6SSEL045 – Language Origins
Lecture 9
Socialisation and Culture

INTRODUCTION

Language has two roles in defining human socialisation: it is a tool for facilitating joint enterprise, and it is a tool for thinking in a particular way. Both of these linguistic roles are key markers of being human; and we view individuals who have language as being "more humanlike" than those who don't – even when the language-capable individuals are otherwise severely limited, and the language-incapable are otherwise completely normal. Anecdotally, we seem to favour communicators over thinkers.

Despite these two roles having equal prominence in defining a human, there has been a long-standing dispute in linguistics about which is the main cause of language. Most researchers, however, have now abandoned this dispute: we accept that language is impossible without humanlike cognition; but it is also impossible without humanlike socialisation and culture. However, a small group of Generativists still insist that language is primarily for, and is solely a product of, the specifically human brain; other brains do not have the magic component of recursion; culture is a product, not a cause, of language; and socialisation has nothing to do with it.

This approach, however, is itself problematic: if language is primarily for cognition then it affects our model of the evolution of language in two ways. First, we cannot say that language grew through exchange, it has to start big and stay the same size; this is Noam Chomsky's "sudden emergence" or macromutation (Chomsky, 2010), an idea that has little justification from the science of evolution (Tallerman, 2014). Second, we cannot say that culture affects language; language has to be genetically monolithic, an idea that does not match what we see happening in the real world.

So, despite the fact that language may well be 99% cognitive, looking for language origins in socialisation and culture is probably a more productive approach.

HOW HUMAN CULTURE IS DIFFERENT

Human culture is unlike that of any other species on this planet. The nearest species to us in terms of organisation are the **eusocial** insects *[for definition, see below]*; but, while their organised cultures share many features with ours, they lack the human attributes of conscious choice and social calculation. Insect eusociality and human **pseudo-eusociality** both require complex communication systems; but, where insect communication systems are innate and fixed, ours are cognitive and plastic.

Human culture is different from the cultures of other species in two important ways:

- **We are tool dependant**. Other species use tools and some make them; but we have not yet identified another species which makes tools to make tools, and no other non-eusocial species is so reliant on tools that survival without them is unlikely.
- **We have great difficulty surviving outside of a human social group**; yet, at the same time, we have all the necessary cognitive machinery to make trust difficult. However, despite knowing that we can be deceived, we trust others – even strangers. Part of our solution to this dilemma is co-operative altruistic punishment: we get together to punish cheats, sharing the punishment costs between us. We also get together to punish those who don't themselves cheat, but who don't share the costs of punishing cheats. This social morality is a large subject area by itself, and will not be pursued further here. Contact me are you are interested, and I will provide papers.

THE SOCIAL BRAIN

Human social modelling seems to be superior to that of other apes. We can build larger and more sophisticated alliances; we can maintain different levels and types of alliance; and we can build alliances around cognitive needs as well as physical needs. Our understanding of the human social brain has become increasingly sophisticated in the past three decades, and we are beginning to decipher the cognitive mechanisms behind our social modelling. Some examples are:

- **Robin Dunbar** (1998) has proposed that the human brain is a product of the social needs of living in large groups. As group size increases, the social calculus needed to keep track of all the members of the group increases exponentially, so larger brains are needed to handle the social calculus. However, large groups can only be stable if there is a high level of in-group tolerance and a low level of in-group rivalry. Large groups are therefore behind both increased brain sizes and increased alpha suppression. Increased group size also creates a need for a more sophisticated system of communication to negotiate the demands of the larger group; and, at some stage, that sophistication would be enough to start calling it language.
- **Uta & Chris Frith** (2010) look at dyadic (two-person) interactions, and show that there is a difference between automatic cooperation and planned joint enterprise: the fronto-polar cortex is more active in joint enterprise tasks. Additionally, it is more active in non-Asperger's individuals than in individuals with Asperger's syndrome.
- **Martin Edwardes** (2014) suggests that the use of language created an introspective self-awareness for humans – we are not just self-aware, we are aware of our selfness. We can model ourselves as if we were other people, which gives us both an awareness that we are a self, and an awareness of what a self is – we can model a "myself" as a "themself". This capacity is unknown elsewhere in nature.

The capacity to model social relationships does seem to be implicated in the origin of language; and language, in turn, has facilitated the development of more sophisticated social relationships. The sophisticated social brain and the language-using brain seem to rely on the same cognitive resources. We will look at this in more detail next week.

THE ROAD TO HUMAN CULTURE

This week, in terms of the **EAORC Routes to Language** chart, we are looking at the final pre-sapiens species, Homo heidelbergensis, and very early H.sapiens. Where last week's lecture covered about 2.5 million years, this lecture covers, at most, 250,000 years. However, this was the time when the definition of socially and culturally modern humanity was being written into our genes.

We look at the route we took from ostensive-inferential communication to the earliest forms of syntactic language; and we cover social cognition, sharing, negotiation toward meaning and affective teaching and learning on the way.

SEMANTICITY

We start with semanticity, which is also part of the process leading to ostensive-inferential communication, although we did not look at it last week. Semanticity is one of Charles Hockett's design principles (Hockett, 1963), where it is described as:

> Semanticity: Linguistic signals function in correlating and organizing the life of a community because there are associative ties between signal elements and features in the world; in short, some linguistic forms have denotations. The distension by roe of the belly of the female stickleback is part of an effective signal, but does not "stand for" something else.

In other words, vocalisations work because they have a meaning which is known to other members of the group. Hockett did not see

this as unusual in nature, many species demonstrate a capacity to treat sounds as indexes for events which are only related to the sounds semantically.

However, when we look at semanticity as a process, rather than as a component in a larger process, we find that it is quite complex. For semanticity to be a working capacity in a species, the following sub-processes need to be in place:

- A cognitive system for tagging events and objects by type;
- A cognitive system for recalling an event or object using the tag;
- A communicative system allowing a phonological version of the tag to be associated with the cognitive tag;
- A cognitive capacity in the receiver to understand that a sound from the sender represents a cognitive tag for the sender, and that this cognitive tag in turn represents an event or object for the sender;
- A communicative and cognitive capacity to associate deixis with a tag, whether the pointing is done with the eyes, the head, the hands, or any other part of the body;
- A capacity to associate the deixis with an event or object in the real world, then associate the event or object with the tag given by the sender.

These systems and capacities are not simple, but they are at least relatively common in nature. When we call out the name of a pet, however, it is unlikely that the pet identifies the sound as a personal label; they do, though, associate it with a need to pay attention to the caller. Semanticity is at the root of lexis, and in nonhumans it can be seen as proto-lexis. It should not, however, be viewed as proto-naming.

SOCIAL COGNITION

Dunbar (2004) looked at intentionality, showing that most humans are able to understand about five levels of nested intentionality – "Jane thinks [1] that Sally wants [2] Peter to suppose [3] that Jane intends [4] Sally to think [5] that [something concrete is the case]" (p.47). Chimpanzees, in contrast, seem able to handle only two orders of intentionality: "Flint intends [1] Flo to think [2] that [something concrete is the case]". This does allow for deception: Flint can intend Flo to believe something untrue; but it is not enough for effectively detecting deception and sanctioning it. While Goliath can see that [Flint intends to deceive Flo], he cannot really see that he sees it. Chimpanzees do not seem to model themselves as third persons in the way that humans do; they are locked into the Machiavellian needs of self-first, which makes the dispassionate approach to self an unfit strategy, and renders co-operative altruistic punishment impossible. And this, in turn, makes orders of intentionality above two unhelpful.

Social Cognition relies on two orders of intentionality, as does chimpanzee Machiavellian intelligence; but humans also use a third order to evaluate the links between the relationships that they are collecting. This allows the relationships to exist not just as individual anecdotal pairings, but as a network of affiliations. We can view the network without our own subliminal relationships with individuals interfering with our understanding of the relationships between individuals. Human social cognition opens up a different way of being in a group.

PROTOLANGUAGE 1

From the words that semanticity gives us, we were able, via ostensive-inferential communication, to generate our first form of protolanguage. This form is likely to consist mostly of single noun forms, but it is possible that qualifying lexis, or adjectival forms, would also be part of this communication system – "big" has much the same meaning when applied to "elephant" or "rhinoceros", and "elephant" is the same kind of animal whether it is "big" or "little"; but "big elephant" allows the speaker to identify a particular

elephant in a group of elephants, and the listener to understand the speaker's communicative intention better.

There are six communicative functions that this first protolanguage would have made possible. The first four of these can also be seen in general nonhuman communication; but the final two are unlike anything we have been able to identify in the rest of nature (although some cetacean communication may yet prove to have them).

- **Naming for attention:** these involve representing other members of the group with sound-tags. As a sound-tag can only represent an individual who is present, and individuals die, there must be either a capacity to reuse tags for new members of the group, or a set of tags greater than the things to be named must be available. Naming for attention (and self-identifying for attention) has been identified in dolphins, but this capacity may be more widespread.
- **Stating, Declaratives:** these are simple representations of objects or events as sound-tags. The predator-specific calls of vervet monkeys qualify as declaratives. Declarative sound-tags are different from naming sound-tags: they are not used to draw the object's attention but to talk about the object with a third party.
- **Manding, Imperatives:** these are instructions to others to perform a particular action. They seem to have a verbal rather than nominal force (they instruct rather than name); but the action stands alone with no actor or acted-upon given, so it can be seen as either verbal or nominal. Once again, the predator-specific calls of vervets qualify as imperatives because the receivers perform a particular action when they hear a call. Like declaratives, manding is talking about an object with a third party.
- **Coordinating, Interrogatives:** interrogatives are used by nonhumans to indicate uncertainty, but they represent a state of the signaller, they do not involve talking about an object with a third party, as they do for humans. Human use interrogatives to indicate that the state of an object is uncertain, as well as indicating they are uncertain.
- **Agreement & Negation:** agreeing and disagreeing are perhaps the most human of the communicative functions. They can represent submission, as occurs in other species, but they mostly represent co-operation in a joint enterprise. Both "yes" and "no" represent co-operation, but of different types: "yes" is for uncontested co-operation, "no" is for negotiating toward co-operation.
- **Semantic change using concrete terms:** when the nature of something changes, the sound-tag representing it may also change. For instance, A mammoth is a mammoth, but when successfully hunted and killed it becomes food. This lexical transformation does not change the physical nature of the object, but it does change the cultural and social approach to it. This semantic change is known to occur in other species (e.g. when chimpanzees mob a predator, they continue the calls after the threat has gone, enjoying the solidarity created by the shared calling – Eibesfeldt, 1989), but this semantic change is a factual thing; in humans the semantic change can be seen as transubstantiation, giving it mystical significance. Claude Lévi-Strauss (1964) describes cooking in these terms.

These six communicative functions created the first dialogic communication system. It was no longer sufficient to just react to a signal, the intention behind the signal had to be discovered. This freed the signalling system from the strict links between sound and meaning, allowing context to moderate the meaning of the signal. With protolanguage 1, human communication ceased to be fully constrained by the signal itself, and began to involve "talking about" things, events and joint enterprises.

SHARING OF MODELS

Protolanguage 1 and internalised social calculus could have existed side-by-side indefinitely without merging. If, however, a need arose for internalised social calculus to be shared (and in the case of humans we should say "when" rather than "if") then there would have been a swift cascade of capacities, culminating in a second type of protolanguage. What seems to have started this in humans was the replacement of physical grooming with less time-consuming vocal grooming. As Dunbar (1996, p78) asks:

> Could it be that language evolved as a kind of vocal grooming to allow us to bond larger groups than was possible using the conventional primate mechanism of physical grooming?

Dunbar (1993) identified a correlation between neocortex size and group size in primates which, when applied to H.sapiens, predicted an optimum group size of 150. At this size, humans would have faced a time-budgeting crisis: where most primates could groom for 15% or less of their time to maintain group cohesion, humans would need to groom for over 40% of their time. He proposed that vocal grooming (at first just sounds, not language) would have been able to replace physical grooming, and that this could then evolve into meaningful sounds and eventually the exchange of social gossip. In the EAORC model this rather hopeful double transition has already begun: humans are exchanging meaningful sounds, albeit not primarily to groom. Additionally, humans already had the cognitive mechanisms for recording and examining social relationships; the sharing of social relationships is just the externalisation of internal cognition.

One argument made against the gossip hypothesis is that there is no mechanism to ensure that gossip is honest: false social information should make the true information unreliable, and destabilise the whole gossip mechanism (Power, 1998). However, Hess & Hagen (2006) showed that humans have a sophisticated capacity to evaluate gossip. Multiple sources and independent sources increase veracity, while overly-benign interpretations and rivalry between gossiper and gossiped-about decrease veracity. Simple repetition also increases apparent veracity, a feature exploited by modern fake-news generators. Baumeister et al (2004) showed that gossip is not just about relationships in a society, it creates a narrative of the society itself. It tells inspirational and cautionary tales about the social status of others, teaching how an individual should behave – and not behave – in their society.

NEGOTIATION TOWARD MEANING

Once gossip is up and running, individuals cease to be sponges for information offered by others; human communication becomes a transactional dialogue rather than a series of separate calls. This dialogue introduces interpersonal rules to the communication: turn-taking, attention, clarification, and attention to the reactions of the receiver, among others. Dialogue needs a negotiation toward common understanding, or a negotiation toward meaning: the original communicative intention of the speaker is modified by the interaction with the receiver, and the understanding of the receiver is created by the interaction. The five negotiation styles (Avoidance, Accommodation, Competition, Compromise & Collaboration) represent the five interpersonal relationships that occur in dialogue.

Another feature of dialogue is that the negotiation is **toward** meaning and not **to** or **for** meaning; the information in the communication is both ostensive (what the speaker intends to mean) and inferential (what the listener wants to know).

These two types of information may end up reinforcing very different world-views (Tannen, 1998). The vervet "eagle" alarm call has only two interpretations: there is an eagle, or the call is deceptive. In contrast, the following sentence can be interpreted in a number of ways:

> In the year ending June 2018, the UK issued 14,308 grants of asylum, alternative forms of protection and resettlement, down 12% compared with 16,215 in the previous year. (From Migration Statistics Quarterly Report: August 2018, ONS.)

The possible interpretations include:

- This is a Bad Thing, there are more asylum-seekers in the world than ever, we're not pulling our weight;
- This is a Good Thing, we need fewer asylum-seekers, Britain is full;
- This is a Bad Thing, we need more manual workers who will accept low pay;
- This is still too high, I hate foreigners;
- This is acceptable, I'm a politician and I can sell this figure to my electorate;
- … and so on.

Negotiation toward meaning changes the roles, purposes, agendas, and outcomes of communication.

AFFECTIVE TEACHING & LEARNING

Negotiation toward meaning also affects the way we teach and learn. We are no longer just teaching skills and knowledge, we are teaching skills and knowledge **to** people; and we are no longer just learning, we are learning **from** people **about** things. Education involves real people with actual emotional, or affective, responses. When a meerkat is teaching a meerkitten how to handle a scorpion, it removes the sting, gives a short demonstration and then allows the meerkitten to play with the scorpion until it is dead. At a certain stage, the meerkitten is presented with a scorpion with the sting attached and learns how to deal with the sting by itself. The approach seems to be "if the meerkitten works it out, fine; if they do not, that's their problem."[1]

In contrast, humans try to engage their young in their learning, and the individuals doing the teaching usually take responsibility for the success of it. Both sides are culturally encouraged to become emotionally involved in the teaching process, and negotiation toward meaning gives each side the mechanism to do so.

Bloom's Taxonomy of Language in Action (1964) sets out the ways that language is used in affective teaching and learning. These are:

- **Knowledge:** information must be taught accurately, so that it can be reformulated by the learner without losing meaning.
- **Comprehension:** teacher and learner must work together to interpret the knowledge taught, so that it can be incorporated it into both persons' knowledge base.
- **Application:** the teacher must help the learner to use knowledge practically to solve their own problems.
- **Analysis:** knowledge must be broken down into constituent parts for teaching, so that dependencies and order can be understood by the learner.
- **Evaluation:** teacher and learner must together assess the value, quality, and importance of the knowledge taught and learned, while accepting that teacher and learner will evaluate things differently.
- **Synthesis:** The learner should be encouraged to apply their knowledge to make new knowledge, or new understanding, which then puts them into the role of teacher.

Bloom's Language in Action taxonomy shows how humans share knowledge in proactive and creative ways. It is not just about teaching and learning of knowledge, it is about teaching and learning how to think.

---

[1]   https://www.livescience.com/4150-hunting-101-meerkats-teach-scorpion-dismemberment.html

PROTOLANGUAGE 2

Semanticity, Social cognition, Sharing of models, Negotiation toward meaning, and Affective teaching and learning, all come together with Protolanguage 1 to enable Protolanguage 2. PL2 is not really an extra stage in the same way as the other stages in the EAORC Routes to Language, it is the outcome of all the other stages being cognitively available to a communicatively competent PL1-using animal. However, PL2, unlike PL1, does require a system of rules. The social calculus to be shared requires the capacity to bring together two objects (models of individuals) with a marker for the relationship between them; and the sharing of those social constructs requires a shared terminology to represent the components in the construct. Fortunately, PL1 and Social cognition provide precisely those components. While the sharing of social constructs is in no way inevitable, if it is to happen then it relies on a sociocultural state where negotiation toward meaning and affective teaching and learning are already present, or at least incipient.

The two-argument-plus-link form of PL2 allows it to be extended beyond just linking individuals together; it can also link objects and events to an individual. In this way it can define complex social and cultural expectations about others. Roles, duties, activities, and the simple industrial events of making and changing can all be reduced to two-argument forms.

NEARLY THERE …

From PL2, the steps toward full language are complex, but they follow quite swiftly. They will be examined in detail next week, when we finally arrive at a form of protolanguage that everyone can agree is complex enough to be labelled language – although the term "Complex Language 2" implies that it is neither the beginning nor the end of the story of language, just the end of the beginning of the story.

DEFINITION OF (EUSOCIALITY FROM WIKIPEDIA):
the highest level of organization of sociality, is defined by the following characteristics: cooperative brood care (including care of offspring from other individuals), overlapping generations within a colony of adults, and a division of labor into reproductive and non-reproductive groups. The division of labor creates specialized behavioral groups within an animal society which are sometimes called castes. Eusociality is distinguished from all other social systems because individuals of at least one caste usually lose the ability to perform at least one behavior characteristic of individuals in another caste.
Eusociality exists in certain insects, crustaceans and mammals. It is mostly observed and studied in the Hymenoptera (ants, bees, and wasps) and in Isoptera (termites). A colony has caste differences: Queens and reproductive males take the roles of the sole reproducers, while soldiers and workers work together to create a living situation favorable for the brood. In addition to Hymenoptera and Isoptera, there are two known eusocial vertebrates among rodents: the naked mole-rat and the Damaraland mole-rat. Some shrimps, such as Synalpheus regalis, are also eusocial. E. O. Wilson and others have claimed that humans have evolved a weak form of eusociality (e.g., with menopause), but these arguments have been disputed.