

carer or consumer” (p 176). The first explains the idea of ‘sentient materialities,’ making animal sentience primary in the business of animal-based protein production, rather than secondary to productivity or economic value. The second discusses challenges and innovations in farm animal welfare science, particularly in the light of other priorities often seen as more important, notably sustainability. The third partly answers that by outlining the One World/One Health/One Welfare agenda, which promotes a policy framework built on commonality of interests between people, animals and the environment.

It remains true, though, that farm animal welfare has its own ethical mandate. The authors close (p 183) by emphasising that: “There is no meat or animal product for which there is no life behind... [M]aking connections with those lives and making something of those lives knowable seem, at the very least, an essential endeavour.”

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### **Introduction to Laboratory Animal Science Technology and Welfare, Third Edition**

SW Barnett (2017). Published by Institute of Animal Technology, 5 South Parade, Summertown, Oxford OX2 7JL, UK. 232 pages Hardback (ISBN: 978-1-9999168-0-0). Price £20.00

This third edition of *Introduction to Laboratory Animal Science Technology and Welfare* is a compact introduction to laboratory animal science and welfare that, as suggested, should become required reading for those studying for first level IAT qualification.

This revised edition is very welcome having expanded the text, the species, illustrations, numerous informative tables and, additionally, the edition has been made available as an ebook.

There are sixteen chapters in all covering a whole gamut of topics ranging from ‘Animal health’ and ‘Modern caging and housing systems’ to chapters on hygiene, feeding and watering, breeding, substance administration and euthanasia.

The book’s final chapter is a new addition to previous editions, introducing ‘Ethics and animal welfare.’ I was particularly pleased to see this chapter included and using the theory of utilitarianism as an illustration is pitched at the perfect level for the proposed readership.

The glossary at the end of the book, again, is in keeping with the principle that the book has been written, primarily, for those people starting work in laboratory animal facilities and provides a wonderful addendum of technical terms relating to the subject of laboratory animal science welfare, which can be built upon as more experience is gained.

The structure and presentation of this edition is far superior to previous versions with notable improvements in tables and the introducing of summaries at the end of each chapter. Fish have been incorporated into a number of chapters and, for the most part, improved colour illustrations are an upgrade on the previous black and white.

If I have one small concern with the book it was with the use of some photographs taken for the second edition that have been used here, showing pieces of equipment of the day. Technological and engineering advances have seen vast improvements to the benefit of animal welfare but aren’t represented in the book. Similarly, photographs depicting what appears to be singly housed animals with little or no environmental enrichment could be updated to show cagemates and various examples of enrichment, unless of course it is explained that single-housing of these animals is essential for research purposes.

However, this minor gripe aside, The Institute of Animal Technology has produced a revised textbook which I am sure will go a long way to better inform those beginning a career in laboratory animal science of good practice which, in turn, will continue improving the welfare of animals in research.

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### **Rethinking the Three R’s in Animal Research: Replacement, Reduction, Refinement**

J Lauwereyns (2018). Published by Springer, Tiergartenstrasse 15-17, Heidelberg, Germany. 144 pages Hardback (ISBN: 978-3319892993). Price £44.99.

Jan Lauwereyns — psychologist, neurophysiologist, ethicist, and poet — describes his recently published book, *Rethinking the Three R’s in Animal Research*, as a scholarly work based on his experiences and feelings, and insights gained working in Belgium, New Zealand, and Japan where he is currently Professor of Psychology at Kyushu University. His stated intention in writing his book is, through “an integration of ethics and science without speciesism”, to further improve the ethical conduct of animal research by providing a critical review and consequential updating of the Three Rs and how they can be better applied. The book contains what he considers to be timely, novel, realistic proposals for policy-makers and others to achieve this objective.

Having trained as a cognitive psychologist, his interest in visual attention led him to further his research interests by undertaking animal-based, invasive neurophysiology experiments on Japanese macaques. After six years of working with these animals, he underwent a Damascene conversion,

and now considers non-human primates to be a special class of animal he is not prepared to experiment on. He believes that "...there will literally never be any loss of knowledge even if we discontinue all monkey research this exact minute". He continues to work with rodent models.

The book begins with a brief consideration of the content, impact and standing of Russell and Burch's 1959 book, *The Principles of Humane Experimental Technique*. In the subsequent four chapters, Professor Lauwereyns outlines what he sees as the current state of affairs with respect to the Three Rs, before providing a rationale for his ideas on how further progress with the implementation of the Three Rs can be made. He considers, in turn; the concept of contemporary fatigue with the Three Rs; the problems he believes arise from a mismatch between the motives, processes, decisions, action and outcomes of the different component parts of scientific establishment; and the special status of non-human primates. He ends by providing his blueprint for a more ethical approach to animal research based upon a co-operative, strategic approach to putting the Three Rs into practice.

Like us all, he considers his views on animals in science represent the reasonable middle ground. He believes animals can suffer; their lives have intrinsic value; well justified, carefully thought out, well conducted, and clearly reported animal research may be able to contribute to societal benefits; and, not all of the historical benefits sometimes attributed to animal research, particularly non-human primate use, withstand careful scrutiny.

In offering his own thoughts on the Three Rs, Professor Lauwereyns is at a serious disadvantage. By his own admission he has not read all of Russell and Burch's book. In addition, his book's bibliography suggests that he is not widely read when it comes to the work and thoughts of others who have sought to keep thinking and implementation of the Three Rs apace with developments in public opinion, public policy, science and technology. As a result, he seems to think that, in determining what should or should not be permissible, weighing the likely animal welfare costs of animal research against the potential benefits is a new concept. He seems completely unaware that cost/benefit assessment is now an essential and central component of how animal research is regulated and conducted across Europe.

He is highly critical of Russell and Burch for not putting ethics and the validity and utility of the scientific objectives being pursued, rather than animal welfare, as the centre-piece of their book — unaware that Russell and Burch worked to the animal welfare brief given to them by UFAW. He goes on to characterise Russell and Burch as "specialists" with only a Cartesian view of animals and no concept of animal welfare as a moral issue. He goes on to state that they clearly believed, with respect to animals in science, that any claim of any potential human benefit trumps any resulting animal suffering as long as only the minimum necessary number of animals is used.

Professor Lauwereyns provides expanded, alternative, definitions of the Three Rs. His starting point is his belief that Replacement (and that includes choosing not to pursue a

scientific objective) is the only truly ethical principle, and that often Reduction and Refinement are driven by economics and the quality of the desired scientific output. He reflects on what he believes Russell and Burch meant by 'humanity,' but fails to appreciate that the holistic approach to the Three Rs described by Russell and Burch was not intended simply to reduce the number of animals used — but to reduce and minimise the resulting animal suffering. Many, indeed, most, of Professor Lauwereyns' critical comments about how the Three Rs are currently applied in practice, and the obstacles to progress, are not new. Whilst he draws upon examples from his own experience, they are not now typical of practices in the United Kingdom.

He correctly points out that technological advances with alternatives risk leaving individual senior scientists locked into research methods upon which the sun is setting, or has already set — and that without retraining and funding for new technologies there is a risk that they will instead look for other uses for their established methods, or use them in an attempt to learn more and more about less and less, rather than continuing to pursue their longstanding scientific objectives by embracing the newer, the more refined and advanced technologies and methods. He is also correct in pointing out that much of the material published by scientists in defence of animal research, particularly non-human primate research, is aimed at preaching to the converted or convincing other scientists rather than better informing the general public or influencing policy-makers.

Although Professor Lauwereyns recognises and acknowledges that scientists do not form a homogenous group, he seems to believe that the general public is a more homogenous group. He understands that public opinion is an important consideration in establishing ethical norms and public policy. In his treatment of the public's perception of animal research he assumes he can rely on recent trends thrown up by recent telephone Gallup polls in the United States of America both to define current public opinion and to extrapolate back in time and place to when and where Russell and Burch were working on their book.

He favours a light touch approach to the regulation and governance of animal research, believing in academic freedom, and arguing that researchers should spend their time undertaking hands-on research and not be burdened with administrative chores. He believes that funding bodies need to step-up and take account of ethical issues before funding is secured; notes that good experimental design can be challenging; and mentions publication bias as a long-standing problem. His comments and criticisms are not new, and he makes no mention of steps that have already been taken to address the problems.

He offers what he considers to be realistic proposals for policy-makers and others better to implement the Three Rs. Having considered the successful 'big-science' approach underpinning the human genome project and the large Hadron Collider, he outlines a strategic approach to better realising the full potential of the Three Rs, making the best possible use of the finite resources available to

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.