Mythmaking: The Social Modelling that Made Us Human, and Why Second Lives are Third or Fourth Lives

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ABSTRACT

The capacity to make models of ourselves as we wish to be, and the modern ability to project those models into computer-moderated games, appears to be a species-specific skill; and, as such, it is an important candidate for what makes us human.

The ability to play is not an extraneous function for us humans, it is central to our social organisation. Many commentators have noted the importance of play in language, in social and economic structures, and in our relationships with each other. The ability to tell each other stories – and to know they will be listened to – is key to our definition of humanity.

This ability is not just evolutionarily unusual, there are reasons for believing that it is paradoxical in terms of Darwinian signalling mechanics. What makes a signal valuable is its reliability as an indicator of an external event – the individual receiving the signal can rely on the signal as a proxy for the external event. For humans, language signals are not proxies, they stand by themselves; and they can reflect events that are past, in the future, or even unlikely to happen. What aspect of human development made this possible?

This paper will explore the human ability to make models of ourselves and others, and the ability to project those models into the worlds of past, future and what-if. It will review the likely species-specific features that allow us to enter this world of speculation. In particular, the reverse dominance social structure and the capacity for altruistic punishment will be considered as factors in our modelling capacity. The question of what came first, self- or other-modelling, will also be addressed.

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Play is Endemic

Humans play. This is not so unusual, most mammals play during their childhood. Play seems to be a significant factor in socialisation, allowing pre-adults to try out the strategies they will need as adults without the severe costs of getting things wrong. Play biting, fighting, even grooming, allow for social behaviours to be practiced without pain. Gregory Bateson (1972)

showed that the reduced criticality of play (e.g. a nip stands for a bite) puts players of all species into a proto-symbolic universe where a reduced-cost signal can stand for something that, outside of play, would be more serious.

Human children are the same as other mammals, they practice archetypical adult roles with games like “playing house”, chase games, ball games, building games, and so on. These games allow children to perfect the delicate balance they must keep as fully socialised adults between co-operation and competition. They allow the child to practice and learn adult roles without the pressure of reality – in play, mistakes don’t really matter.

However, the word “practice” in the description of play above indicates there is something very different between the learning play used by the pre-adults of many species, and the irreal play indulged in by human adults. Learning play is useful while there is no danger that the lessons learned can be immediately applied: pre-adults are smaller, weaker, sexually immature and often dependent on adults. They pose little immediate threat to adults or to each other; their actions do not “mean” in the same way as adult actions, if only because they are not adults. Once sexual maturity begins, however, all bets are off and playtime is cancelled. Nonhuman adults do not play with sex, dominance or food – they are all deadly serious things that dictate the future of the individual, both personal and genetic. The needs of the adult form reveal the play of the pre-adult form as practice for personal and genetic survival.

The arrival of humans, however, changed these rules. Adult humans play, and when humans play it is not all about practice for real life.

Adult Human Play

What does it mean when adult humans play? First, we must not ignore the very real effects that play can have as a fitness signal. Do you want to signal your strength? Play strength games, like rugby. Dexterity? Do Rubik’s Cube. Intelligence? Try crosswords, scrabble, chess, or Countdown. Co-operation? Indulge in team-building exercises. Human adults do seem to use play as a costly signal of fitness; although, in the inconstant world of human culture, the original force of these signals has often been mitigated – if you’re good at rugby you’re seen as strong but intellectually deficient, if you’re good at chess you’re clever but a nerd. There seems to be a thread in human cognition that discounts the impressiveness of these costly but irreal signals of fitness.

All of these fitness signalling games share one thing in common: their purpose, in the end, is to identify people who are good at them – to identify individuals who, if the game is a measure of genetic fitness, are fit. While all of these games are on some level co-operative, they are also identifiably competitive. They therefore fit into the standard Darwinian model elaborated by Amotz and Avishag Zahavi (1997), in which arbitrary self-imposed handicaps act as signals of fitness: The peacock's tail is a signal of fitness because the male can carry it around, display it and still survive predation long enough to breed; and humans can enter these apparently pointless competitions and still have enough time left to support a mate, some offspring and themselves.

This, however, seems a very weak explanation of what adult humans do when we play. We don't just do these things to display our fitness; we play games within a mythic universe, in which the games are part of the myth. We play for the joy of playing, and without any conscious ulterior motive. Even more remarkably, as receivers of these play signals, we accept them as significant even though they are, effectively, low cost and unrelated to reality. For instance, our team doesn't need to win for us to continue to support them, they only need to give us a sense of belonging; and, as players, we don't need to win to enjoy the game – as Mae West said, in relation to an activity not usually seen as playful: "the score never interested me, only the game."

As adult humans, we are not playing games just to practice – except, maybe, to practice playing the game itself. We are not playing games merely as a costly signal of our fitness, either at the individual or the group level. We are not even playing games just to gain reproductive dominance. All of these occasionally have a role in game-playing, but to describe adult human play as a product of only these evolutionary imperatives is to miss something vital about game-playing. So, if there is no straightforward Darwinian advantage to be gained from playing games, why do we do it?

One explanation is that playing games gives us the opportunity to demonstrate our co-operative nature. By working together as a group we get a chance to practice our "people skills", other get to see how good we are as team workers, and we can together practice for real events by rehearsing them. A play hunt teaches the skills needed for a real hunt and allows specialist roles to be established without the peril of reality. In play, mistakes are usually non-fatal. There are problems with this model, however. Play as co-operation may be a workable hypothesis in team games, but how can we

demonstrate our co-operativeness in one-on-one games like tennis? True, as players we do follow the arbitrary rules of the game, which by itself indicates a willingness to co-operate in a shared fantasy, but that can be viewed as a necessary handicap to get a willing opponent. It is not really a co-operative signal, more a signal that the player's fitness is not compromised by following the arbitrary rules of the game.

There have been many attempts to categorise play, but the differences between child and adult play, and between human and nonhuman play, have made it difficult to see all the different types as a single system. Roger Caillois (1958) subdivided play into four types:

- **Agon**, competitive games like chess;
- **Alea**, random games like the lottery;
- **Mimesis**, role playing games, like trick or treat;
- **Ilinx**, vertigo games which play with our senses.

But this still does not provide a full explanation of the phenomenon – where does Rubik's Cube fit into this? This activity is not usually competitive in a Darwinian way (although it can be); it is definitely not random (although it often feels that way); they is no role playing (in fact, there is no selfhood in it at all); and it doesn't cause vertigo (unless you do it incredibly fast).

Playing for Fun

There is, however, one aspect that all games have for the people playing them: they give pleasure. If the game ceases to meet our expectations of personal satisfaction then we usually take our ball and go home. Sometimes we continue to play out of loyalty to others – our team mates or our fans – but this loyalty is very limited and does not sustain unsatisfying play for long. Human adults play games for one very simple reason: we like playing them. Whether we win or lose, the game's the thing.

This poses a Darwinian dilemma: animals only like doing things that activate the reward circuits of the brain, and those circuits have developed primarily to encourage the phenotype to do things that favour the genotype. Eating and sex are the two great pleasure drives in most animals, and rearing offspring does seem to create some kind of pleasure in females of some species, although it seems to be much less intense than the joys of sex and food. Occasionally the pleasure circuits can be fooled (drug-taking is a hijacking of the pleasure response by drug suppliers to co-opt the drug takers' muscle power to serve the supplier), and sometimes they can be hijacked by other organisms (some parasites can produce anti-survival behaviours in their hosts

to ensure that the parasite can move on to the next stage of its life cycle); but the initial and main reason why the pleasure circuits developed was to encourage behaviours which favour the individual and assist them in getting their genes into the future. So, if human adult play is a product of ancient pleasure circuits, is it something that enhances individual fitness, or is it a mistake produced by a genetic miscue or a coercion?

Let us, for now, dismiss play as a mistake: mistakes are seldom adaptive and seldom produce positive fitness effects. This leaves the two questions: how does play in adulthood enhance individual fitness, and why are others willing to collude in play when it enhances another's, and not necessarily their, fitness? To answer these questions we need to delve into how we became aware of ourselves, and how this strange capacity became a part of being human.

Homo heidelbergensis

Let us start with an early human, *Homo heidelbergensis*. These humans lived from about four hundred thousand to about one hundred thousand years ago. Sometimes called *Archaic Homo sapiens*, they co-existed with *Homo erectus*, *Homo neanderthalis* and *Homo sapiens* at various times and places. Fossil evidence for these early humans is not as great as we would like, but we can say certain things about them. They used fire, they made composite tools, and they hunted large game using throwing and thrusting spears. They lived in social groups, which seem to have included several males and females, much as modern hunter-gatherers do; and they probably bivouacked in the same place for several days, exploiting local resources extensively before moving on. This is a hunting strategy similar to that used by *Eciton burchelli*, the army ant.

So it is reasonable to see *H. heidelbergensis* as a social species, co-operating in hunting, defending their group, and operating a policy that David Erdal and Andrew Whiten call Vigilant Sharing – each individual making sure that they get a fair share of resources, and punishing those that try to seize more than their share. It is also likely that the males were providing the females with meat as a costly signal of fitness, and that the meat was then being cooked to make it safer and easier to digest. It is also possible that, as Marek Kohn suggests, part of the male costly signal involved banging rocks together to make handaxes, providing the females with a wealth of cutting edges for preparing the meat. *H. heidelbergensis* was very likely the most co-operative primate to exist before us.

But was this co-operation enough to give *H. heidelbergensis* language and adult play? The answer is likely to be no. The co-operative social structure described here would definitely need a low-cost signalling structure to support it, but it does not have to be more than a simple set of imperatives – telling others what to do now. There is no need for temporality, person-roles are fixed, and complexity is limited to simple action-object constructs. There is also no need for descriptive deixis, because there is no pointing to events out of sight. This is a heavily impoverished subset of language as we use it today.

H. heidelbergensis is also likely to have had limited adult play – or, at least, continued practice. The skills the species was using – handaxe manufacture, spear throwing, co-ordinated hunting, fire-making, cooking – are unlikely to have been genetically encoded; they certainly aren't innate in modern humans. Childhood practice would not have been sufficient to hone these skills, and continued interactions with others would have been necessary to maximise the advantages these skills give.

It is also likely that there was a slapstick sort of humour, best summarised by the word schadenfreude. A Swedish proverb[1] translates as "schadenfreude is the only true joy"; this is an extreme interpretation, but it is likely that schadenfreude was the first true joy. Schadenfreude is implicated in altruistic punishment – the willingness to punish others for their negative actions – and is represented here by the English phrase "serves you right". This implies pleasure at the fact that an antisocial individual has been punished, even if it does not indicate participation of the utterer in that punishment. Schadenfreude is the pleasure-circuit that reveals altruistic punishment to be a non-recent innate feature of humans.

H. heidelbergensis is unlikely to have played organised games, however. Alpha behaviours are likely to have been suppressed by vigilant sharing, and a tendency for females to reward non-alpha behaviour with access to sex would have created an evolutionary pressure towards co-operative genes – much as we see in bonobos (*Pan paniscus*) today. However, the willingness to enter into a shared fantasy world, where winning and losing – and even playing – do not really matter, is unlikely to have been present. There is little sign of

[1] *skadeglädje är den enda sanna glädjen* "schadenfreude is the only true joy". From Wikipedia, ***Schadenfreude***.

symbolic usage (body decoration and art) in the *H. heidelbergensis* fossil record.

Homo sapiens

What extras did *Homo sapiens* get when we speciated from *H. heidelbergensis*? Clearly, in terms of what has happened to the two species, the *H. sapiens* extras must have had a substantial effect; but, in terms of Darwinian evolution, the genetic changes that permitted the extras to emerge cannot have been extensive. We are looking for something that is itself small, but which opens up a Pandora's box of opportunities.

We therefore need to examine areas of lifestyle that may have been particularly stressful for *H. heidelbergensis*, in order to identify ways in which these stresses could have been mitigated. In terms of reproduction and survival, one clear stress candidate – for females, at least – is the need to support increasingly large-brained and helpless infants. Vigilant sharing, and the male willingness to provide meat for females, enabled *H. heidelbergensis* to push its average brain size from about 1,000cc to 1,200cc, but it took something else to get average brain sizes to the 1,400cc of modern humans.

The genetic event that speciated *H. sapiens* from *H. heidelbergensis* is unlikely to be identified from the fossil record; so, to understand how it may have happened, a plausible story must be generated – there has to be a little mythmaking. This story should, however, match with what we do know and help to explain some of the outcomes we see today. The intention is to provide an answer that fits the facts and is internally consistent. The story presented here is only one story of how we became human, and may not even be a true story; but it is, hopefully, a good story.

Becoming Human – Once upon a Time

Let's say, for argument's sake, that one human female was born with the genetic urge to organise other females, creating a solidarity that could control the males. What advantages does that female get, and what advantages does she give to her group? At the personal level, the female would have an advantage over the other females in that she is co-opting their muscle power to her purposes. The act of organisation is not itself dominant behaviour but creates a dominant role for the perpetrator. This is charismatic dominance rather than brute dominance. The advantage for the other females is that, by forming a solidarity, they are getting some of the advantages of alphahood without actually being alphas. All the females have parallel rather than

directly competing needs – to raise children – so the solidarity, alongside vigilant sharing, creates a proto-eusocial organisation in which each individual female best enhances her own fitness by working with the solidarity rather than against it.

Unfortunately for this charismatic female she is likely to have been busy with her own reproductive burden, and unable to fully exercise her organisational talent. In this case, the genetic trait remains a natural variant oddity with little fitness advantage. If, however, menopause and longevity are added to the mix then the female will eventually have had time to devote to organising her daughters and their offspring. A post-menopausal charismatic female becomes a powerful figure in her own right, giving fitness advantage to her offspring and therefore enhancing her own reproductive fitness. It is likely, therefore, that menopause and longevity both preceded the *H. sapiens* speciation event.

What about the males? They would seem to be at the bottom of this hierarchy. The females are exploiting male muscle power, but what do the males get that makes this a winning situation for them? Simply, they are getting their genes into the future by helping the females to raise children. In the end, any strategy that enables the next generation to prosper is going to be evolutionarily fit at the species level; and, if cheating can be suppressed, it will also work at the individual level.

So what is suppressing cheating in this model? To understand this we will need to consider how the females are controlling the males with their solidarity, and what they are getting the males to do. Chris Knight (1991) provides a convincing answer to these questions, offering a model he calls "sex strike", in which females control the hunting of males to make it cyclical and co-ordinated. The females no longer have to wait for the males to decide to hunt and then give away the meat. The females dictate when the hunt occurs and, by ritualised power, control the meat from the moment of kill onward.

Knight proposes a sex strike at dark moon, in which the female solidarity uses a ritual signal of group menstruation to turn off the supply of sex to the men. This is not just a "no" signal, it is a promise that sex will switch on again when the males bring meat. For human hunters, the best time to hunt large game is at full moon, when nights are bright and there is almost continuous light both day and night for 48 hours – long enough to hunt prey to exhaustion.

However, once the prey is killed then its blood, like the menstrual blood of the female dark moon ritual, is sacred – because blood is the property of the females. Only by bringing the meat back to the females, who will render the blood safe by cooking, can the food be eaten.

What sort of social order does this model produce? The group has to be highly socialised with altruistic punishment mechanisms in place for the sex strike model to work. The sex strike action itself requires ritual signalling from the female solidarity to the men to mark the dark moon strike; and it requires a fantasy world to be shared by both the males and the females. In this fantasy world, sex is the gift of women, blood is sacred, and things can mean more than they are. The model also requires a high level of communicative co-operation with sufficient complexity to ensure that ritual, meaning and altruistic punishment can be co-ordinated by the group members – In short, it needs language.

Language

The form of language needed by the sex strike model is one in which interpersonal relationships can be shared: it has to signal the relationship between at least two individuals in an effective way. To put this in linguistic terms, the signalling system must permit the association of noun-type concepts through a verb type concept; it must have an “A-relationship-B” structure, or a two-argument form. This is a simple grammatical system requiring a segmented signal with replaceable components and differentiated word-types. Signalling has become a problem-solving game in which it becomes worthwhile for the receiver to work out the coding rules the sender is using, and worthwhile for the sender to make their meaning and coding rules as transparent as possible.

The syntactic units in this form of language need not be extensive: agreed identifiers for every individual in the group and for a limited range of relationships is likely to require a vocabulary of less than 300 words. The extensibility of this language is, however, infinite: objects other than group members can be given agreed names, and new relationships between animate and inanimate objects explored. By separately modelling each individual, and then creating an integrated model of their relationship, the basic noun-verb distinction and the two-argument grammatical form open the way for more complex semantics and grammar.

This form of language is significant because it allows humans to share models of social relationships – A's relationship with B – so that it becomes possible to exchange interpersonal information about others. In other words, it enables gossip. Messages such as "Alf likes Beth" and "Beth is ignoring Colin" become currency in this exchange, allowing personal knowledge of relationships to become shared knowledge, even community knowledge.

What happens, though, when someone offers me the model "Dave likes Ed", and I am Ed? I have been given information which is clearly important to me; but, in order to parse this construct properly, I need to be aware that the sender is making models of me in the same way that I am making models of others. The pre-existing capacity to model third parties becomes available reflexively, allowing me to model myself as if I were a third party. I have to become aware of myself in a new way – to see myself as others see me. A new kind of self-awareness is an emergent feature of this form of language. It allows me, in the best possible way, to "play with myself".

There is also interpersonal adult play in this model; not just as an adjunct to human culture, but as human culture itself. The sex strike ritual is a mutually-agreed transition into an alternative world, where unreasonable things become reasonable. The mundane reality of blood becomes the esoteric symbol of female power, and the mundane imperatives of Darwinian male-female sexuality become the counter-intuitive precepts of sex strike. The social structure of being human has itself become a game.

Homo ludens

In the process of becoming *Homo sapiens*, a genetic event, we also became Johan Huizinga's *Homo ludens*, a transition that took us into human culture. Human culture gave us the capacity to make myths – not just about the world, but about others, and about ourselves. When human females first made the blood signal of "no" they were entering a second life; and we have been living multiple lives ever since.

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"We don't stop playing because we grow old;
we grow old because we stop playing."
George Bernard Shaw