



Philosophy of Animal Behavioural Study and Its Relevance in Modern Laboratory Research

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Abstract

Development of animal behavioural observational skills dates back to Palaeolithic era when the prehistoric hunter human ancestors successfully gamed their prey by understanding how animals behave, in other words, survival needs, instigated the need to master the animal behaviour to find a prey successfully. Greek philosophers, while attempting to describe the order of the world, considered the animal origin and the attribute that makes them unique, differential animal behaviour was the obvious one. The importance of animal behaviour studies lies in better animal welfare and improving animal behavioural experiences preventing animal suffering. The 1965 report on intensive farming practices by Brambell committee that exposed farming practices in Europe paved the way to realise the importance of animal behaviour in animal welfare. Reduction, Refinement and Replacement of animal usage mentioned in Russell and Burch's seminal book principles of humane experimental technique (1959) forms the core of regulatory guidelines in modern laboratory by animal experimentations. Stringent enforcement of legislation on use and care of experimental animals imposed by regulatory authorities have led to better safety and welfare of experimental animals in recent years.

Keywords: Ethology; Welfare; Scientific research

Contextual History

Civilisation stands testimony to human-animal conflicts. Development of animal behavioural observational skills dates back to Palaeolithic era when the prehistoric hunter human ancestors successfully gamed their prey by understanding how animals behave, in other words, survival needs, instigated the need to master the animal behaviour to find a prey successfully. Pre-historic cave paintings portray certain animals that are naturally associated with members of their species, suggesting a keen observation that certain animals move in groups. A probable reason for recognising the animals in groups by early man might be that if hunted, it is likely that they would definitely make a kill or to refrain from risky predatory beasts that might prey on themselves. Origins of the modern study of animal behaviour route back to Darwin's theory of evolution by natural selection. Greek philosophers, while attempting to describe the order of the world, considered the animal origin and the attribute that makes them unique, differential animal behaviour was the obvious one. Ernst Mayr in 1976 described 'typological thinking' a concept in which the knowledge of how we humans think or what makes us think is logically reasoned by how animals think, which is perceived based on their behavioural outcome, there lies the importance of ethology [1].

Emergence of Ethology as a Scientific Field

Animal behavioural studies began well before the discipline was introduced. The word 'ethology' the study of animal behaviour has origins from Greek term 'ethos' meaning "character." Three crucial developments that prompted the emergence of ethology were: (a) Theory of evolution by natural selection, (b) Development of a systematic comparative method, and (c) Studies in genetics and inheritance [2,3].

The study of evolution and functional significance of behaviour has originated from primitive works by C.O. Whiteman in 1800's who coined the term 'instinct' to elucidate the display pattern in pigeons. A graph showing time course and switch points in a sequence of

behaviours known as the 'ethogram' became the way of expressing species-specific behaviours. It was opined that environmental stimuli were responsible for triggering these instincts. Von Uexkull defined these stimuli as 'sign stimuli'. Early works by most ethologists were summarised by two noble laureates Nikolaas Tinbergen and Konrad Lorenz that marked the beginning of modern discipline of ethology during 1930's. Tinbergen later formulated methods to study animal behaviour as detailed by Sinervo [1].

Importance of Animal Behaviour Studies for Better Animal Welfare

It is noteworthy to mention that behaviour is the mode through which animals communicate to their surroundings and respond, is considered as the "first line of defence" to respond to a change. Recognition of these behavioural signs hints critical information on animals' likes and dislikes etc. [4]. Several models have been proposed to study the factors that regulate variations in behavioural features. However, one should consider subject animal and specific requirements before drawing any conclusions. Certain factors may improve animal behavioural experiences by preventing animal suffering, whilst others may push the animal into stress and agony. Hence, the human caretakers should have a fair knowledge and understanding of particular animals likes and dislikes to deliver better care and compassion. The 1965 report on intensive farming practices by Brambell committee that came into existence after the revelation of farming practices in Europe by Ruth

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Harrison in 1964, paved the way to realise the importance of animal behaviour in animal welfare. The report reads as.. (Mench, 1998) [5].

“The scientific evidence bearing on the sensations and sufferings of animals is derived from anatomy and physiology on the one hand and from ethology, the science of human behaviour, on the other ... we have been impressed by the evidence to be derived from the study of the behaviour of the animal. We consider that this is a field of scientific research in relation to animal husbandry which has not attracted the attention which it deserves and that opportunities should be sought to encourage its development.”

Undoubtedly, all the animals deserve an appreciation for becoming the subjects in improving crucial information and knowledge on complex phenomena in nature. These studies also provide an insight into the scope for future improvements in the welfare of such animals. Although most research methodologies involve the study of animal behaviour in their natural or laboratory environment without harm to animals, in question but certain studies might not be complete without manipulation of the subject animal. Such animal intensive studies should be well conceptualised before execution to minimise animal suffering, be approved by competent authorities and be within the boundaries of outlined legislations.

Need for Animal Experimentation

Behavioural research has immensely contributed to the betterment of mankind and experimental animals occupy centre stage of such achievement. Although, advances in laboratory technologies and techniques have replaced conventional procedures involving intensive animal experimentations. The emergence and re-emergence of infectious agents especially pathogenic viruses yet times compel to make use of alternative animal models to quickly identify and characterise the pathogen.

Regulatory Guidelines and Ethical Considerations for Use of Animals in Scientific Research

Most countries independently govern and issue directive guidelines on the use of non-human animals in scientific research and

are country specific hence vary greatly. However, all such guidelines aim to minimise both usage and suffering of laboratory animals during experimental procedures. Reduction, Refinement and Replacement of animal usage mentioned in Russell and Burch's seminal book principles of humane experimental technique (1959) forms the core of regulatory guidelines in modern laboratory animal experimentations [6]. Stringent enforcement of legislation on use and care of experimental animals imposed by regulatory authorities have led to better safety and welfare of experimental animals in recent years. As a result, a report from lushprize.org on global review on the usage of animals in toxicological testing suggests a marginal reduction in usage (www.lushprize.org) [7]. However, a greater thrust still needs to be emphasised on fundamental principles of replacement, reduction and refinement. An exclusive list of international organisations, agencies and authorities involved in laboratory animal research is enlisted in 'Guide for the care and use of laboratory animals' and same can be accessed online via https://www.ncbi.nlm.nih.gov/books/NBK232589/pdf/Bookshelf_NBK232589.pdf.

It is cautionary that as in most cases, researchers are accountable for breach of ethical conduct and animal welfare objectives during animal experimentations. Hence, a clear purpose oriented research goal carry's a long way to making best use of minimum animal resources, to obtain maximum meaningful output from such experiments.

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