

undertake biomedical research, and promoting public confidence in the research community. He advocates a big-science, collective, integrated framework for decision-making and action: with policy-makers and funding bodies setting agreed, strategic funding priorities, then funding only the best proposals in these areas, which would be made transparent as registered studies to discourage unnecessary duplication. Scientists and research centres would form consortia to bid for this funding, and then minimise resource costs and animal use by co-ordinating and harmonising their research protocols and programmes, pooling their resources and data, and producing publications based upon aggregation and meta-analysis of the resulting datasets. The research centres hosting the research would be responsible for providing infrastructure and monitoring the good conduct of the researchers.

The book contains a number of significant inconsistencies and contradictions. The author is less than careful in his use of emotive and pejorative language, giving the impression, at times, that he tends to oppose animal research — writing of the “brutality of animal research”, “the powerless victims of vivisection”, and “using our powers to exploit animals”. At other times, although he is right to criticise some of the claims made in support of the benefits that have resulted exclusively and directly from animal research (though he does not directly refute any of the examples he cites), he is uncritical of his own chosen field of research — describing basic neuroscience as holding a central position in society, having been responsible for enormous progress over the last five decades, and promising further new insights that will not just produce medical benefits but will also inform advances in the fields of engineering, economics, the law, cultural studies, and other aspects of society.

One of my underlying concerns as I read this book is that it describes a landscape I cannot reconcile with recent and current practice in the UK. Specifically: Professor Lauwereyns is silent on the subject of regulation; he writes of funding bodies neither making informed choices in order to fund only the best science, nor taking the Three Rs and other ethical issues into account in their funding decisions. He criticises research institutes not fully supporting implementation of the Three Rs at local level. He believes that researchers are currently free to pursue their research objectives by whatever means they see fit, unaware of new, improved, more refined or replacement research methods that could and should be used.

Despite the author’s claims, this is not a scholarly work; it is an account of his personal odyssey and philosophy, unburdened by a deep or clear understanding of what Russell and Burch were advocating or an understanding of contemporary good governance and practice.

Professor Lauwereyns’ book is not an introduction to the Three Rs; it is not a critical appraisal of the current state of play; and it does not provide a practical blueprint for the future direction of travel. It will not better inform the general public or the debate about the use of animals for scientific purposes. It will not determine public policy or

influence the scientific community. It is difficult to see it making any meaningful contribution to animal welfare.

On the plus side, it did prompt me to read again the *The Principles of Humane Experimental Technique*, where, as always, I found small points of detail I had missed, but that are still relevant today.

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### **One Welfare: A Framework to Improve Animal Welfare and Human Well-Being**

RG Pinillos (2018). Published by CABI, Nosworthy Way, Wallingford, Oxon OX10 8DE, UK. 112 pages Hardback (ISBN: 9781786393845), Paperback (ISBN 9781786393852). Price £49.00, £25.00.

*One Welfare* represents the brave attempt of the author to present a framework for working on animal welfare and human well-being as interrelated concepts. The idea of *One Welfare* is not originally that of the author, but she is, to my knowledge, the first to present it in a more extensive format. While Rebeca García Pinillos appears as the sole author of the book, she has developed the framework through consultations with a range of international experts, who are listed in the Acknowledgements section. The method used for this consultation is not described, but I understand that it served to provide feedback as regards the organisation of the framework as well as to produce actual content for the book. Many of the case studies have named authors.

The first chapter presents the idea behind the concept, whilst the subsequent five present the five sections of the framework:

- 1) The connections between animal and human abuse and neglect;
- 2) The social implications of improved animal welfare;
- 3) Animal health and welfare, human well-being, food security and sustainability;
- 4) Assisted interventions involving animals, humans and the environment;
- 5) Sustainability: connections between biodiversity, the environment, animal welfare and human well-being.

Each chapter presents how different facets of human and animal well-being relate to each other and suggestions for how professionals from different backgrounds can work together in each particular context. This overview, which is based on a variety of sources (the author highlights that there is no ambition to present a complete literature review), is complemented by real-life examples from different parts of the world. The style is accessible and the examples are engaging and help make the book international. That said, the chapters are somewhat uneven, and the attention given to different topics does not always seem commensurate with the extent of the problem: for example, the characterisation of animal hoarders takes up approximately the same number of pages as a discussion on how to achieve sustainable animal production in a world with a growing demand for animal products.

The first section covers the abstract and concrete connections between abuse of animals and humans and gives examples of a Spanish programme for raising awareness and supporting victims where companion animals are also catered for, and of a US collaboration between organisations acting on law enforcement/prosecution, domestic violence and abuse, animal welfare and veterinary and human healthcare. The second chapter covers companion animal welfare, working animals and livestock-supporting livelihoods, natural disasters and war and animal welfare and crime. It includes eight real-life examples, including support to UK farmers who suffer livestock attacks by uncontrolled dogs, cat hoarding action in Canada and work with Kenyan donkey owners. The third section covers animal welfare and food safety, animal welfare and farmer well-being, animal health and welfare and environmental protection, food security and sustainability. Five real-life examples are presented, including a support network for UK farmers and an early warning/support system for Irish farmers with emerging animal welfare issues on their farms. The fourth section covers different interventions with animals and presents an example of animal-assisted therapy for children in New York. The fifth and final section addresses the connections between biodiversity, the environment, animal welfare and human well-being, using examples from an indigenous tribe in the Amazon and how they cohabit with other beings as well as international work on animal welfare, biodiversity and environmental protection.

I hope that this book will be able to achieve its aim and I agree with the author that it is much-needed. In the contemporary discussion of how to mitigate the negative effects of human expansion on the planet, focus tends to be on humans and the environment, and the interests of animals often fall by the wayside. Others have tried to change this, for example, by integrating animal welfare in sustainability, but with questionable success. To develop and launch a conceptual framework is no small ambition, and to do so as a private research project is admirably brave. Unfortunately, this is also where the book falls a little short. The ideas and examples presented in the five sections convey the message that what is missing to make the world a better place for humans and animals is the *One Welfare* approach. There is little critical analysis of any limitations. I understand that to sell the idea, it is tempting to focus on the solutions it can provide, but a serious discussion of the concept needs to account for those scenarios for which no straightforward solution exists. For example, in modern animal production, there are few remaining situations where improving animal and human welfare clearly go hand-in-hand. Similarly, in many parts of the world, there are conflicting interests of wild animals and humans whose habitats overlap. That said, the enthusiasm of the author and the engaging style of the book bode well for its dissemination and the *One Welfare* movement that it is part of. If successful, in a few years there will hopefully be material and resources available for a second book which can address the topic in more depth and from several perspectives.

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### **Achieving Sustainable Production of Pig Meat, Volume 3: Animal Health and Welfare**

Edited by J Wiseman (2018). Published by Burleigh Dodds Science Publishing Ltd, 82 High Street, Sawston, Cambridge CB22 3HJ, UK. 326 pages Hardback (ISBN: 978-1-78676-096-8). Price £140.00.

It is important for animal welfare and animal welfare scientists to be an integral part of the grand challenges that livestock production faces, such as climate change, food security, food safety, animal and human health, and sustainability (Marchant-Forde 2015). And it was really on the basis of the word ‘sustainable’ in the book’s title that I took on the task of this review. This book is one of a series of three volumes on sustainable pig production, the other two covering *Safety, Quality and Sustainability* and *Animal Breeding and Nutrition*. They are also part of an expanded series entitled *Burleigh Dodds Series in Agricultural Science* so far comprising 67 volumes, of which 52 have sustainable or sustainability in the title. This volume, however, does not really do what it says on the tin, and it has left me feeling rather disappointed within the context of sustainability, although some individual chapters do provide very thorough up-to-date reviews of health and welfare of pigs during different stages of production.

By now, we are all aware of the projections in human population growth, to reach 9.8 billion by 2050 from its current 7.6 billion (UN 2017) and the concomitant demand for food, especially food from animal sources. Pig meat continues to be the most consumed meat globally, but now vying for that position with poultry meat. Over the last few years, however, although total pig numbers worldwide have been fairly flat, we have continued to see increased industrialisation of pig production, especially within SE Asia, with rapid decrease in small- to mid-scale farms and corresponding increase in large-scale farming, somewhat in line with, or even surpassing the US model. In the last few months, the construction of multi-story sow breeding units in China has attracted media attention (<https://www.pigprogress.net/World-of-Pigs1/Articles/2018/4/The-future-of-swine-breeding-278517E/>) with accompanying comments made about sustainability of such systems.

What is sustainability defined in terms of agriculture? We have a legal definition here in the United States, which defines ‘sustainable agriculture’ (US Code Title 7, Section 3103) as “an integrated system of plant and animal production practices having a site-specific application that will over the long-term:

- Satisfy human food and fibre needs;
- Enhance environmental quality and the natural resource base upon which the agriculture economy depends;
- Make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls;
- Sustain the economic viability of farm operations; and
- Enhance the quality of life for farmers and society as a whole.”