

physical and social environment for the captive animals in an attempt to encourage natural behaviour and prevent the development of behavioural abnormalities.

I therefore highly recommend this book for anyone planning to embark on primate field research, and urge them to take the animals' welfare implications into serious consideration when carrying out their studies.

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Animals and Public Health: Why Treating Animals Better is Critical to Human Welfare

A Akhtar (2012). Edited by Palgrave Macmillan, Houndmills, Basingstoke, Hants RG21 6XS, UK. 234 pp Hardback (ISBN 978-0-230-24973-8). Price £55.00.

Animals and Public Health is a wide-ranging and ambitious book covering aspects of the human treatment of animals that impact upon animal welfare. Dr Aysa Akhtar, a public health neurologist, sets the scene by noting that many eminent thinkers, including Pythagoras, Immanuel Kant and Albert Einstein, have suggested that mistreating animals will come back to haunt us. Akhtar's major concern is that public health does not take seriously the link between our treatment of animals and human well-being. Akhtar concedes that public health is concerned with zoonoses, but she laments "rarely do we [public health] explore deeper than this and ponder whether the nature of our relationships with animals could play a role in whether they become infected with a pathogen in the first place". Akhtar appreciates that such pondering might be interpreted as being outside of the purview of public health and even radical. But, "public health is no stranger to social concerns (or even radical ideas). On the contrary, public health, throughout its history, has been an integral part of social change". Akhtar then documents how public health has challenged cultural and social mores, for instance the link between poverty and disease, women's and children's rights and stigmas against the mentally ill.

Chapters 3 to 6 of *Animals and Public Health* address how mistreating animals in the various ways we use animals leads to public health problems. These four chapters are concerned with the wildlife trade, industrial agriculture and the development of zoonoses, industrial agriculture and the environment, and animal use in biomedical experimentation. Consider the question that Akhtar is addressing: Why (is) treating animals better *critical* to human welfare? The objective of *Animals and Public Health* is to substantiate empirically the philosophical ideas of Pythagoras, Kant and Einstein. It is here that one can see that the central thesis is an ambitious one; Akhtar must demonstrate that treating animals better is critical to human welfare in all domains of animal use that she examines. This is why Akhtar had to address the charge of radicalism in her opening chapter, for do we not (ab)use animals precisely because it is beneficial to human welfare? Ultimately, then, Akhtar's broad thesis rests on three separate claims: namely, that treating animals better in the wildlife trade, in agriculture, and in biomedical experimentation are each *individually* critical for human welfare.

Before reviewing chapters 3–6 and their respective claims, a comment needs to be made about the second chapter 'Victims of abuse: making the connection'. It is aptly prefaced by the words of Immanuel Kant: "He who is cruel to animals becomes hard also in his dealings with men. We can judge the heart of a man from his treatment of animals". In this chapter Akhtar describes the well-documented link between animal cruelty and the abuse of humans. However, the reader might suppose it constitutes a natural linkage with the chapters on animal use that follow. The position and title of this chapter — 'Making the connection'—might lead one to think it grounds the argument in the following chapters. But there is the glaring issue of intentionality that Akhtar does not mention. Chapter 2 describes the *deliberate* abuse of individual animals and its relation to abuse in humans. In contrast to this, animal use in the wildlife trade, in agriculture or for biomedical experimentation are all commonly considered to be different to animal abuse. The former practices are motivated and justified (rightly or wrongly) by consequential human benefit. In the case of animal abuse there is no such motivation and the practice is regarded as morally unjustified and often is prohibited by law. This is problematic because the chapter does not do as much work as I suspect the author might intend it to do. Whether Akhtar intends this chapter to genuinely make a connection with types of animal use that are so different in terms of their motivation (utility versus cruelty) I am not sure. What can be said is that the well-known connection between animal abuse and human abuse does not provide any obvious support for the thesis of a general connection between treating animals better and human welfare.

A great virtue of *Animals and Public Health* is the sheer scope of the work and the myriad of interesting facts that Akhtar provides, fully referenced in an exhaustive bibliography. This veritable feast of facts begins in earnest in chapter 3 on the global trade in wild animals. Akhtar begins the chapter by describing Tyke the performing elephant going on a rampage in Hawaii and Rocky the grizzly bear turned Hollywood star taking a bite out of his handler and killing him. An example of a startling fact reported by the author is the estimation that between 5,000–7,000 tigers are kept in homes in the USA. Akhtar calculates that if this figure is accurate, there are more tigers living in American homes than in the wild! Despite being a human public health specialist, the animal welfare sections are well researched. For instance, Akhtar reports "Caged birds routinely display abnormal behaviours, such as self-mutilation and stereotypes". Furthermore, the author's criticism is not restricted to a welfarist ethics and she writes with a style that is often to the point: "Birds are most often housed in small cages, depriving them of the very thing that defines them: flight".

Documenting unfortunate but rare incidents and writing truisms on caging birds and denying them their flight are interesting and in ways important but are a long way off making a strong case for Akhtar's ambitious thesis. To make the case that treating animals better is critical for human welfare, the author needs to ground her argument in a maltreatment of animals that has the potential to cause

widespread suffering to humans. It is part way through the chapter 'The global trade in animals' that Akhtar begins to do this, under the subtitle 'The rise in infectious diseases'. It is between this point of the book and the end of chapter 4 that the author is at her most authoritative. This is to be expected, since Akhtar is a public health specialist working on infectious disease, and this central part of the book covers that subject. It is here also that, I believe, many welfare scientists and other readers of *Animal Welfare* will enjoy reading *Animals and Public Health*.

Akhtar begins this central part of the book by writing "In the past few decades the world has witnessed an unprecedented surge in emerging infectious diseases (EIDs) such as AIDS, SARS, Ebola, 2009 H1N1 (commonly referred to as 2009 swine 'flu') and H5N1 (or avian influenza)". Together with this, the author documents resurgence in diseases in regions where they were considered eradicated, such as malaria, tuberculosis and cholera, emergence of diseases in new locations, such as West Nile virus, and new infectious agents, such as Nipah virus. The section subtitled 'Bushmeat, HIV and Ebola' can be used to illustrate the epidemiology of such EIDs. Humans are moving deeper into jungles and other natural ecosystems to seize animals for the wildlife trade, exposing us to exotic insects and novel infectious agents. Simian Immunodeficiency Virus (SIV) is thought to be the precursor to HIV, with which 65 million people have been infected and 25 million have died. Globally, AIDS is now the leading cause of premature mortality in people aged 15–59 years. Intelligently, Akhtar documents the significant recent changes in our contact with wild animals, since indigenous peoples have been living alongside and off them for centuries. Human population growth and the transformation by logging companies of the bushmeat trade into a commercial operation are causal factors in the surge in infectious diseases. The author also highlights the alarming extent of the wildlife trade, which impacts on opportunities for transfer of infectious agents: "After the smuggling of drugs, the illegal wildlife trade is the most valuable illegal commerce in the world — even more profitable than the smuggling of weapons or humans".

In chapter 4, 'Foul farms: the state of animal agriculture', Akhtar writes that industrial farming is directly implicated in H5N1 avian influenza virus ('swine 'flu') and the increased prevalence of food-borne infectious disease caused by *Salmonella* species and *E. coli* 0157:H7. The author goes on to say that farm animal confinement, the dense concentration of animals indoors and substantial stress lead to the promotion of infectious zoonotic diseases. Perhaps most alarming is the detailed discussion on what — as a public health specialist — Akhtar describes as the 'most worrisome' zoonotic pathogens: influenza A viruses. Akhtar writes that intensive CAFO (controlled animal feed operations) units are also in effect 'flu farms'. The author describes how pigs act as 'mixing vessels' and chickens and other farmed animals act as the intermediate hosts that enable the viruses to transform so that they can readily infect humans (wild aquatic birds are the primordial source). The 1918–19 Spanish influenza infected one-third

of the world's population and a staggering 50–100 million people died. The HPAI (highly pathogenic avian influenza) H5N1 strain has a high case fatality in humans. Fortunately for us the virus has not yet acquired the genes to transfer readily between humans. Akhtar argues that intensive agriculture can "substantially magnify that opportunity".

The subject of chapter 5 is the increasingly documented link between agriculture and the environment. Akhtar discusses both local and global effects of an excessive number of animals being farmed intensively for human consumption. For instance, she reports a study that showed an increased prevalence of asthma in children residing near a factory farm in the US state of Iowa. Globally, livestock agriculture is producing large amounts of carbon dioxide, methane and nitrous oxide that are contributing to global warming. Deforestation, land degradation and pollution are causing biodiversity loss on an unprecedented scale. Under the revealing subtitle 'Our powerful forks', Akhtar writes "a reduction in animal product consumption would not only help thwart climate change and pollution but also lead to major reductions in chronic diseases... such as cardiovascular disease, diabetes and many forms of cancer". She summarises the public health imperative as: "it would be a calamitous shame not to pursue a great reduction in, if not complete elimination of, animal consumption as a public health priority".

Aysha Akhtar provides powerful arguments to support the claims that treating animals better is critical for human welfare, with respect to the trade in wild animals (chapter 3) and livestock agriculture (chapters 4 and 5). Aside from narrow economic benefits, there appears to be little to gain from the global trade in wild animals and much to lose. In terms of livestock agriculture, there is an increasing recognition that excessive consumption of animal products is directly detrimental to human health and devastating to the living environment. Despite this, the issue of biomedical experimentation on animals appears at first sight a different category, and I eagerly anticipated reading the arguments. A central plank of Akhtar's argument is that animal models used in biomedical experiments are not similar enough to humans to produce useful data. This is a well-rehearsed assertion and Akhtar discusses many examples to support the claim. Despite this, she acknowledges that with so many experiments on animals, statistically some are bound to yield useful information. For this reason Akhtar must provide a further argument to support her claim that animal experimentation actually does more harm than good. The argument she provides is that the reliance on animals for biomedical advancement has in fact jeopardised the discovery of human medical treatments that would otherwise have been developed had there not been such an emphasis on animal models. This is a complex issue and whether this claim is true or otherwise is an empirical question. The only way to validate Akhtar's claim, together with the position she argues against, is to compare research conducted with and without the use of animal models. To date this has not been possible in part because of regulatory constraints mandating the use of animal models in pre-clinical trials. This, of course, is a different question from whether it is morally permissible to

use animals as research models for human medicine. Akhtar is here making a purely empirical claim that use of animals in biomedical research has actually stifled the development of novel medicines. Nevertheless, she succeeds in problematising the utility of animal models for biomedical experimentation and is persuasive that the issue is more of an open question than many realise.

Therefore, in judging whether Aysha Akhtar succeeds in her overall thesis that treating animals better is critical for human welfare, the jury must still be out. Whereas there may be sufficient evidence that trade in wild animals and industrial farming are detrimental to human welfare, the issue of biomedical experimentation requires further evidence and more deliberation. This provisional judgement might seem conservative but it should be viewed in the light of the considerable scope of this book. Indeed, Akhtar has succeeded in her principal goal, that public health should put a strong spotlight on the relationship between our treatment of animals and human welfare. *Animals and Public Health* can be recommended to a wide audience. Akhtar covers a tremendously diverse field, and for this reason at least I would be surprised if many did not learn something from this book. As Akhtar puts it: "If public health is concerned about public health, we must turn our attention to the elephant (and every other animal) in the room".

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In Defence of Dogs. Why Dogs Need Our Understanding

J Bradshaw (2011). Published by Penguin Books Ltd, 80 Strand, London WC2R 0RL, UK. 324 pages Hardback (ISBN 978-1-846-14295-6). Price £20.00.

Konrad Lorenz did it more than 60 years ago. He wrote an entertaining book about dogs. He mixed the latest scientific findings and personal anecdotes, his own opinions and the hypotheses of others about man's best friend (Lorenz 1950). John Bradshaw did the same in his 2011 book: *In Defence of Dogs: Why Dogs Need Our Understanding*. Bradshaw tackles important theoretical and practical topics such as the origin of dogs, domestication and dog training. Like Lorenz in his famous book: *Man Meets Dog* Bradshaw presents new findings and tells interesting anecdotes. For dog lovers this mixture between anecdotes and scientific findings is revealing and entertaining.

As a scientist I can enjoy this mixture as well. However, I would prefer to be able to grasp the difference between anecdotes, the author's own opinions and results from scientific studies. Scientific knowledge should be separated from stories and beliefs. Although there are notes for each chapter in which Bradshaw cites a few studies, it is often not clear when he is presenting his own opinion and when he is presenting approved assumption or conclusions from controlled experimental studies. But, in my view, to mark that difference is important — especially when one is talking about dogs. Everyone knows a dog; that is why there are so many claims about them. As Bradshaw points out, neither dog training nor the treatment of behavioural disorders in

dogs are regulated professions, so formal education is not required to become a 'dog expert'. Therefore, Bradshaw emphasises that it would be important to integrate scientific understanding of dogs into training methods, for example. But also in his book the difference between scientific and 'personal' understanding of dogs could have been clearer.

The dog is not a wolf. This is the main message from Bradshaw's book. It sounds simple and obvious, but it is really important to point that out. The dog has become another, a new species. For a long time science has treated the dog as merely a 'silly' wolf that had lost many of the abilities that its wild ancestor possessed. Dogs have smaller brains than wolves, and cannot hear or smell with the acuity of their wild ancestors. Lately, however, this view has changed. Scientists accepted that dogs have faced selection pressures that are just different from those of wolves. In a smart and detailed way Bradshaw argues against the prejudice that dogs are just silly tamed wolves. Over more than 10,000 years dogs were selected to live in the human environment. That means dogs have been under selection pressures from the human environment for a long time: animals that were able to best adapt to life with humans would reproduce the most. As a result, dogs now are perfectly adapted to live with us. Research from the previous 15 years has shown that indeed dogs have evolved new skills during domestication, especially in the domain of communication. And, of course, our modern dogs also have different needs compared to a wolf.

It is true that the wolf is the only ancestor of the domestic dog, and therefore its closest living relative. So it might sometimes be reasonable to explain dogs' behaviour by comparing them with their ancestor. However, in the common picture of the wolf, there is another big prejudice that Bradshaw is arguing against. Wolves are said to live in packs with a strong hierarchy. This is the case in a captive environment. However, according to recent observations, this is not the case in the wild. Wolves live in family groups with one breeding pair and its offspring. Thus, the common assumption is wrong, that an owner has to be careful that his or her dog always tries to climb to a higher position of the hierarchy in the human pack. Bradshaw explains in detail why it is not important to 'dominate' a dog. But he also emphasises that it is important to control a dog, and that a dog is not learning to behave well, simply 'because it is loved'. As the title of the book implies, it is important to understand dogs as dogs. They are neither wild wolves nor better humans. For treating them appropriately it is important to understand them, not only their origin, but also their newly evolved skills. Bradshaw explains this convincingly but also entertainingly. By reading this book, the reader indeed learns to understand the dog better, and this knowledge will help owners to treat their dogs in a more appropriate way.

The book is divided into eleven chapters and illustrated with meaningful drawings, tables and figures. In the opening chapters, Bradshaw describes where dogs came from and how they were domesticated. He presents the latest genetic and archaeological evidence about the origin of the dog. This is followed by a detailed chapter about dog training. Here, Bradshaw describes different views of trainers. But he also