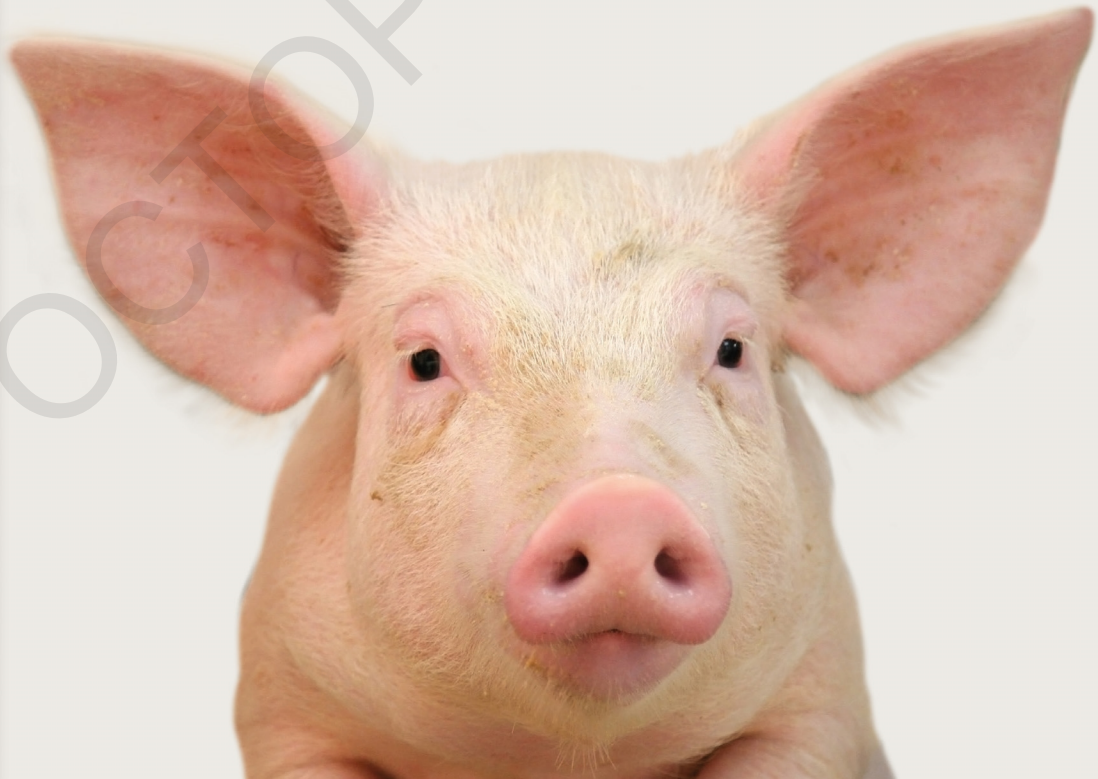
DR SEAN WENSLEY FRCVS

Foreword by Miranda Krestovnikoff, RSPB President

THROUGH A VET'S EYES

How We Can All Choose a Better Life for Animals



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How We Can All Choose a Better Life for Animals

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For Mum, Dad, Jenny and Willow

'...ABOVE ALL, my constant endeavour will be to ensure the health and welfare of animals committed to my care.'

Extract from the declaration on admission to the UK veterinary profession, Royal College of Veterinary Surgeons (RCVS), 2012

'We [veterinary surgeons] are clear about our duty to champion animal welfare more broadly across society – beyond the bounds of animals under our direct care – and to challenge activities that compromise animal welfare.' *Vet Futures Report*, Royal College of Veterinary Surgeons (RCVS) and British Veterinary Association (BVA), 2015

'Ensuring good animal welfare is a core mandate of individual veterinarians as well as the veterinary community at large. It is equally as important to consider and promote positive [animal feelings] as well as to prevent negative ones.'

World Veterinary Association policy on the Role of the Veterinarian in Animal Welfare, 2021

Foreword

Eight years ago, my husband and I sat down at the kitchen table with Sean for his advice. We were thinking about getting a puppy. Carefully, meticulously and un-emotionally, Sean talked us through the process, asking us all the right questions to find out why we thought it was a good idea, how it would affect our family life and whether we could give her the care and attention that she needed. Today, we are going through that same process once more, without him beside us, but at every turn we ask ourselves: 'What would Sean do?' His wise words, sound advice and genuine concern about our welfare as well as hers are at the forefront of our minds as we embark on this massive decision once more. She's arriving tomorrow...and the adventure begins!

I've never really had the chance to formally thank Sean for the inspiration he has been to me and to my family, so I'm taking the opportunity to do it here. For my children, he was just 'always there' – another member of the family, but a fairly unusual one, who revived a grass carp, performed post-mortems of our old laying chickens and pointed out the 'copsulating kestrels' in the poplar trees ('Mummy, what's

"copulating"?' came the reply from my youngest). Sean was our lodger for nearly 5 years. Apparently, he knew we were the right family to live with after spotting a copy of *BBC Wildlife* magazine on the kitchen table. I imagine that the bird feeders and large wildlife pond also gave away our family's passion for attracting nature into our garden.

Sean introduced us to so many sights and sounds in our garden and beyond. A keen birdwatcher, he could correctly identify a species from a mere fluttering in the bushes, when all I could see was an LBJ ('little brown job'). It took a while for us to realise that he was colour blind, as he could describe birds in such detail that you had no idea that several colours were indistinguishable to him, compared to the rainbow of colours that we experienced from our feathered garden visitors. We have fond memories of a myriad of wildlife experiences with him, such as his spotting a black redstart (my first), which got some of our local twitchers very excited!

Perhaps what we are most grateful for is that Sean spotted kestrels flying and hunting over the fields that surround our house and, knowing our interest in the local buzzard population, tentatively suggested we could encourage these raptors to the edge of our garden by building and erecting a kestrel box. There then ensued a great deal of research into boxes, materials and construction and the suitable dwelling was created. Because of Sean, our lives are now intrinsically linked with these birds, as they have nested every subsequent year and we delight in hearing their calls as we leave the house in the morning. We eagerly anticipate the time of fledging when we can watch the acrobatics and mastery of skills as the adults teach their chicks to hunt and to fend for themselves.

Being long-time owners of laying chickens, as well as various pets that the children have grown up with, having a vet and an expert on animal

welfare living with us certainly sparked some interesting conversations concerning the animals that we share our lives with. Do the chickens have enough space in their pen in the garden? Are they warm enough overnight? Is the electric fence working? Are the older, non-layers OK? I'm not sure if the stick insects' welfare was ever discussed but I remember that when considering purchasing guinea pigs for the children, and further down the line, our puppy, he was always there to offer advice: never judgemental and always impartial, with just a flavour of what he would recommend. In the end, he made it very clear – here is the information, but the choice is, ultimately, up to you.

While he was living with us, Sean talked about a book he had long wanted to write. Having lived a life devoted to improving the welfare of pet, farm and wild animals, I believe Sean is the only person who could have written a book like this. His thoughtful and deeply caring nature comes across in the way he deals with each topic, combining his extensive experience in the field with detailed research and consultations with experts in each and every chapter. Added to that, writing had to be put on hold for a while as he took on the prestigious role of British Veterinary Association officer, becoming the (then) youngest ever President of BVA – one of his many and ever-accumulating accolades.

I am delighted that he has chosen not just to write about animal welfare and ethics, but also to intertwine this with stories about his passion for wildlife. It takes the reader deeply and intimately into Sean's life as a naturalist. I feel as though I have a better insight into and understanding of how deeply rooted is his connection with nature and how intensely he cares about animals, by being immersed into some of the wildlife-watching experiences he shares.

As humans, our lives are so intrinsically linked with the creatures that share them, it's a wonder that we are so disconnected from the hidden misery and suffering animals endure for our growing consumption and entertainment. In our homes, most of us strive to make our pets' lives as comfortable, interesting and stress-free as possible, so why do other animals deserve any less? These are complicated questions, discussed with consideration and moderation. Sean shares valuable information in these pages, empowering consumers to drive change through what we buy and the choices we make. It is a reminder that we are all able to make changes that will have long-lasting repercussions for the lives and well-being of the animals we come into contact with every day. There is a moral requirement for them to live well and we all have the ability to help to make that happen.

Miranda Krestovnikoff
President of the Royal Society for the Protection of Birds (RSPB)
2021

CHAPTER 1

Beneath the skin

Another anatomy class finished. I leave the echoey confines of the dissection room, along the corridors of skeletons and specimens, and heave my might against the weighty veterinary faculty doors. The university's majestic Victoria Building throws a gothic clock tower high in to the Liverpool skyline. I crane at its base, peering upwards at spires that point to a blue sky beyond. Behind me, buses and taxis rumble upon a busy road.

A shrill 'kee kee kee' forks through the urban din; a sound from the wild. I stop dead and look up. A pair of kestrels soar on outstretched wings. Wheeling in interlocking circles, one gathers speed, propelling towards the other, who inverts and the couple lock talons. A courting pair or territorial defence; love or war in the city sky.

The railway from Liverpool to Southport transects the human landscape, passing from inner city to suburbs to areas of open countryside. Trundling above the dark-brick terraces while passengers look in to backyards below, I see dogs pacing and rabbits in small hutches, corrugated roofs and barbed wire. Running parallel to the Mersey, the

train continues on until light begins to breathe between the buildings and wild shrubbery bursts from every available gap, beyond suppression. Playing fields – often dusted with wild geese and wading birds in winter mists – and then come the first glimpses of the Sefton coastal dune system. Like a great geographical accordion, the bellows are now fully expanded, roaring with leaves, grasses, limitless horizons, insects, birds, sneaked glimpses, suffocating spectacles; the stuff of wild air. But the journey is dipping in and out of suburbia – these tastes of the wild spaces are like intermittent consciousness in a narcotic dream. By the time I reach my stop, I am among gardens and tree-lined roads.

It has been a long day studying, and I drop my backpack at home and pull on some outdoor trousers and boots. The pockets are like old friends, waiting to receive unusual shells, nibbled pinecones; the day's natural curios. I set off back towards the railway station and, after just five minutes, have crossed the railway line through a metal gate offering quiet support from a mental health charity's posters and am on a dusty track – Fisherman's Path. It crosses the manicured green swathe of Formby golf links, then enters the dark, foreboding cathedral of the coast's pinewoods. It is quiet beneath the towering trees, but for the faint, high-pitched contact calls of dainty goldcrests and coal tits. I stop still and hear tiny glass baubles breaking in the branches, each releasing their drops of pine oil, which permeate through the plantation on the sea breeze.

The coniferous woods open out to brighter alder woods whose roots find their essential water in the dune slacks. In a matter of paces, the track turns to sand. My boots push down, sinking into the soft sand as my heart surges forward with each step. Trudging higher, the hardened coastal shrubs give way to marram grass, swaying comfortably, perfectly adapted

to this unforgiving boundary between land and salted gales. When I have climbed high enough, the rolling sea and the dipping sun behind it are so perfect, so welcome, so overwhelming, that, as always, it causes me to gasp and grips me so tightly that I must catch my breath. There is warm air on my face. I walk with renewed determination across the dimpled plateau, jump two-footed into a depression on the other side and take large strides down towards the shore. It is evening and this path emerges at a quiet part of the beach; there is nothing but open space in all directions and no one but me.

This part of the Irish Sea is invariably calm and still, though violent storms can eat the dunes with vicious bites. Grey seals bob offshore in the summer months and bright white gannets fly further out, but I can see neither this evening.

My mind is uncluttered. This is home; the most real place on earth. The runnels in the sand reflect the light from the closing day, wrapping me in streaked clouds. The beach stretches as far as I can see, to my left and to my right. It meets a sea that covers all the earthbound space behind me, straining to the shore, and a sky that sweeps above. It is a colossal swirling continuum of sand, sea and sky, timeless and wild. I am absolutely nothing; another grain of sand, flailing matter on the strandline. If I spread my arms and legs as far and wide as I can, then pick apart each of my thoughts and emotions, and pull them as far as they will unravel in all directions – all I have ever known and all I will ever know – I am still absolutely nothing. In this timeless wild landscape, I am just me. This is the purest beauty I know.

Today's anatomy demonstrator was Dr Bajaj, known and respected for his soft, machine-gun fire of precise anatomical terms. He focussed

intently on the dog beneath his fingers and scalpel, and quietly directed streams of terminology into the moist spaces created by his prying and cutting. We strained towards video monitors and speakers to concentrate on his quiet, learned output. After about ten minutes, he dismounted from his podium to ensure we had all found for ourselves the structures that he had so nimbly revealed, with our resulting embarrassment if the focus of the day's lesson had accidentally been chopped in half.

In dissection classes, I was fascinated by foramina. Foramen (plural, foramina) is Latin for 'hole', and anyone who has held and inspected a bone will know that their surfaces are pitted and punctured by depressions and small holes. These, perhaps, are not fascinating in themselves, until it is revealed that the porosity of our osseous framework – and that of the rest of the animal kingdom – is not random, but structured purposefully and consistently to enable a precise function: that of providing protective bony tunnels through which frail nerves and blood vessels can pass. What look like random holes dotted around the surface of any given bone are, in fact, part of the precise architecture of living creatures.

Bones, like any other living tissue, need a blood supply. Where arteries that supply nutrients to bones emerge from holes on a bone's surface, the holes are called 'nutrient foramina'. Nutrient foramina exist right across the animal kingdom, within the bones of mammals and birds, reptiles and amphibians. Other foramina are the exit points for nerves.

It is important for trainee medical professionals, such as veterinarians (vets), doctors and dentists, to be aware of foramina because, on an X-ray, a nutrient foramen could be mistaken for a subtle fracture if the practitioner is not au fait with normal anatomy. Foramina that house nerves also need to be learnt so that, if necessary, nerve 'blocks' can be applied to provide

local anaesthesia. This involves injecting local anaesthetic around a nerve as it emerges from a bony foramen, numbing the surrounding area so that surgical procedures can be performed painlessly.

What fascinated me was the 'sameness' in the bony architecture of all the mammals that we dissected. The more comparative anatomy that we studied – comparing different species that came beneath our scalpels – the more the realization dawned just how similar all mammals are, right down to the level of their foramina.

Flicking through the pages of a veterinary or medical anatomy textbook quickly reveals that the infraorbital foramen, for example, is present in dogs, cats, cattle, horses and humans; in fact, just about any mammal one cares to mention. The same hole, at the same relative position, carrying the same nerve.

There are many larger, more obvious structures we could choose to illustrate the anatomical similarities between mammals. What about the bones, of which foramina are just a part? All mammals have similar limb bones, for example, all arranged in the same order.

Take a human arm first. Starting at the top, we have the shoulder blade, or scapula. Then the humerus. Then the radius and ulna. Then the metacarpals. Then the digits – our fingers – five of them.

What about a dog? At the top, scapula. Then the humerus. Then radius and ulna; then metacarpals; then the digits – five of them (one, the so-called dewclaw, is up round the side).

How about a creature that seems more different: a seal? Dissect a seal's flipper and, sure enough, we find scapula, followed by humerus, followed by radius and ulna, followed by digits – five of them.

This pattern of bones in mammals is called the 'pentadactyl limb'.

Pentadactyl literally means 'five digits'. In some mammals, such as cattle and horses, the number of functional digits has reduced (cattle, for example, have dewclaws, like dogs), but the basic underlying pattern is the same.

One of the first, and most famous, scientists to write about the extraordinary anatomical similarities between mammals was Charles Darwin:

> 'What can be more curious than that the hand of a man, formed for grasping, that of a mole for digging, the leg of the horse, the paddle of the porpoise, and the wing of the bat, should all be constructed on the same pattern, and should include similar bones, in the same relative positions?'

Anatomical sameness exists throughout the mammalian body. If we lay a dead human, dog, lion and rat on their backs and peel back their chests and abdominal walls to expose their internal organs, we find the same organs, in the same relative positions, lying beneath – heart, lungs, liver, stomach, spleen, kidneys, intestines, bladder, etc. And, perhaps even more remarkably, these structures are not just anatomically similar, but functionally similar as well. The four-chambered heart of a pig, human, horse or dog – just about any mammal – is, in life, pumping blood around the bodies of each in exactly the same way.

Even at the cellular level – the level of the microscopic cells that are the building blocks of tissues and organs, far smaller than the foramina that caught my attention – we find that cells of a particular type are broadly similar across all species.

The study of cells and tissue at the microscopic level is called histology. At vet school, many students, including myself, used the colourful textbook *Wheater's Functional Histology: A Text and Colour Atlas*. Why is this noteworthy? Because the vast majority of images used in Wheater's textbook, taken using a photomicroscope, are of human tissues. And yet, as the book's preface explains, 'this book should adequately encompass the requirements of undergraduate courses in medicine, dentistry, veterinary science, pharmacy, mammalian biology and allied fields.' It is fine for a veterinary student to use a human histology textbook, because a liver cell is histologically a liver cell, regardless of mammalian species!

Upon learning that I am a vet, people often graciously comment how challenging my work must be 'with so many different types of animals to learn and know about'. I try to reply with humility, but really I, and my colleagues, bask in false glory if people do not realize just how similar – anatomically and functionally – one mammal is from the next. Of course there are species differences in, for example, parasite and pathogen susceptibility, pharmacological considerations and nutritional requirements, but there is also much overlap. Vets, doctors and dentists all essentially practise 'mammal medicine', with vets throwing in – to a greater or lesser extent – reptiles, birds, amphibians and invertebrates for good measure.

Even when it comes to medicine and surgery, there is much overlap between humans and non-human mammals in the fundamental principles. Numerous comments made during medical conversations with friends and acquaintances make me suspicious that people rarely have cause to reflect on how similar humans are to other mammals.

I was introduced to an optometrist, who spoke of a diagnostic dye

applied to the eyes of her human patients to detect corneal damage. I enquired if this was fluorescein dye. 'Yes...' she answered, 'how do you know? Do you use it in animals?'

She seemed surprised that this might be the case. But why, when one considers that the cornea is not a human structure, but a structure common to mammals, birds and reptiles, with fluorescein dye used diagnostically in all three?

In a similar case, another non-veterinary acquaintance was telling me about her diagnosed spinal troubles. There is much overlap between medical and veterinary medical terminology, and my apparent familiarity with the basics led her to ask, again with surprise, 'So do animals suffer from disc troubles as well?' In my head, bells were ringing: 'Yes! Of course they do! Why wouldn't they?! They have almost the same vertebral structures, and similar things can go wrong! A slipped disc is as troublesome for a dachshund (a commonly afflicted dog breed) as it is for a person!'

Yet we seem to find it hard to comprehend the sameness between humans and non-human animals.

So what is the point in this fascination with inter-species sameness? It is because understanding the fundamental anatomical and functional similarities between humans and other animals takes us to the heart of why we must extend our circle of compassion to include non-human animals.

We advocate fair and just treatment for all humans, regardless of, for example, age, sex or ethnicity, based on our common capacities for pleasure and pain, and there being things that matter to us all. Based on these same principles, we could expect that all mammals would justifiably

argue for their fair and just treatment, if they were offered the language that enabled them to do so.

But does this – the idea of language, and other such capabilities often considered to be uniquely human – bring us to the stumbling block; the fatal flaw in this line of reasoning? We may accept all that has been said thus far about cross-species similarity, but at the end of the day a human is not a dog, is not a rat, a hedgehog, a whale or a deer. They all seem so different.

This is the crux. If we are to devote our attention, in later chapters, to the beauty of the natural world and the injustices to which we subject our fellow creatures, then we should pursue our concept of mammalian sameness into the brain. Concern for the wellbeing of non-human animals is pointless and misplaced if those animals are not sentient; that is, having the capacity to feel things and to be able to consciously experience feelings that matter to them, such as pain, fear, comfort and enjoyment. If we share the rest of our organs with the other six thousand or so mammalian species, do we also share similar brains?

Superficially, at the gross, dissectible level, most mammalian brains do, indeed, look remarkably similar. To view this for yourself, visit the online mammalian brain museum at www.neurosciencelibrary.org and click on 'List of specimens', where you will find hundreds of clearly labelled photographs. This is what we would expect – why would all our other organs look largely similar, but not our brains? Physical sameness is present, but what about functional sameness?

The brain has a tiered structure; let's say, in mammals, a cauliflower (comprising a stalk surrounded by florets) perched upon a parsnip, which is joined to a courgette. It is the highly folded cauliflower that most people

think of if they are asked to picture a brain.

The spinal cord, transmitting information to and from the rest of the body, enters the brain at the courgette. Information then passes through the parsnip, through the cauliflower stalk and on up to the cauliflower florets. Although there are various interconnections between them, each of the constituent parts (each vegetable, if you like) has its own functional responsibilities.

The courgette, parsnip and cauliflower stalk are present in reptiles, birds and mammals, and their functions are essentially the same across all three groups.

Only when we come to the cauliflower florets do significant differences start to appear; extras start to be added in. Language, complex emotions and self-awareness are features of the advanced cauliflower. As you might have guessed, it is mammals like humans and great apes (such as chimpanzees and gorillas) who have advanced cauliflowers.

But what comes with the standard brain model – the basic courgette, parsnip and cauliflower stalk? Remember it is all mammals, birds and reptiles who have these fitted as standard.

The courgette represents the part of the brain called the 'medulla oblongata', often referred to as simply the 'medulla'. This controls fundamental life functions such as breathing, swallowing and heart rate.

The parsnip represents the part of the brain known as the 'midbrain'. This deals with visual and auditory information.

The cauliflower stalk represents structures such as the thalamus, hypothalamus and amygdala. The thalamus plays an important role in regulating sleep and wakefulness; the hypothalamus controls a number of body functions, including thermoregulation (responding to heat

and cold), hunger and thirst; while the amygdala is associated with fear and anxiety.

Finally, the cauliflower florets represent the cerebrum and its folded outer layer, the cerebral cortex, which is associated with intelligence, learning, memory and language. It should make perfect sense that some animals should have more florets than others (representing greater folding), based on the intuitive observation that some animals seem more 'clever' than others.

But before we get caught up with cleverness, just take a moment to think back to what we've passed on the way to the cauliflower florets – parts of the brain, conserved across reptiles, birds and mammals, capable of generating feelings such as fear, hunger and thirst, and the feelings of being too hot or too cold. Pain mechanisms, too, are highly similar between humans and other animals, with pathways responsible for pain passing through many of the areas we have visited, such as the medulla, midbrain, thalamus and cerebrum.

Reducing something as complex as a brain to a series of three vegetables is, needless to say, a gross oversimplification, but for the purpose of our question it covers the relevant bases. Are the brains of non-human animals functionally similar to those of humans and capable of generating pain, suffering and other feelings? The neuroanatomical and neurophysiological evidence suggests that the answer is yes. Important ingredients of possible suffering, such as pain, hunger and fear, are all considered to be generated by similar brain areas present in animals and humans. Taken to this level – to the very brain itself – the notion of human–animal sameness has crucial implications for how, morally, we should respect and treat the animals from whom we gain so much.

Let's be clear about what brain studies do not tell us. They do not, for example, tell us definitively what animals are capable of experiencing. But this is equally true for fellow people.

A neighbour may tell me that he is scared. He may be frozen to the spot, trembling, pale, wide-eyed and sweating, and if I were to scan his brain, the regions associated with fear might be lit like beacons. But I will never know, for certain, what it is like for that man to experience fear, because I will never be able to enter his private mental world.

But practically, of course, I think I know perfectly well how his fear feels. After all, he is a human male, like me, and when I am afraid I also tremble, become pale, wide-eyed and sweat, and the same fear regions of my brain also light up on scans.

By now you will be well-versed in the reasoning that follows – what about when a horse (or mouse, or sealion, or sheep, or...) is faced by something they are apparently scared of? When they freeze, tremble, become wide-eyed, and the fear regions from scans of their brain – that we know is anatomically and functionally similar to ours – beam out like beacons? We don't know, for certain, what fear feels like for a horse, but the behavioural, physiological and neurobiological evidence suggesting that it is highly comparable to the human experience is compelling.

It should probably come as little surprise that basic (but important) feelings such as pain, hunger and fear should be so conserved across animal species, being, as they are, crucial for survival. An animal who did not feel hunger would die from starvation, and those who did not experience, and respond to, a 'healthy' fear would fall victim to any of a multitude of dangers present in a natural environment. But what about so-called 'higher' feelings that are generated at the level of the cauliflower

florets, the cerebrum? Are these shared by human and non-human animals as well?

Brain-imaging studies of guinea pigs have shown that when they are separated from their young, the part of their brain that is activated is the same as in humans who are experiencing grief. Similarly, if a ewe is viewing her lamb, or an attractive ram, the brain activity seen on scans is fundamentally similar to that seen when humans are shown pictures of their children, or of a romantic partner. Findings such as these do little to refute the argument that the mental lives of animals and humans may bear striking similarities on several important levels.

Let's briefly return to cleverness. Probably the greatest barrier that prevents people from allowing themselves to believe that animals and humans might share a common subjective world is the vast chasm that seemingly exists between human and animal intelligence. 'If animals shared our brain capabilities, then surely we would find otters writing symphonies and meerkats labouring to build space stations?' people sometimes proffer, sarcastically. The route to approaching this has already been mapped out. It may be true that otters, meerkats and most, if not all, other animals, are not as clever as humans (at least, by our typical measures – some mammals and birds outperform people on memory tasks and all animals are as clever as they need to be), but is this at all relevant to whether or not we should treat them humanely? The bottom line is this: animals do not have to be clever to suffer, or to enjoy life. Farmed animals may look stupid slopping around in their own slurry while vacantly chewing their cud (we will see in later chapters that, in fact, commonly farmed animals are far from stupid), but this is irrelevant to the question of whether or not they can experience pain, fear, comfort and pleasure.

In terms of advanced cauliflowers (remember, these are present in those we perceive as the most intelligent mammals, such as humans, great apes and dolphins), it is actually difficult to say with certainty what effect they have on the quality of the lives of animals who carry them. One ability of clever animals, such as great apes, is that they may have a 'theory of mind'; they act as if they can 'think about thinking'. Animals with a theory of mind (like humans) are believed to be able to reflect on their own thoughts and think about the mental states of others. This is an advanced mental ability and it raises the concern that in, for example, animal research laboratories, a particularly intelligent animal, like a chimpanzee, could think about him- or herself in a particular situation in the future and suffer dread about what might happen. They could also suffer from the knowledge that a brother, sister or friend may be in pain.

Alternatively, it has been suggested that some aspects of the suffering of clever animals might be less, because they can rationalize, based on previous experience, that the pain, or some other negative experience, will go away. A 'simpler' animal, however, may not be able to cope in this way, instead just feeling terrible and having no idea when the feeling will stop.

Consideration of sameness should not be restricted to mammals. We have noted, on several occasions, that some of the most fundamental ingredients of suffering – pain, fear, hunger and thirst – are common to reptiles, birds and mammals. The brains of birds and reptiles do not so visibly resemble human brains in the way that those of other mammals do, but both birds and reptiles have brain regions that share similarities with the cerebral cortex (the outer brain layer that deals with our 'higher' functions, such as learning abilities). The derogatory term 'bird brain', used to describe someone supposed to have limited intellectual abilities,

is misguided. On reptiles, Professors Anna Wilkinson and Oliver Burman and their colleagues are making fascinating and morally relevant discoveries at the University of Lincoln's Cold-Blooded Cognition Lab, including the abilities of reptiles to demonstrate complex social learning and extensive long-term memory.

In *Hugh's Chicken Run* – a television programme in which British celebrity chef, Hugh Fearnley-Whittingstall, highlighted animal welfare problems associated with commercial poultry farming – residents of a British town were charged with the task of rearing some chickens for eventual killing and eating. One participant noticed that the chickens followed him when he turned the soil with a pitchfork, so that they might consume any revealed invertebrates (as robins follow gardeners and clouds of white gulls follow the plough). He exclaimed, 'I'm sure they are intelligent! Y'know, they've got a memory. Why are they following me, like this? They know there's something good on the end of the fork, surely!'

Perhaps it's the huge numbers in which we farm some animals – faceless, personality-devoid masses – that cause us to eventually view them as mindless robots. But chickens, like most birds, are eminently capable of learning and display signs of empathy. In fact, the mental abilities of some birds (like crows and parrots) have been found to parallel those of apes. This said, we must not forget the golden rule: that an animal does not have to be clever to suffer.

In light of such findings, in 2012 a prominent international group of cognitive neuroscientists, neuropharmacologists, neurophysiologists, neuroanatomists and computational neuroscientists gathered at Cambridge University to discuss animal consciousness and made the

Cambridge Declaration on Consciousness:

> 'The weight of evidence indicates that humans are not unique in possessing the neurological substrates that generate consciousness. Nonhuman animals, including all mammals and birds, and many other creatures, including octopuses, also possess these neurological substrates.'

In some parts of the world, animal sentience is recognized in legislation. In the European Union, the 2007 Lisbon Treaty stipulates that, as sentient beings, full regard should be paid to animals' welfare requirements. Having left the European Union, the UK government announced a new Animal Welfare (Sentience) Bill in 2021, to put 'animal welfare at the very heart of government policy decision making'. The campaign group Crustacean Compassion, backed by, among others, the British Veterinary Association – the national representative body for veterinarians in the UK – successfully lobbied to ensure the provisions of this Bill include decapod crustaceans such as crabs and lobsters, and cephalopod molluscs such as octopus. An independent review published in November 2021 concluded there is strong scientific evidence for the sentience of these animals, who are subjected to practices such as being shrink-wrapped and boiled while alive.

Charles Darwin recognized the pentadactyl limb as representing some of the strongest evidence for the theory of evolution. Verlyn Klinkenborg wrote that Darwin showed humans 'their true ancestry in nature'. Few truer words could be spoken. When our common ancestry with the rest of the natural world is comprehended, it is on at least two levels. First, the

ecological level; the level on which humans and all other species on the planet are interconnected in a great, beautiful, interdependent web of life. And second, the common ancestry level; in which, together with all other animal species, we are constructed of the same building blocks and share common structures with common functions. At the level of the brain, we share our pleasure and pain.

Issues involving animals can be highly emotive. Be they the hunting of foxes or the long-distance transport of farmed animals, outpourings of angry, pleading and desperate human emotion can sweep a nation. Humans have debated how we ought to treat non-human animals for millennia; Pythagoras, for example, now better remembered for his mathematics, promoted the ethical treatment of animals, as did 19th century Romantics such as William Blake ('A Robin Red breast in a Cage/ Puts all Heaven in a Rage'). But such concern, bubbling through our history, lacked a certain something. While it could be tackled by the great minds of the day, with intellectual rigour and within the boundaries of carefully constructed ethical frameworks, it still fundamentally sought to address a seemingly intractable problem. To be concerned for the welfare of animals is to be concerned with the private, inaccessible, mental experiences of species that might be quite unlike us.

Anthropomorphism is the projection of human emotions and motivations on to inanimate objects, natural phenomena or animals, and some have dismissed concern for the proper treatment of animals as anthropomorphic; pursued by 'bunny-huggers' and peddlers of soppiness, sentiment and misplaced emotion. But today, in the 21st century, and uniquely in our history, such a view is especially unenlightened. Since the latter part of the previous century, and continuing now, scientific

objectivity has been brought to questions about animal minds and experiences – such as the brain-imaging studies already mentioned – with results that are forcing us to revisit and re-evaluate our ethical debates and positions. Animal welfare, a subject intricately linked with animal feelings and human values, now has science shining into all of its corners. As for most fields, the beam is, in some places, insufficiently bright, but questions about how animals perceive the world, how they think and feel, and what makes them feel good and bad, are now firmly in the hands of scientific inquiry.

The eminent animal welfare lawyer Dr Mike Radford summarizes why animal welfare science has been so influential:

1. Science has an international perspective; its findings are applicable throughout the world.
2. Politicians (and judges) are more likely to adapt their decisions in the light of scientific evidence on the basis that it rises above mere emotion.
3. The insight into the needs and experiences of animals that has been gained through research has had a profound effect on the ethical debate about our relationship with other species and the manner in which we keep them.

The stimulus for this historically unique era of scientific inquiry is largely attributed to a British author, Ruth Harrison. After the Second World War, animal agriculture had become highly mechanized and industrialized, and in her book *Animal Machines*, published in 1964, Harrison revealed the barren and behaviourally restrictive conditions in

which so-called 'factory-farmed' animals were being reared. The book stirred intense reaction among the British public and, in response, the government of the day appointed a committee, under the chairmanship of Professor F W Rogers Brambell, to investigate 'the welfare of animals kept under intensive livestock husbandry systems'. The committee, comprising several scientists as well as agriculturalists, made recommendations on various animal husbandry systems, but additionally called for research in fields including veterinary science, stress physiology and animal behaviour to help answer the questions about animal farming that had arisen. Such research began in earnest and gave rise to the field now known as animal welfare science.

Due to the high level of confinement that characterized factory farming, the report of the Brambell Committee concluded that animals should have the freedom to 'stand up, lie down, turn around, groom themselves and stretch their limbs', a list that became known as 'Brambell's Five Freedoms'. Such a list represented substantial progress at the time, but by focussing entirely on physical possibilities it failed to capture other elements of an animal's welfare, which subsequent analysts considered to be important. Welfare, or wellbeing, as we know from our own experience is a conglomerate concept. That is to say, our wellbeing at any given time is determined by several contributing factors, many of which interact with each other. Our wellbeing is diminished if we have a satisfying and nutritious, balanced diet, but go home to a house that is intolerably hot or cold. We may be in peak physical fitness with access to the highest standards of medical care but endure chronic loneliness. Welfare depends on more than one determinant. By re-examining the original Five Freedoms, the internationally renowned Professor Emeritus

of animal welfare, John Webster, as a member of the UK-based Farm Animal Welfare Council (FAWC, an independent advisory council to the UK government – now, with a broader remit, called the Animal Welfare Committee), proposed a more comprehensive framework, incorporating both physical health and mental wellbeing. The resulting Five Freedoms have since been used to assess the welfare of animals by governments and non-governmental organizations around the world:

1. freedom from hunger and thirst
2. freedom from discomfort
3. freedom from pain, injury or disease
4. freedom to express normal behaviour
5. freedom from fear and distress.

John Webster himself acknowledged that not all of the Five Freedoms will be met all of the time, while more recent work by FAWC and others has emphasized the importance of providing positive experiences for animals, rather than simply aspiring to freedom from the worst. Nevertheless, the Five Freedoms (and related frameworks, such as the Five Domains, which put additional important emphasis on animals' mental states) can help map a route to a state of animal welfare that incorporates most, if not all, relevant determinants.

The Animal Welfare Acts of 2006 and the Welfare of Animals Act of 2011 in Northern Ireland translated the Five Freedoms into updated UK animal welfare legislation. Each Act introduced a legal duty requiring that a person responsible for an animal's welfare meets the animal's following five needs:

1. the need for a suitable environment
2. the need for a suitable diet
3. the need to be able to exhibit normal behaviour patterns
4. the need to be housed with, or apart from, other animals
5. the need to be protected from pain, suffering, injury and disease.

These so-called Five Welfare Needs have moved the Five Freedoms concept from a theoretical aspiration to a legal obligation in the UK.

How, ethically, can we act on our understanding that many animals that we currently use for our benefit are sentient? Broadly, in one of two ways. We may take an animal rights view, concluding that their similarities to people are grounds for them being granted similar rights – for example, to not be killed for food, enslaved as pets or objectified for our entertainment. In this view, recognition of animal sentience should result in abstention – sentient animals are not ours to use. Or we may take an animal welfare-based view, in which we deem it acceptable to use sentient animals for our benefit (as companions, for food, for sport and so on), as long as, in return, they are afforded a good life and a humane death. In practical terms, their Five Welfare Needs should be met, resulting in good physical health and mental wellbeing; they should be given opportunities to enjoy their lives; and their death should not be associated with preventable pain and suffering.

As a veterinary surgeon – first practising and latterly developing veterinary animal welfare policy with species-specialist colleagues – and during my five years as a veterinary student, I have been privileged to have had first-hand exposure to many of the ways in which animals are used by humans today. In doing so, I have become aware of how billions of animals

are not having their Five Welfare Needs met; those cases where we are not meeting our side of the ethical bargain that we strike with sentient animals. It is my professional responsibility to advocate for these animals' best interests, both within the bounds of the status quo (how we currently use animals) and to challenge the status quo (asking, how should we use animals?).

Like many people, I tend to take an animal welfare-based view of how we should use animals. But within that, I am comfortable that if animals are routinely failing to have their welfare needs met under a certain type of activity (for example as pets or on farms) and this cannot be rectified, then ongoing societal acceptance of that activity will, and should, diminish.

Animal-using activities are woven through our human societies around the world. Pets give companionship and enjoyment; many people eat meat and dairy products; we take medicines that have been tested on animals; some people wear clothing made from animals; and some enjoy animal-based sporting and cultural events. We each have an animal welfare footprint, akin to a carbon footprint, the size of which is linked to our everyday decisions and purchases. In this book, I look at some of the welfare problems experienced by animals used for three purposes – for food, for entertainment and as our companions – together with wild animals impacted by human activities. To describe these problems is not to irresponsibly criticize, it is to help us, as societies, understand and account for the ethical costs of these activities, to guide our future choices.

Several chapters are focused on animals farmed for food. Principally, this is because of the numbers of animals involved and the potential for large-scale animal suffering; over a billion are reared for food every year in the UK, excluding many millions of farmed fish, and over seventy

billion globally. In the time it takes to read a page of this book, around 2,000 chickens will have been killed to eat in the UK and 18,000 in the United States.

It is also a critical time for global animal agriculture. Questions of animal welfare on the world's farms are intimately connected with other pressing issues, including climate change, biodiversity loss, human health and accessible, affordable food. Global politics, including the implications of the UK's departure from the European Union, pose serious threats to animal welfare gains made in recent decades. I make reference to animal welfare standards in countries with whom the UK may strike trade deals in the coming years; deals which would threaten to undermine UK animal welfare standards if imports were not legally required to at least meet the same standards. Global markets mean that the animal welfare problems I discuss must be addressed by nations across the world, to help avoid individual countries raising their domestic standards and importing cheaper lower-standard products, thereby exporting the problems they had set out to address. We need a reimagined global food system, supported by engaged citizens rather than passive consumers, in which food is properly priced and valued, and the poorest are supported. Dietary shifts are occurring across the world, with much debate about healthy and sustainable consumption of meat and dairy products. Interest in vegetarianism and veganism is at an all-time high in several countries. Technology, such as meat produced from cell culture rather than large numbers of farmed animals, is set to play an increasing role. I fully expect that my topics and perspectives will assume quite different relevance in the coming years, given the intensity of public focus on how we should relate to our natural environment and our fellow sentient animals.

Animal welfare standards in the UK are among the highest in the world, with the UK being one of the six highest-ranking countries on the global Animal Protection Index. But despite this, as we will see, important problems persist and we must all keep progressing if we are to meet the conditions of a good life and a humane death for the animals who provide us with so much.

One of the ways we can reflect animal sentience is through our thoughtful use of language. In this book I have aimed to not refer to sentient animals as 'it', but rather to use 'he' or 'she' where the animal's sex is known and to use 'they' where the sex is not known, including if referring to a single animal. I have often found that cattle veterinarians and dairy farmers do this naturally; for example, saying of a cow who can't stand, 'She can't get up,' rather than, 'It can't get up'. We might say of an inanimate object, like a cushion, 'It's on the sofa', but it would feel wrong to say the same of, say, a grandparent. In this way, our language conveys our belief in an individual's capacity to experience feelings; that is, their sentience. It is not my intention to dictate how people should speak and write about animals and I would be inconsistent in my own daily application of these principles, but I hope it may offer pause for thought.

On Formby Beach, my footprints turn to reflective pools beneath the incoming tide, reminding me that we can tread lightly for animals and wash away the worst. My veterinary training and career have given me insights and information on how we treat animals, on animal welfare and animal ethics. I do not have all the answers by a long shot, but in this book I can share with you what I have seen and learned.

CHAPTER 2

Australian zebra finches

The 12-mile Sefton coastline is the largest dune complex in England and one of the most important areas for nature conservation in Europe. Passing from north to south, it takes in the Ribble Estuary, with its wheeling thousands of wintering waterfowl; the Ainsdale and Birkdale Sandhills; Formby, with its pinewoods, red squirrels and sandy beach; past the Alt Estuary and down to the sleepless Liverpool docks. To the east, sprawling mosslands nestle in the coast's hinterland. The landscape and its rare wildlife feature prominently in the local culture, including in the name of The Squirrels Football Club and in the crest of Formby High School, which incorporates a pine tree and the rippling waves of the sea.

As a teenager I worked in a small pet shop in the heart of Formby where, each week, a steady flow of pet owners and wildlife lovers crammed into an Aladdin's cave of pet paraphernalia. The shop twitched and twittered with living creatures: rabbits, guinea pigs, hamsters and gerbils near the floor, with budgerigars, canaries and small finches in cages above.

Food for wild garden birds was in demand and at peak times people queued out of the shop waiting for a bag of seed or nuts. Feeding garden