WHAT sort of creature is the human? The obvious answer is a smart, talkative, upright ape with a penchant for material possessions. But what about the more subtle concept of human nature? That is more controversial. Some deny it exists, preferring to believe that we can be anything we want to be. They cannot be right. Although we exhibit lots of individual and cultural variations, humans are animals, and like all animals we have idiosyncrasies, quirks and characteristics that distinguish us as a species. An invading alien would have no trouble categorising us but, being so close to our subject matter, we struggle to pin down the essence of humanness. Nevertheless, the task may not be beyond us. Anthropologists have identified many "human universals" – characteristics shared by all people everywhere, which constitute a sort of parts list of our species. What if we were to use these to examine the human animal in the same way we would study any other? As the following pages reveal, what emerges is a suite of characteristics that encapsulate our nature – and a rather peculiar one it proves to be. If you thought you knew what humans were like, then think again.

The nature of the beast

Being one yourself, you might think you know what people are like. Think again, say **Kate Douglas** and **Bob Holmes**

RICHARD WILKINSON

Playful

(adj) Full of high spirits and fun

Humans are not nature's only funsters. All mammals play, as do some birds and a few other animals. But no other species pursues such a wide variety of entertainment or spends so much time enjoying themselves. The list of universals includes such diverse extracurricular pleasures as sports, music, games, joking, hospitality, hairdressing, dancing, art and tickling. What sets us apart is the fact that we play with objects and with language, says Clive Wynne at the University of Florida, Gainesville. We can also go beyond the literal. "What revolutionises human play is imagination," says Francis Steen at the University of California, Los Angeles.

"We're a playful species," says primatologist Frans de Waal at Emory University in Atlanta, Georgia, and we retain our juvenile sense of fun right into adulthood. The only other primate to do that is the bonobo, perhaps as a result of its relaxed social environment. Human society is also relatively relaxed, de Waal notes, because we have moral codes and laws that promote stability. Crucially for the entertainment industry, we will also happily congregate with unrelated individuals, a situation that would leave both chimps and bonobos tearing strips off each other. Then there's the simple matter of leisure time. In the wild, adult chimps spend around 8 hours a day foraging. Given more free time, they might play more. De Waal points out ›

"Play is a sort of simulator that allows us to imagine and try out different scenarios with little risk"

that captive apes enjoy computer games and watching TV, favouring scenes of sex and violence, but also appreciating slapstick humour.

But is it just opportunity that allows us to indulge our playful side, or do we actually need more entertainment than other animals? Play isn't simply for fun, notes Marc Bekoff at the University of Colorado, Boulder. He identifies four primary purposes – physical development, cognitive development ("eye/paw coordination" as he calls it), social development and training for the unexpected. Playing is an evolutionary adaptation for learning, agrees Steen. Mammals are born inept but can adapt – playing helps us do that. Noting that human social and physical environments are particularly complex, he sees playing as a sort of simulator that allows us to imagine and try out different scenarios with little risk. "In play we are most fully human," he says.

Bekoff believes social development is the most important purpose of play for humans, not least because it underpins morality. "Young children will not become properly socialised without it," he says. For Robin Dunbar at the University of Oxford, playfulness is a mainstay of social cohesion. "Play often involves laughter, which is a very good bonding mechanism," he says. And physical play – especially coordinated team sports – produces feel-good endorphins (*Biology Letters*, DOI: 10.1098/rsbl.2009.0670). In addition, sports provide a release for competitive urges, says de Waal. "If people watch others playing, that actually improves their own skills," adds Steen. Even entertainment for sheer pleasure has benefits. "It's fun, so it's really good for mental health," says Bekoff.

RENAUD VISAGE/SUPERSTOCK

Scientific

(adj) Inclined to the methodical study of the material world

"What sets us apart from other animals? One likely candidate is our drive to ask why"

From earliest infancy, humans are constantly sorting the world into categories, predicting how things work, and testing those predictions. Such thinking, which is the essence of science, is evident in a range of human universals from time, calendars and cosmology to family names and measuring. "Science is basically working at understanding the world around us," says Edward Wasserman at the University of Iowa in Iowa City. And it is not confined to humans – all animals need scientific thinking to survive. "It's in our job description," he says. Pigeons, for example, can learn to discriminate between cars and chairs (*Journal of Experimental Psychology: Animal Behavior Processes*, vol 14, p 235). Dogs can associate the sound of a bell with food, and when chimps try to extract a nut from a tube, they are performing a simple experiment.

Clearly, no other animal does science to the extent that we do, though. So what sets us apart? One likely candidate is our drive to ask why. Daniel Povinelli at the University of Louisiana in Lafayette taught both children and chimps to stand an L-shaped block on its end, then secretly substituted an apparently identical block that would not stand up. The chimps just kept trying, he says. "But the kids would stop and turn the block upside down and feel the bottom of it. They'd shake the block, try to figure out what was inside it. They would do all kinds of things in an attempt to diagnose why it wouldn't stand up" (*Folk Physics for Apes*, Oxford University Press, 2003).

Another possibly unique feature of humans is our ability to grasp abstract concepts. Chimps struggle with this. For example, while they quickly learn that heavy rocks are better for smashing nuts, when it comes to a general understanding of weight, they falter. "If they hear two objects drop and one goes 'bam!' and the other goes 'click' they can't infer that one

Humans cannot resist the urge to classify and make connections

Legislative

(adj) Having the power to make laws

The question of whether every human society has formal laws is far from settled, but they do all have rules. This is a peculiarly human trait. Our closest relatives, the chimps, may stick to simple behavioural rules governing things like territories and dominance hierarchies, but we humans, with our language skills and greater brainpower, have developed much more elaborate systems of rules, taboos and etiquette to codify behaviour. Though every society has different rules, they always involve regulating activity in three key areas – a sure sign that these are fundamental to human nature.

For a start, we are all obsessed with kinship, which brings rights, in particular to inheritance of goods and status. "There are always rules about who counts as kin, and what obligations you have to kinfolk," says Robin Fox at Rutgers University in New Brunswick, New Jersey. The rules may favour maternal or paternal links, or treat both equally. Every society recognises the uniquely human concept of kinship by marriage, as well as believing that kinship entails duties to family members – for which there are rules. And all have incest taboos, usually prohibiting sexual intercourse between immediate family (though royalty are sometimes exempted).

After who's who, everyone worries about safety, so every culture also has rules about when one person can kill another. "I don't know of any society that doesn't condemn murder," says Sally Engle Merry at New York University. "However, what constitutes an illegitimate killing is complicated." In some societies, any stranger is fair game. Others allow killing to avenge the murder of kin, and many allow the group to kill someone who violates its norms. But every group draws the line somewhere.

Every society also has rules governing the use of objects. The notion of private property is by no means universal but people everywhere do have rules that stipulate who is entitled to use certain things at particular times. These vary widely from a simple first come, first served, to the elaborate system of private ownership in industrialised societies.

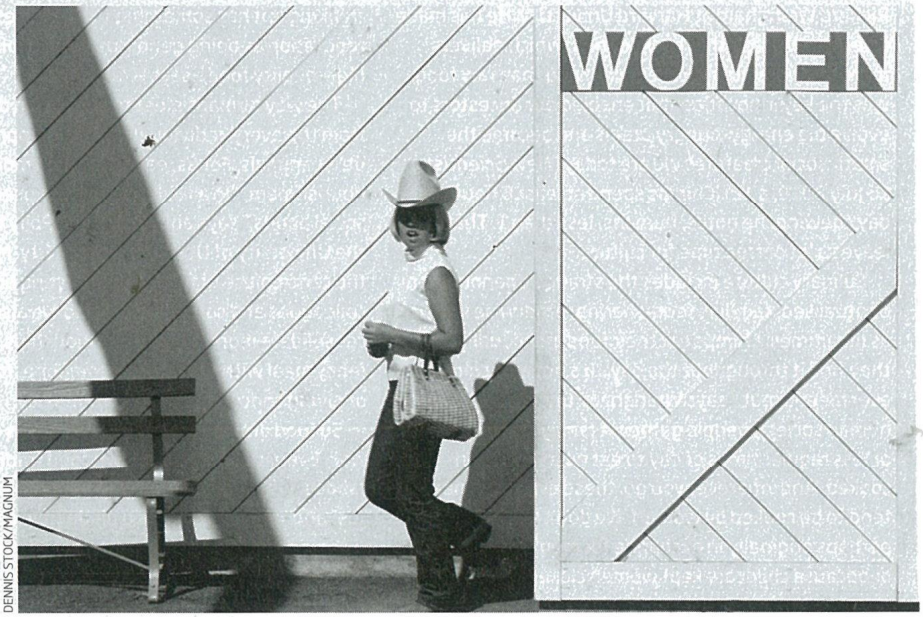
Kinship, safety, stuff. Across the whole range of human cultures this is what our rules say we care about. But perhaps there is a deeper part of human nature that underlies all these concerns: a desire for rules themselves. Rules help us navigate the hazardous waters of interpersonal relationships and provide a framework for knowing how to act, says Justin Richland at the University of Chicago, Illinois. That makes them an essential part of us.

"It's the most basic feature of human nature," agrees Fox. "We're the rule-making animal." ›

Our tendency to play by the rules is a building block of morality

of those objects will be good for cracking a nut and the other won't," says Povinelli, whereas we can. Crucially, this understanding allows us to use what we have learned in one domain to make causal predictions in another – so, for example, we can predict that something that goes "bam!" will sink, whereas something that goes "click" may well float. Our nimbleness at abstract causal reasoning is tied up with our facility with language and probably underlies many of our other social skills, such as rituals and rules of behaviour, too. Povinelli believes this is what really sets humans apart from even the brightest apes.

There is one more trait that distinguishes us from less-scientific animals: an eagerness to share what we have discovered. Once we figure something out, we announce it to the world, which is why all scientifically minded humans, not just Newton, can stand on the shoulders of giants.



DENNIS STOCK/MAGNUM

Clandestine

(adj) Secret and concealed, often for illicit reasons

Nothing reveals an animal's nature quite as well as its sexual practices, and humans certainly have some strange ones – even from a biological point of view. Woman are continually receptive and have concealed ovulation – that is, there is no external sign that they are in a position to conceive. We are the only monogamous primate to live in large mixed-sex groups – more about these later. But surely nothing is quite as puzzling as our predilection for clandestine copulation. Why do humans have sex in private?

This coyness is not just the consequence of particular cultural or moral views. "It is the rule across all kinds of human societies," says cultural anthropologist Frank Marlowe of the University of Cambridge. There is the odd case of public ritual sex, such as orgies among the Canela of Brazil. But where there is no alcohol – as would have been the case in the past before agriculture – sexual privacy is the norm. What is going on?

"In the context of other primates it's very interesting," says Clive Wynne of the University of Florida, Gainesville. Sneaky mating occurs in species where there is a lot of inter-male competition and males control sex by controlling females, he says. Among orang-utans, alpha males copulate openly but subordinates are so discreet that nobody realised they mated at all until the advent of genetic paternity testing. The situation is similar for gorillas. In bonobos, by contrast, females control the show and sex is a free-for-all. "I've never seen anything that resembles privacy in bonobos," says Frans de Waal of Emory University in Atlanta, Georgia. "I think the origin of privacy [in humans] has to do with competition."

Nevertheless, human sexual politics has become a lot more complicated since then. For a start, women won some control from men by evolving concealed ovulation and continual sexual receptivity to confuse paternity (*Ethology and Sociobiology*, vol 14, p 381). Then our ancestors did something completely different from other great apes – males and females started sharing parental care. Monogamy was born. Now, infidelity among pairs living in large groups became more risky than ever, with infanticide by males the ultimate price, says Robin Dunbar of the University of Oxford. So there was a need to strengthen the pair bond. "We have this odd thing called love," he notes, adding that privacy may also have emerged as a way to increase intimacy.

> "Infidelity is widespread and private sex allows it to occur without loss of reputation"

Dunbar sees clandestine copulation as a trade-off, because as well as strengthening relationships it makes infidelity easier. David Buss of the University of Texas at Austin thinks that could actually be a benefit.

Epicurean

(adj) Loving food and finer things

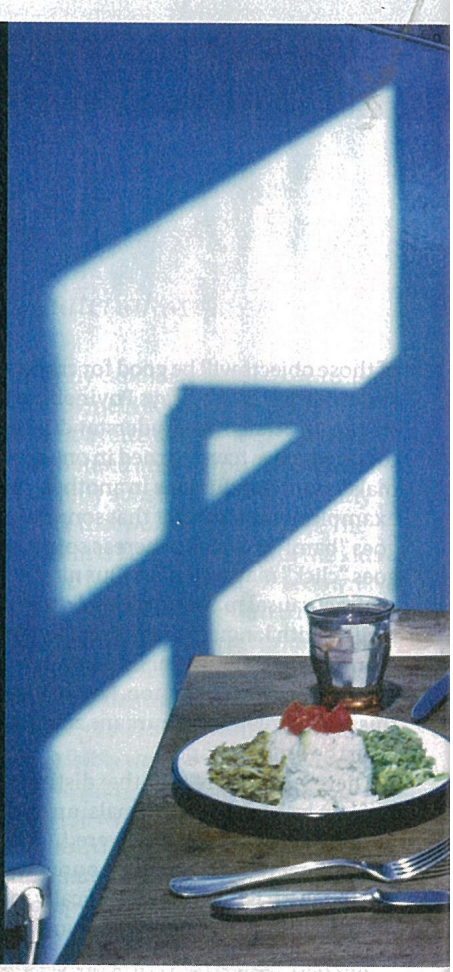
Compared with other animals, the feeding behaviour of humans is exceedingly odd. Where they just eat, we make a meal of it. The main difference is down to one of humanity's greatest inventions: cooking. People in every culture cook at least some of their food, says Richard Wrangham at Harvard University. He has made a persuasive case that cooked food, which delivers more calories with much less chewing than raw food, was the key innovation that enabled our ancestors to evolve big energy-hungry brains and become the smart, social creatures we are today (*New Scientist*, 16 July 2010, p 12). Chimps spend at least 6 hours a day chewing, he notes, humans, less than 1. That leaves a lot of free time for culture.

Culinary culture includes the strange phenomenon of ritualised, familial, food-sharing, otherwise known as mealtimes. Chimps eat their food individually, as they find it throughout the day. "It's not as if chimps ever meet to eat," says Wrangham. But we do. In every human society, people gather in family groups at more or less regular times of day to eat what has been cooked. And wherever you go, these everyday meals tend to be cooked by women. We don't know why – perhaps originally in exchange for men's protection, or because childcare kept women closer to home.

Then there's feasting. From sharing the spoils of a good hunt, to celebrating a special occasion, every society does it. And here you are more likely to find men cooking. We even see this in our own backyards, where they do most of the barbecuing. "My own thinking is it has something to do with establishing a reputation as being generous, in control of the high-quality food," says Wrangham.

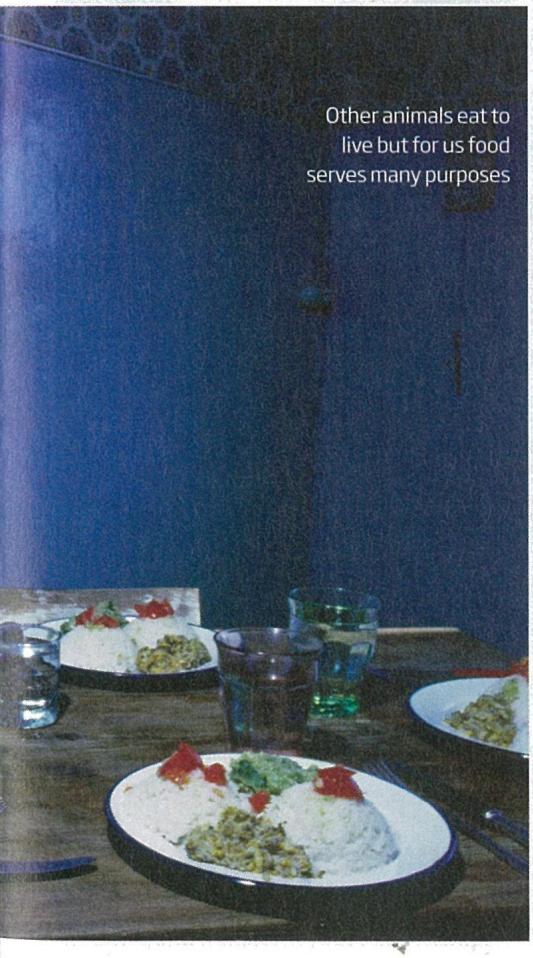
The way humans meet to eat is a big departure from the every-individual-for-itself approach taken by other animals. For us, eating is much more than mere nourishment. "In all cultures, food is used to form social bonds," says anthropologist Polly Wiessner at the University of Utah in Salt Lake City. Mealtimes are the centrepiece of family life, feasting bonds friends, colleagues and communities, and we also use food to consolidate more intimate relationships, sharing a fancy meal with that special someone, for example, or giving chocolates on Valentine's day.

So food draws us together, but it sets us apart as well. Every culture has its own food traditions and taboos, which help define the boundaries between "us" and "them". They have distinctive cuisines too. "Ethnic differences are marked by what kind of food you eat," says Weissner. "You are what you eat."



"Humans are socially monogamous, not sexually monogamous," he says. Infidelity is widespread in all traditional cultures and private sex allows it to occur without loss of reputation. Another very human trait, envy, may also play a part. In his landmark book, *The Evolution of Human Sexuality* (Oxford University Press, 1981), anthropologist Donald Symons suggests that since men can never get enough of it, sex is a precious commodity and therefore best enjoyed covertly to avoid inciting covetousness.

"This is for the same reason that during a famine anyone with food is likely to consume it in private," says Steven Pinker of Harvard University. "A sexual act, even among consenting adults, has a high probability of upsetting someone," he adds. Parents or community members may disapprove and for children it can lead to the creation of rival siblings. So perhaps clandestine copulation simply follows the precautionary principle. "You can't be too careful," Pinker says.



Other animals eat to live but for us food serves many purposes

JAN MICHALKO/PICTURETANK

Gossip cements relationships and keeps people in line

STEVEN SIEWERT/OCULI/AGENCE VU

Gossipy

(adj) Tending to talk about others

Language was once thought to be the defining characteristic of humans. These days we are more likely to consider it as part of a continuum of animal communication. Nevertheless, nobody doubts that it has shaped our nature profoundly. Language is central to human universals ranging from education, folklore and prophesy to medicine, trade and insults. Arguably, our way with words reaches its apogee in gossip.

A compulsion to talk about other people is only human. And it is not nearly as frivolous as you might think. Some anthropologists believe we gossip to manipulate the behaviour of others, which may help explain why gossip often takes place within earshot of the person being gossiped about. Among the Kung Bushmen of Africa, for example, that is the case 70 per cent of the time, says Polly Wiessner of the University of Utah. "And I think it often happens in schools here," she adds. "A group of girls will gossip within earshot of the girl they gossip about, intending for it to be heard."

But gossip doesn't just serve to name and shame. When Dunbar eavesdropped on people gossiping, he found that barbed comments were relatively rare compared with innocuous ones. He believes that gossip is the human equivalent of primate grooming – our social relationships are too numerous to cement each one with time-consuming grooming, so we chat instead. "Gossip evolved for oiling the wheels of social interaction," he says. Even the most powerful movers and shakers depend on it, though they may call it by some other name. After all, says Dunbar, most business could easily be transacted by phone or email, but people still meet face-to-face so that they can bond over casual conversation at lunch or on the golf course.

Wiessner observes that a juicy titbit of gossip is a gift – and, incidentally, gift-giving is another human universal. "In the Kalahari, where I work, it is so boring. [That's why] people talk about other people most of the time." Wiessner goes so far as to assert that a society without gossip would simply dissolve. "People wouldn't have any common interest to stay together." ■

Bob Holmes is a *New Scientist* consultant and **Kate Douglas** is a feature editor