control or determine the relevance and availability of vital social information – such as who has been having sex with whom, or who has fathered a given child. 'Gossip' is the exchange of *social* information; inevitably, it is manipulated to serve sectional interests. The relevance or irrelevance of an utterance, according to Power, depends less on any objective informational content than on *prior* ritually established relationships linking the speaker with her audience.

Power observes that during an actual ritual performance, or when deployed to signal ritual status, an utterance may be accepted as relevant despite lack of propositional meaning or content. Theoretically, even a nonsense rhyme learned during initiation might appear relevant. This recalls Maurice Bloch's (1975) ethnographic study, in which Merina political elders display ritual status through verbose speeches almost devoid of creativity, syntactical combinatoriality or any novel content. At first sight, all this might seem in conflict with Desselles's expectation that status should depend on linguistic relevance. Ethnography indeed suggests the reverse possibility: where the purpose of signalling is to display evidence of ritually conferred status, the most relevant strategy may be to produce propositionally meaningless, repetitive verbiage.

If this is accepted, then to retain consistency with Desselles, we must distinguish between two contrasting settings in which 'authorised language' (Bourdieu 1991) is used. Where internal status differentials are in the process of being established by *ritual* as opposed to verbal means, we expect displays or negotiations of such status to violate Desselles's 'relevance' maxims. In such contexts – as Power shows – signalling may be relevant without informational content and without making any contribution to collective decision making or problem solving.

'Relevance' in Desselles's terms, however, cannot be a property of nonsense rhymes or ritualistic, repetitive verbiage. Neither can it be a feature of simple ritual marks such as bodily scars, cosmetic designs or tattoos. Where group members demand information relevant to cooperative decision making, the necessary vehicle is syntactical speech. Here, the social matrix is one in which preordained status can be ignored, for the simple reason that in principle, everyone shares the same such status. In this democratic setting, the ground is cleared for a quite different contest, in which communicators make no prior assumptions about status differentials dividing them. Conversationalists set out with a level playing field, in which the contest is to provide information of value to the group. Power has outlined a persuasive, ethnographically testable

model to explain how such status-conferring groups in the human case came to be established.

Knight turns from an examination of costly ritual signals to an examination of low-cost symbolic communication. Young primates frequently engage in play behaviour, whose make-believe creativity often seems suggestive of human cultural symbolism. In contrast to primate vocal signalling, the playful gestures of young apes may be rich in cognitive expressivity and complexity. Whereas ape vocal calls are analog indices of physical and/or emotional condition, the distinction between a play bite and its functional prototype is cognitive and categorical. Whereas ape vocal calls, when delivered in sequence, can yield only a blended compromise between meanings, a gesture indicating ‘This is play!’ may systematically reverse the significance of subsequent ‘chases’ or ‘bites’. If we are seeking a primate precursor for speech creativity and combinatoriality, Knight suggests that the most convincing candidate is primate play.

But if conversational speech including humour in the human case extends and develops the creative, combinatorial potential of immature primate play, then we must ask how the conditions for such creativity came to be extended into adulthood during the course of human evolution. For Knight, the key factor acting to deny animals freedom to play is reproductive competition and conflict. The onset of sexual maturity brings with it the Darwinian imperative to engage in potentially lethal sexual competition. In the primate case, this impinges upon life concurrently with sexual maturity, setting up anxieties, divisions and status differentials which permeate and effectively constitute adult sociality. If imaginative playfulness diminishes in frequency, it is because autonomous, freely creative expressivity is simply not compatible with a situation in which individuals feel anxious or externally threatened. Admittedly, adult primates – most notably bonobos – do sometimes play with one another. But as competitive stresses intensify, the dominant tendency is for play fights to give way to real ones. On a more general level, by the same token, involvement in shared make-believe yields to a more narrow preoccupation with the serious competitive imperatives of adult life.

Among humans, however, the transition to adulthood takes a different form. Human offspring go through an extended period of childhood followed by adolescence (Bogin 1997). During this extended period, the young are enabled to rely to a considerable extent on social as opposed to ‘fend-for-yourself’ provisioning. Hunter-gatherer ethnography demonstrates in addition that at a certain point, young adolescents become coercively incorporated into ritual coalitions. Rites of initiation – central to intergenerational transmission of human symbolic culture – may be viewed as a modality of animal play. In fact, they are spectacular ‘pretend-play’ performances, drawing on hallucinatory techniques

such as trance, dance, rhythm, face painting and so forth. Whether or not genital mutilation is involved, the declared aim is to curb individualistic pursuit of sexual advantage. Bonds of coalitionary solidarity, typically modelled on sibling solidarity, are accorded primacy over sexual bonds.

How did such coalitions and associated rituals become established? Power's model of reciprocal altruism within female coalitions suggests a route through which the playfulness of infancy and childhood might have been preserved into adult life. If young fertile females are simply *prohibited* from presenting themselves as objects of male competitive attention, being instead retained under control by siblings and other protective kin, then such kin-based coalitionary solidarity might reduce sexual conflict and so establish extended opportunities for adults to engage in 'play'. Knight argues that with the emergence of *Homo sapiens*, the childhood significance of kinship indeed became preserved within adult sociality, overriding sexual bonds and thereby opening up a new social space within which language – an extension of the creativity of primate play could now for the first time flower.

What is clear from all these contributions is the extent to which they dovetail and support one another. Burling sets the scene by reminding us that speakers could not effectively innovate in the absence of prior understanding on the part of listeners. The ensuing chapters in their different ways explore the evolutionary roots of such creative and rewarding acts of cooperative understanding. All are agreed that speech evolved to enable thoughts to be shared, its emergence inseparable from distinctively human strategies of social cooperation.

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