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Environmental Enrichment: an Historical Perspective

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In 1985, the Congress of the USA passed amendments to the *Animal Welfare Act* that directed the Animal Plant and Health Inspection Service (APHIS) to promulgate regulations that provide for the psychological well-being of non-human primates (Bloomsmith *et al.*, 1991). In February 1991, the US Drug Administration/APHIS issued a final ruling that states: 'Dealers, exhibitors, and research facilities must develop, document and follow an appropriate plan for environment enhancement adequate to promote the psychological well-being of non-human primates'.

In the UK, while environmental enrichment is not a legal requirement in animal keeping institutions (i.e., farms, laboratories and zoos), it certainly helps to justify laboratory animal experiments (see Chapter 7) and in the UK, zoo visitors expect to see it being implemented (Reade & Waran, 1996). Personally, I have run workshops and courses on this subject from countries as diverse as Brazil and Russia. Television programmes about animals in the UK often feature stories about how to enrich the lives of pet species (see Chapters 7 and 13). How did we arrive at this heightened level of interest in environmental enrichment? A historical perspective is very useful on any subject matter, since knowing where we have come from often determines where we should go. However, before starting we need to define what we mean by environmental enrichment.

1.1 Definitions

'Environmental enrichment is a concept which describes how the environments of captive animals can be changed for the benefit of the inhabitants. Behavioural opportunities that may arise or increase as a result of environmental enrichment can be appropriately described as behavioural enrichment' (Shepherdson, 1994).

Alternatively, environmental enrichment is 'a process for improving or enhancing zoo animal environments and care within the context of their inhabitants' behavioral biology and natural history. It is a dynamic process in which changes to structures and husbandry practices are made with the goal of increasing behavioral choices to animals and drawing out their species appropriate behaviors and abilities, thus enhancing animal welfare'. (BHAG, 1999, provided by Valerie Hare).

1.1.1 Goals

In terms of practically implementing environmental enrichment it is easier to think of its goals rather than the various definitions that exist (see above). The goals are to:

(1) increase behavioural diversity;
(2) reduce the frequencies of abnormal behaviour;
(3) increase the range or number of normal (i.e. wild) behaviour patterns;
(4) increase positive utilisation of the environment;
(5) increase the ability to cope with challenges in a more normal way.

(Modified after Shepherdson, 1989; Chamove & Moodie, 1990)

1.1.2 Types of enrichment

Environmental enrichment is a term that applies to heterogeneous methods of improving animal welfare that includes everything from social companionship to toys. Bloomsmith *et al.* (1991) identified five major types of enrichment, each of which can be subdivided:

(1) Social
  (1.1) Contact
    (1.1.1) Conspecific (pair, group, temporary, permanent)
    (1.1.2) Contraspecific (human, non-human)
  (1.2) Non-contact
    (1.2.1) (visual, auditory, co-operative device)
    (1.2.2) (human, non-human)
(2) Occupational
  (2.1) Psychological (puzzles, control of environment)
  (2.2) Exercise (mechanical devices, run)
(3) Physical
  (3.1) Enclosure
    (3.1.1) Size (alteration)
    (3.1.2) Complexity (panels for apparatus)
  (3.2) Accessories
    (3.2.1) Internal
      (3.2.1.1) Permanent (furniture, bars)

(3.2.1.2) Temporary (toys, ropes, substrates)
(3.2.2) External (hanging objects, puzzles)
(4) Sensory
(4.1) Visual (tapes, television, images, windows)
(4.2) Auditory (music, vocalisations)
(4.3) Other stimuli (olfactory, tactile, taste)
(5) Nutritional
(5.1) Delivery (frequency, schedule, presentation, processing)
(5.2) Type (novel, variety, browse, treats)

In Chapters 8–11 I discuss all the different types of enrichment and strategies for implementing them for any species of animal held in captivity. The origins of animal keeping, animal welfare and environmental enrichment are pertinent to the types of enrichment we might use and, therefore, these subjects are discussed in the remainder of this chapter.

1.2 A Short History of Animal Keeping

The origins of zoos have been extremely well documented by Bostock (1993) in his book *Animal Rights and Zoos*. To summarise briefly, the first major collections of exotic animals were housed by the ancient Egyptians (around 3000 BC). These collections were maintained for two broad reasons: (1) many of the species kept had religious significance; (2) the possession of exotic animals was regarded as a status symbol. The use of animals as status symbols by rich and royal families across Europe and the Middle East continued until around 1800. In London, the Tower of London housed the royal family's collection of exotic animals, which had included lions and polar bears (which were often presented as gifts). Then, in the early 1800s, scientists such as Darwin started to take a serious scientific interest in the Animal Kingdom, especially in classifying animals into related groups (i.e., systematics). To facilitate their work these scientists needed large collections of different species and ones that could be easily observed (this meant small barren enclosures). It was at this time in London that the royal animal collection was moved from The Tower to Regent's Park. Sir Stamford Raffles founded London Zoo in Regent's Park in 1826. For the first twenty years of its life the zoo was only open to *bona fide* scientists before finally allowing entrance to the fee paying public. Soon after the public was given access to London Zoo, letters of complaint and criticisms of the high death rates of the animals started to appear in *The Times* newspaper. The animals were largely dying from physical health problems, such as disease. The zoo responded to the problems by increasing levels of hygiene and ensuring that all newly built enclosures could be easily cleaned (this meant hard surfaced, small barren enclosures – now referred to as hard architecture) – conditions that still exist in many zoos today despite advances in veterinary medicine