WHY PANDAS DO HANDSTANDS...

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TRANSWORLD
BOOKS

About the Book

South American rats settle arguments by boxing. Tuna fish sunbathe and herring communicate with each other by breaking wind. Llamas hum to each other, elephants impersonate traffic sounds and whales sing ballads.

Strange new, scientifically proven facts about the animal kingdom emerge seemingly every day. Here, gathered together in one book, are hundreds of the funniest, most fascinating and plain bizarre things we have discovered about the non-human world.

All animal life is here: from the only dog that can develop gout to the wren whose song sounds just like Beethoven. It is a book full of surprises. Who would have thought giraffes can’t trot, reindeer ‘fly’ after taking magic mushrooms or that elk turn nasty when drunk? Who would have known that shark embryos attack, that caterpillars tap dance or that – out of our earshot – male mice are serenading their girlfriends with high-pitched love songs?

And who on earth would have guessed that male pandas court potential partners by performing handstands?

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WHY PANDAS DO HANDSTANDS

And Other Curious Truths About Animals

Augustus Brown

To Gabriella, Thomas and Cilene

Preface

Generations ago, even the cleverest people used to dismiss animals as dull, uninteresting creatures – at least, compared to us humans.

Mark Twain, for instance, argued that ‘man is the only animal that blushes, or needs to’, while D. H. Lawrence called man ‘the only animal in the world to fear’. G. K. Chesterton, a glass doubtless in his hand, wrote that ‘no animal ever invented anything so bad as drunkenness – or as good as drink’.

He would have needed a stiff whisky if he had known how wrong they all had been.

Mr Chesterton had clearly not encountered a Scandinavian elk blind drunk on fermented apples, or witnessed the carnage caused when a flock of berry-addled birds fly into the side of a glass tower. Nor, obviously, had Mr Twain witnessed a sexually aroused male ostrich, its long neck burning a vivid scarlet. If he had, he would have turned bright red himself.

And Mr Lawrence had obviously never been stung by the awesome Australian box jellyfish. If he had, he would have spent a week suffering from the hideous Irukandji syndrome, a combination of nausea, high blood pressure and manic depression that can reduce a man to … well, a quivering jelly. If he had, he would have feared animals for ever more.

In their defence, all three were living in another age, a time before electron microscopes and wildlife filmmakers,

the National Geographic channel and computers capable of decoding a dog's DNA.

Today, no one can look at the animal world without feeling amazed on a regular basis.

Every day, or so it seems, a scientific journal or research paper, a wildlife documentary-maker or zoologist is delivering some new discovery or insight. The variety, unpredictability and pure strangeness of the facts they come up with are endless – and endlessly fascinating. Cows produce more milk to the sound of Beethoven, male mice serenade their sweethearts, penguins can fire their faeces like cannon, lobsters behave like mobsters, elephants can imitate the sound of passing trucks. Animal life, clearly, is anything but dull.

This book is an assembly of some of the curious, the bizarre and the sometimes barely credible things we now know about animals.

As will be obvious from the beginning, this is a collection intended to inform and educate, but above all to entertain. So, while I have been scrupulous in providing source references and have endeavoured to maintain scientific accuracy at every turn, I have not let pedantry get in the way of the sense of fun and wonder that, I hope, lies at the book's heart.

To have done so would have been to risk making animals uninteresting to another generation. And that simply wouldn't do.

Augustus Brown,
London, Easter 2006

PART ONE

Talk to the Animals

The Curious Art of Animal Communication

‘The best thing about animals is that they don’t talk much.’

THORNTON WILDER, *The Skin of Our Teeth*.

IN TRUTH IT’S a wonder we can hear ourselves think. Animals everywhere are deep in conversation, chattering away about food, sex and childcare, transmitting top-secret messages about homeland security or just gossiping idly about passing strangers, and all in a range of ingenious, often bizarre, languages. Creatures hum and drum, sing and dance their news. They use semaphore signals and colour codes, release chemical smells and secretions. Almost anything, it seems, constitutes talk to the animals – even breaking wind.

Body Talk

How Animals Use Their Anatomys to Communicate

HERRING COMMUNICATE BY breaking wind. They produce high-frequency bursts of sound by releasing air from their anuses. This also produces a stream of fine bubbles that is visible to other herring.

Herring do this primarily during darkness and when there are high numbers of fish around. Scientists think the herring can hear the sounds and are communicating with each other about their location. Researchers have named the herring language, Fast Repetitive Tick, or FRT for short.

SNAKES EMIT a flatulent pop to scare off their enemies. A scientist studying two breeds of snake from the southwestern United States, the Sonoran coral snake and the western hook-nosed snake, heard them emitting a rumble from their cloaca, the opening at the rear used for sex and excretion. He concluded the noise was being generated by air bubbles and was a result of flatulence.

CRAYFISH HAVE a quick and effective way of warning each other of danger. At the first sign of a predator, they simply empty their bladder.

LOBSTERS HAVE taken this language a step further: they communicate by urinating in each other's face. The urine is fired from tiny jets near the lobster's eyes and is laced with chemicals that transmit messages, mainly about flirting or fighting.

CHIPMUNKS ALSO relay important information to each other by urinating. Their signalling system is sophisticated enough for them to be able to mark not only spots where there is food, but also places where all the supplies have been eaten.

VOLES ARE another species that communicate with each other by marking their environment with urine. Unfortunately, this isn't the safest form of communication, given that their most prolific predators are birds of prey like kestrels. The vole's urine is visible in ultraviolet light, and a kestrel has the ability to see using UV vision. Unsurprisingly, voles suffer massive falls in population when kestrels pay attention to their movements.

SCIENTISTS BELIEVE elephants communicate with each other by transmitting vibrations through the earth. By making the ground rumble with a series of stamps and mock

charges, the six-ton creatures can relay messages as far as 32 kilometres (20 miles) away, much further than airborne sound travels. The messages are then picked up by other elephants via their feet, which act as their antennae. Scientists have described seeing elephants running in the opposite direction when other elephants were being slaughtered miles away. They think that the fleeing elephants were alerted to the threat by the foot-stamping of their dying herd members.

African elephants are also capable of learning to imitate sounds. Scientists have recorded them imitating, among other things, the sound of trucks passing on nearby highways. Why they do this is, at the moment, unclear.

KANGAROOS COMMUNICATE using their tail.

If a member of a group of red kangaroos spots a predator it will either stamp its feet or use its large, heavy tail to pound the earth. This is the signal for the rest of the group to scatter and leave the dominant male to defend them from the attacker.

Kangaroos also make a small number of noises. Red kangaroos click, for instance, while grey female kangaroos cluck when calling their young. Coughs can be a signal of submission when two males are fighting.

THE GOLDEN frog, a rare amphibian from Costa Rica and Panama, has its own version of semaphore. It makes slow circular movements with its front and hind limbs that signal to other frogs the direction it is taking. Researchers think the frogs are communicating messages including ‘I’m coming towards you’ and ‘I’m going to take care of you’.

CUTTLEFISH WINK. The fish are able to change the complex patterns on their back and have two black eye spots that they can manipulate as if they are being opened and closed to signal their presence.

VOCAL HEROES

Birds, Whales and Other Singing Stars

WHEN SCIENTISTS SLOWED down recordings of the birdsong of two species of wren they were surprised to discover they were singing classical music. A white-breasted wood wren produced the familiar 'Da-da-da-daaaaah' of Beethoven's Fifth Symphony, while a canyon wren sang a trilling cascade of notes that almost exactly echoed the opening of Chopin's 'Revolutionary' Etude. Whether or not the composers drew inspiration from birds is unclear; but Mozart, at least, was willing to give credit to his pet starling for inspiring him. When the bird sang his new Piano Concerto in G Major back to him, with the sharps changed to flats, Mozart admitted it was an improvement and incorporated the starling's changes. Scientists think birds use the same combinations of notes, rhythms and pitch permutations as we do.

BIRDS PRODUCE many of the sounds made by human orchestral instruments. The song of the Australian diamond firetail finch, for example, sounds like an oboe. The sound of the white-bellied green imperial pigeon or the strawberry finch could easily be mistaken for a flute. The potoo sings like a bassoon, while the western crowned pigeon from New Guinea woos its mates with notes that could be produced by a tuba.

TWO OF the best mimics in the bird kingdom are mynah birds and the Australian lyrebird, each of which can perfectly imitate the songs of other birds. But the title of champion mimic probably belongs to the mockingbird. While observing a male northern mockingbird over a year or so, one bird-watcher heard it mimic the sound of twenty-five other birds, from gulls and sparrowhawks to blackbirds and thrushes. Some claim to have heard it imitating other sounds, from a creaky door to a cat's miaow.

Ornithologists think the mockingbird's gifts are a means of attracting members of the opposite sex. Females are drawn to males with the biggest repertoire because it is a sign of his fitness as a mate. They may also think if he knows so much about other birds he will also know where they keep their food supplies.

THE NIGHTINGALE may have nature's best musical ear. It can repeat complicated pieces of music containing sixty different 'phrases'. The nightingale's singing abilities are also exceptional. Its repertoire includes nine hundred different types of melody.

MALE BIRDS sing in the morning to appear more macho. Birds tend to gorge during the day, then fast at night; so, in theory, they should be at their weakest in the morning. By delivering a lusty dawn chorus, a male sends out the message that he is still full of energy.

SOME SPECIES of birds break into song earlier in the day than others. Blackbirds and song thrushes, for instance, can strike up their dawn chorus more than an hour and a half before birds like chaffinches and blue tits. Scientists have found that the bigger the bird's eyes the sooner it strikes up a song. This is because singing attracts not only mates but predators, like owls, too. With their hearing out of action while they warble, they have to be able to rely on

their eyes to see any attacks coming. Those with smaller eyes need extra sunlight to be sure of their safety.

BIRDS PASS on songs from generation to generation. Tropical wrens do this on a gender basis. Fathers pass on their repertoires of chirps and tweets to their sons, mothers give theirs to their daughters.

FEMALE SONGBIRDS learn faster than males. A study showed that a female cardinal was able to learn a selection of music in one third of the time it took a male to learn the same number of songs.

A RARE South American bird barks like a dog. Ornithologists who discovered the bird, known as the Jocotoco antpitta, in southern Ecuador in 1997 think it makes the bizarre call to warn off intruders entering its territory.

BIRDS BAND together to sing triumphant songs when they win territorial fights.

When the tropical boubou from the Ivory Coast succeeds in driving an invader from its neighbourhood, pairs of the birds perform a distinctive duet to signal their victory. Researchers think the call lets other boubous know the coast is clear and also warns off other potential intruders.

OWLS HOOT less when it rains. Wet weather acts as a dampener on the acoustics within woodland and forests. The owl's call is seventy times more likely to be heard when it is dry.

LOONY TUNES aren't funny. The male loon has a distinctive song, a loud yodel that is a clear threat to other birds. According to one scientist, it is translated as 'Come near me and I'll pull all your feathers out'. Unusually, loons also radically change their tunes when they move to a new home. They do so, apparently, to make sure they sound

different to the birds already resident there. Again, this is a signal that they are not to be messed with; that there is, you might say, a dark side to the loon.

MALE BRONZE-WINGED jacanas live in a harem ruled by the female of the species. The birds yell when they want to compete for her attention.

WHAT YOU eat affects your singing voice – at least, if you are a bird. Just like musical instruments, different-shaped beaks produce different sounds. Heavy beaks, designed to crush tough seeds, make deeper, less complicated sounds than slim beaks, which are ideal for snatching insects. So birds with heavy beaks can't produce the same range or trill as fast as those with smaller beaks.

THE NORTH American black-capped chickadee, named after its famous call, uses a system of warning cries, graded to indicate the level of threat its flock faces. The soft, high-pitched 'seet' sound warns of airborne predators, such as owls and hawks, and tells the other chickadees to take cover and stay in place until an 'all clear' call comes. A full 'chick-a-dee' warns of a resting predator, such as an owl perched on a tree branch. When chickadees hear this call, they flock together and crowd the predator until it flies away, sometimes joined by other birds such as nuthatches and small woodpeckers, who also recognize the signal. The most serious alarm call is, however, reserved for small raptors that the chickadee would find hard to evade, such as pygmy owls. This time the 'chick-a-dee' call is punctuated with several extra dees at the end. This tells the flock to scatter and run for its life.

THE DEEPEST-VOICED bird is the cassowary, and, after the ostrich, it is the world's largest. It uses low-frequency infrasound, used by only one other land-living animal, the

elephant. Its call can be pitched as low as 23 hertz, the bottom of the range we can hear as humans.

HUMPBACK WHALES can sing continuously for up to twenty-four hours at a time. Whales can sing over a range of at least seven octaves. Yet the intervals between the notes are similar to those humans use in their musical scales. As a result whales' song is made up of rhythms and patterns that are identical to some human musical forms, from ballads to classical sonatas. Scientists have concluded that they are constantly composing new themes to attract admirers. The male humpback whale is the most inventive songwriter, specializing in songs with what sound like rhyming lyrics.

THE LOW-FREQUENCY pulse of the blue whale can be as loud as 188 decibels – that is noisier than a jet engine. It can be picked up from as far as 800 kilometres (500 miles) away. Fin whales can communicate with each other when they are 3,000 kilometres (2,000 miles) apart.

MALE DWARF minke whales make a very curious sound. Their distinctive ba-ba-boinnnnnnggg noise sounds like a laser gun and has been nicknamed the *Star Wars* call. It is believed the minke whale uses the noise to keep other whales at a distance.

KILLER WHALES use different dialects to communicate with each other.

LIKE POP music, whale song can move in and out of fashion. When whales off the Pacific coast of Australia encountered a stray school from the Indian Ocean coast of the same continent, they were immediately taken by the visitors' collection of songs. Within a year the east coast whales had

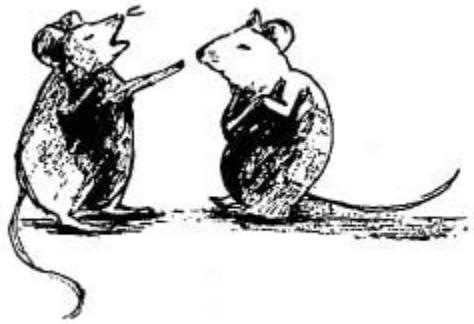
dropped their old tunes and adopted the Indian Ocean songbook.

MYSTERY SURROUNDS the most unusual of all whale songs. It has been heard in the oceans since 1992 and doesn't match the song patterns of any known whale. It is also pitched at a frequency of 52 hertz, well above the normal 15- to 20-hertz frequency of other whales. The whale's migration patterns are unique, too, leading some scientists to speculate it is an undiscovered species of the mammal.

FISH SING. Male plainfin midshipmen hum at night-time to attract females. Their songs are so distinctive they are also known as Californian singing fish. Juvenile fish aren't able to hum, however. They can only grunt.

DOLPHINS WHISTLE. Each dolphin has its own signature sound, which allows it to be recognized by others. They are also gifted mimics and can imitate each other's whistle. They use this skill to communicate with unfamiliar dolphins in the wild.

THE PHRASE 'quiet as a mouse' is misleading as mice do much more than let out the occasional squeak. A study of male mice discovered that they reacted to the sexual smells of female mice by emitting ultrasonic sounds. When scientists slowed these sounds down, they found they were songs. They concluded the mice were serenading their potential partners.



RATS WHISTLE secretly to each other. The rodents produce the ultrasonic sound from deep inside their throat. The whistle's frequency ensures it is picked up only by fellow rats and doesn't tip off potential prey that they are about to pounce.

SOME FROGS have a song in their throat. A talented species of Chinese frog can perform an amazing range of vocal acrobatics, belting out everything from ape-like growls and birdsong to low-frequency songs similar to those sung by whales. The frog owes its amazing versatility to the fact it has two pairs of vocal sacs rather than the usual one.

FEMALE FROGS and crickets select their partners on a first-come-first-served basis, so male frogs and crickets all sing at the same time because they are afraid of missing out on an available female. They also call out as fast as they can, which produces the often deafening frog or cricket chorus.

THE NORTH American bullfrog has a particularly booming voice. This is mainly because it uses its ears as amplifiers.

Less naturally gifted creatures make their own amplifiers. Male mole crickets serenade females from the burrows they dig in the sand. They dig the burrows with horn-shaped openings which amplify the sound, especially when wet. Other species of crickets cut leaves to amplify their calls.

FROGS CAN also play woodwind. A species from the rainforest of Borneo has been discovered using the tree in which it lives as a musical instrument. While wooing females, the males sit half submerged in water-filled cavities in the tree's trunk. As they boom out their calls they adjust the pitch and length of their notes until they hit a frequency that resonates with the tree, amplifying the sound they are making, rather like a human humming in the shower until he or she finds the resonant frequency. Scientists think the frogs do this to sound even sexier to potential mates. They know of no other animal that effectively plays a musical instrument in this way.

SPINY LOBSTERS can play themselves like violins. The lobsters draw the protrusions at the bottom of their antenna – known as plectra – across a set of ridges under their eyes when they feel threatened or want to object to something. The action is very similar to a violinist drawing the bow across a string. The noise acts as an alarm or protest signal.

WOODCHUCKS, ALSO known as groundhogs, use a whistling sound to warn one another of danger. Hence their nickname, 'the whistling pig'.

THE NEW Guinea singing dog is unique. As well as yelping and barking like other dogs, it emits a series of cries that are a mixture of bird calls and whale song.

The Anthills Are Alive

How Animals Buzz, Bang, Bounce and Rap

MUSIC IS EVERYWHERE in the insect world, with many species vibrating their wings to produce a rhythmic buzz. The housefly, for instance, creates a hum by beating its wings at 345 strokes per second, producing a middle octave pitch of F. Queen honey bees make a range of sounds, including quacking and tooting noises, the former announcing the presence of challengers in the nest. Another bee, the melipona, uses a buzzing 'Morse code' to guide the rest of its hive to sources of food.

MANY ANIMALS communicate by sending vibrations to each other. Among those who pass on good and bad vibes are frogs, chameleons and termites. The most impressive sound may be that made by a Costa Rican stink bug. Males work together to send tremors through plant leaves, which are then translated into an airborne sound, very similar to the distinctive melody of a tuba.

ANTS HAVE different forms of music. Drumming – or body rapping – is common in species that live in wood or dried-pulp nests. Ants bang their front mandibles and their rear ends against the wall of the nest in bursts of seven thumps, at 50-millisecond intervals.

CATERPILLARS TAP dance. Biologists believe the butterfly caterpillars do the dance on leaves and plant stems to attract ants, which protect them from predatory wasps.

HONEYBEES COMMUNICATE by dancing. They do a waggle dance to let other bees know how far away and in which direction they need to travel to locate food. Another dance, in which they tremble, signals to bees that they should not fly off for more nectar because there is too much arriving at the hive. The honeybee also communicates by increasing its body heat when it finds food.

BLIND MOLE rats communicate with each other by drumming their head against the roof of their tunnel. The drumming produces a seismic reaction that other mole rats can understand. Scientists suspect the rats also use their drumming to measure the distances they have tunnelled.

BEES BUZZ less during hot weather. The honeybee slows down the rate at which it beats its wings so as to cool its body and reduce the risk of overheating.

THE KNOCKING sound of the notorious death-watch beetle, which eats its way through timber, is in fact a form of sexual communication.

BUTTERFLIES MAKE threats in Morse code. Scientists heard blue and white longwing butterflies make a series of clicking sounds when they confronted a different species of butterfly. As well as directing the clicks at the other butterflies, the longwings used them to communicate with each other.

Hot Gossip

What Animals Talk About

PRAIRIE DOGS CHAT about passing strangers. The rodents have a highly developed language with special words to warn against the threat of different animals.

Scientists at Northern Arizona University decoded the prairie dogs' calls into a collection of key signals. These signals included a single sharp note meaning 'hawk overhead', repeated calling by a group to signal 'coyote alert', and a mix of long notes and barks to indicate 'human approaching'.

They also found that prairie dogs can get carried away while making their territorial call, which they deliver while standing on their hind legs. They can get so excited they leap into the air, flip over and fall backwards.

The most intriguing discovery, however, was that prairie dogs have calls for animals that pose no threat to them, such as cows. They also created a new call for a wooden object scientists dragged across the desert near their colony. The scientists concluded that, as well as looking out for each other, the highly sociable rodents like to chat about the world as it passes by their front door.

CHIMPANZEES TALK about food. A study at Edinburgh Zoo found chimps used different high- and low-pitched grunts to communicate about different foods. The high-pitched

sound was associated with bread, which they liked. The low-pitched groan was for apples, of which they weren't so fond.

FEMALE BABOONS talk about sex. And the better it was for them, the more noise they make about it. The females make a series of loud machine-gun-like grunts after mating. Some biologists believe the chatter is linked to the quality of intercourse with the male partner – the higher his status, the more intense the noise. They think it is the female's way of giving the superior sperm the best chance of fertilizing her eggs. It deters other males, and perhaps even swells the male partner's pride so that he protects her.

SOME TYPES of ants squeak by performing a routine called stridulation in which they rub together two different parts of their hindmost body section. This produces a high-pitched rasping sound. Scientists have observed ants using this to signal different things. Leaf-cutter ants have been known to squeak an emergency call to summon help when a nest has caved in. Females also use it to stop mating, indicating their sperm-storage system is at full capacity.

DOGS' BARKS vary according to the situations they face. Noisy, low-pitched or harsh barks are common when a dog feels threatened, insecure or in physical distress. Barks become more frequent the more threatened a dog feels. When dogs feel happier, for instance playing or acting submissively, their barks are more musical and high-pitched.

LLAMAS HAVE a reputation as quiet creatures, but in fact they make a range of sounds to communicate with each other. Their main means of communicating is humming. Different hums convey different emotions. If they are hot, tired or