CHAPTER 2

CHANGING PERCEPTIONS OF ZOOS

Barbara, a six-year old lioness and her two three-month old cubs, on public exhibition for the first time at Taronga Zoo in May 1969.

To every thing there is a season, and a time to every purpose under the heaven.

Ecclesiastes 3:1.
2.1 Museums and menageries – change and transition

In Greek mythology, the muses were celebrated as the daughters of Mnemosyne (Memory) and Zeus, the king of the gods. Worshipped as goddesses by the Greeks, they presided over the arts which included astronomy, dance, music, history, learning and literature. Classical Greek referred to a place regarded as sacred to these muses by the word mousa (Pearce, 1992:93). From this term originated the Latin word museum, meaning library or study, along with the Greek equivalent mouseion (Alexander, 1979:6). The German word museal, signifying museum-like or dying, also originated from these terms and expressions (Adorno, 1986:175). Regrettably, this undesirable connotation has constantly been erroneously linked with museum collections. Similar adverse connections have been made with the word mausoleum, a term derived from the name of Mausolus, a ruler of Caria in Asia Minor, whose large and elaborate tomb in the city of Halicarnassus is remembered as one of the seven wonders of the ancient world.

Around 290 BC, in the ancient city of Alexandria, Ptolemy I established a centre for learning and research which he dedicated to the muses of ancient Greece. An exceptional structure, this ancient establishment developed into the Museum of Alexandria and became known as the Greek Mouseion. This outstanding institution featured a library which housed collections from all fields and provided facilities for both research and teaching. Possibly the best surviving description of this extraordinary centre is that of the Greek historian and geographer Strabo, who referred to it as ‘a large complex of buildings and gardens with richly decorated lecture and banquet halls linked by porticos, or colonnaded walks’. Unrivalled in ancient times as an educational centre, this magnificent establishment has generally been recognised as being the first real museum. Attached to this Mouseion was the most famous zoo of ancient times, a collection which had been founded by Ptolemy Philadelphus (Scullard, 1974:133).

Susan Pearce espoused the simple premise that a museum is constituted by its collection, no matter how large or small (Pearce, 1992:2). Burcaw (1997:37) considered that a museum existed to ‘collect objects, maintain permanent collections, and base its educational work on these collections’. The art of collecting has been instinctive to humans, with evidence dating back to the ancient Neolithic communities which roamed Europe some 5,000 years ago (Gurian, 1995:36). In the 2nd century BC the Romans elevated collecting to new levels, so that civilisation saw the development of museums which were associated with the storage and
display of special artefacts. With the fall of the Roman Empire these establishments disappeared, and it was not until the Renaissance times of the 15th century that museums once again became an integral part of cultural expression. The Medici Palace in 15th century Florence has frequently been cited as the origin for European museums and collecting practices (Hooper-Greenhill, 1992:23) and is generally accepted as the first ‘modern’ museum of Europe. Along with the rest of the world, museum growth followed a process of linear expansion. Individual assortments formed the nucleus of museums and menageries, such as the collection of the Tradescant family, which when acquired by Elias Ashmole (1617-92) became the nucleus of The Ashmolean. Established in 1683 at Oxford University, The Ashmolean appears to have been the first of the modern-style natural history museums (Alexander, 1979:47). Identified by Kotler and Kotler (1998:12) as ‘the oldest surviving purpose-built museum building in the world’ it became the first museum to open for public visitors as well as academic scholars. Today museums serve an educational purpose which has simply grown from strength to strength during the modern period. These institutions have developed markedly since Sir Henry Cole (1884, vol.2:368) wrote that ‘perhaps the evening opening of public museums may furnish a powerful antidote to the gin palace’.

Museums have changed constantly throughout history. The public museum acquired its modern form during the late 18th and early 19th centuries (Bennett, 1995:19). Until the end of the Second World War there was a tendency for museums to be visited mainly by the elite (Fyfe, 2006). However, in the 1960s museums experienced a marked shift in focus, as their prime responsibility changed from being a study of basic collections to one which concentrated upon their visitors. Today museums are seen as serving a number of purposes. Their role has changed from historical origins which Weil (1997) described as a ‘place of inculcation’, to one which Carol Duncan (1991) recognised as promoting environmentalism representative of communities. Eilean Hooper-Greenhill (1992:1) noted that while changes in museums have reflected the different priorities of the world in which they exist, museums have constantly remained relevant to their visitors. Today, museums represent places for learning which have the potential to educate citizens and help develop a level of social inspiration within the community.

In a similar fashion, displays of animal collections have changed constantly throughout history. In their earliest form they were nothing more than simple menageries which housed an assortment of creatures, with little thought being given to their care and welfare. The idea of keeping animals in naturalistic habitats was developed by Carl
Hagenbeck Jr. with the design of his own zoo in 1907 (Rothfels, 2002). At the turn of the century, Hagenbeck acquired an estate in Stellingen, just outside the city of Hamburg in Germany, where he constructed a zoological park which encompassed all the principles of keeping wild animals that he had come to recognise following his work as an animal dealer and circus proprietor. None of his ideas were really new, but at that time they had not been put into practice (Hoage & Deiss, 1996:59). Hagenbeck created panoramic exhibits that were strongly influenced by 18\textsuperscript{th} century art forms, highlighting visual realism in an attempt to replicate the natural habitat (Coe, 1985:197). The assumption behind his approach was that by providing an animal with an enclosure which approximated its natural habitat the overall welfare of the animal would be improved (Kreger et al., 1993). These revolutionary innovations were quickly adopted in the designs of other zoos, such as Edinburgh Zoo, which was constructed in 1909 and Taronga Zoo, which was opened in 1916. Hagenbeck’s ideas instantly created a new paradigm, representing an enormous leap from the traditions of the past, as naturalistic, barless enclosures were developed to display mixed species of animals.

Today, further conceptual changes have seen the development of multi-faceted enterprises which encourage breeding and research, with the provision of educational programmes.

Although the history of museums and that of zoos are inextricably linked, compared with a museum, the concept of a zoo is relatively new. The museum has at times been regarded as being dead and mausoleum-like (Adorno, 1986:175), but the zoo has frequently been recognised as representing something that is vibrant and living, particularly since live animals hold an emotive value for many people (Hotchkiss, 1991:15). The museum and the zoo have been regarded in museological literature as similar (Bitgood, 1992a; Diamond, 1986; Hood, 1983), although some researchers have thought of them as being distinctly different, particularly regarding the audience they attract (Milan & Wourms, 1992). The main difference between these two institutions is in the nature of their collections, rather than in their aims and approaches. In the preface of A different nature, Hancocks emphasised the strengths of zoos when he wrote that

of all the natural history-based institutions that we have invented – museums of geology, palaeontology, zoology, and natural history; botanic gardens; arboretums; aquariums; and wild animal parks – it is zoos, … that have the greatest capacity to adapt, absorb new functions, and amalgamate the content of other institutions. (Hancocks, 2001: xix).

During the first half of the 20\textsuperscript{th} century, when it was common for large numbers of animals to be kept in restricted spaces, there was little indication that an interest in the care and welfare of animals had infiltrated into zoos. This was not surprising, given that these
institutions were operating in the period of conflict and upheaval that surrounded two World Wars, and a similar lack of progress applied to most scientific research and educational programmes. Throughout this period many zoos fell into a state of disrepair. Zoos often relied upon activities such as circus type performance and elephant rides to attract the attention of their visiting public. Possibly the most important development during this period was the opening in 1931 of Whipsnade Park Zoo, near Dunstable in Bedfordshire, just over 100 kilometres from London (Pendar, 1991). Resembling a large country estate, this 240 hectare (600 acre) open range zoo has successfully bred large numbers of animals in open, naturalistic looking enclosures. One of Europe’s largest conservation parks, it is home to more than 2,500 animals, many of which are endangered in the wild. The model of operating dual city–country centres has since become critical in the development and management of a number of Australian Zoos, such as Monarto Zoological Park outside of Adelaide in South Australia and the Western Plains Zoo near Dubbo in New South Wales. Since their introduction, these open-range zoos have experienced an increase in popularity, which has been attributed to the perceived ‘freedom’ of wild animals roaming in natural settings, seemingly free from the intervention of human observers.

The Book of Genesis (Chapter 7) recorded that before the devastation of torrential rains inundated the land, Noah rescued samples of all forms of terrestrial creatures in a specially constructed ark. Once the flood waters receded and the ark landed, the animals were released from their floating zoo to repopulate the devastated lands. The analogy between the ancient ark and the modern zoo has often been referred to by researchers, (e.g. Mallinson, 1984; Durrell, 1986; Norton et al., 1995; Mazur, 2001), but whereas the ark served the single purpose of conservation, the modern zoo has been concerned with integrating this role with those of entertainment, education and research. These roles are inter-related, particularly since entertainment has played a significant role in education and conservation cannot be effective without good quality research (Rabb, 1994: 159). Over the last fifty years, zoos have often been compared to a metaphorical ark, as they have ‘carried’ threatened and endangered species, in the hope that at some future time these animals could be ‘released’ into areas that had been ravaged by the effects of man. Once considered by the viewing public solely as places of amusement, leisure and recreation, today zoological gardens ‘are in the forefront of world wide efforts to save endangered animal species, protect ecological systems, and train people in the challenge of preserving biodiversity and the environment’ (Kotler & Kotler, 1998:22). This role was exemplified in 1995, when seven Przewalski horses from Monarto Park and Western Plains Zoo, along with others which had been bred in Holland and
Switzerland, were successfully returned to their natural ‘homeland’ in the Gobi desert on the border of China and Mongolia. The only true wild horse left in the world, the Przewalski had become extinct in the wild in the 1960s, following loss of habitat and competition with domestic livestock. Known locally as the takhi, which means spirit, the Przewalski is not only its country’s national symbol, it is also representative of the intensive international conservation efforts that have helped save it from total extinction.

Once the symbol of man’s ability to capture and confine wild animals, zoos have now become an important link to the world of nature. No longer are they merely places in which wild animals are kept for display, now they are at the vanguard of worldwide efforts to save endangered species and maintain biodiversity. Animals in the zoo now live in conditions far removed from those of only twenty to thirty years ago. No longer do visitors see the big cats pacing relentlessly back and forth behind the bars of small concrete enclosures, or animals huddling in the corners of unattractive pens. The Sumatran tiger (Plate 2.2) can now roll and play with its young in a naturalistic enclosure, or sleep peacefully on its elevated bamboo stand, blissfully unaware that its numbers in the wild have rapidly diminished to critically endangered levels. The Malayan sun bear (Plate 2.3) can happily play with enrichment items and occupy itself in its enclosure without the knowledge that it has been saved from being the central ingredient of an aphrodisiac soup prepared in a Cambodian restaurant. As the care and conservation of animals have become key functions of zoos (IUDZG, 1993:2.3), the menageries of the past have developed into internationally oriented centres of conservation for the future (Rabb, 1994).
Plate 2.2: Sumatran tiger, unaware that its numbers in the wild are critically endangered. Having survived for centuries in the moist tropical jungles of Sumatra, the wild population is now estimated at between 400 and 500 animals.

Plate 2.3: A Malayan sun bear playing with a frozen milk enrichment. One of three sun bears to be rescued from the Cambodian restaurant trade, the animal showed several stereotypic behavioural problems when introduced into its new home at Taronga in March, 1997. These problems were markedly reduced with the development of various enrichment programmes.
2.2 Forty centuries of keeping wild animals – change with time

Throughout human history, zoos have been found in all civilisations around the world and have always been linked in some way to human activities. Their history has reflected several perplexing and, at times, unacceptable events that have revealed the many and varied relationships that have existed between humans and wild animals. An exploration of this history is significant in that it provides a background against which the human activities can best be studied. From their origins as private collections maintained for the amusement of royalty and nobility, zoos have developed into centres of conservation where it is possible for visitors to see at first hand the importance of biodiversity and the need for protection and preservation of different animal species. Menageries, holding collections of animals in cages with iron bars and barren concrete, have ceased to exist. Today large ‘immersion’ exhibits, resembling wild habitats, invite the visitor into natural environments, reminding them that zoos are now at the forefront of worldwide efforts to save many endangered species.

Although the Greek word for a wooded garden, *paradaisos*, was first used in the 4th century BC to describe the hunting park garden of Cyrus (Xenophon), gardens appear to have been a Persian invention. Derived from this term, the word ‘paradise’ was used in the Septuagint, the Greek Old Testament, to describe the Garden of Eden which traditionally contained animals. The concept of a zoological garden, as a developed portion of nature which was peaceful and relaxing, originated in Europe and has often been referred to in these terms by various well known writers such as John Milton and C.S. (Jack) Lewis (1955:223).

Since the first wolf ancestor scavenged food scraps in the glistening glow of the Palaeolithic fire circle, a close association developed as humans quickly learned the benefits of keeping animals. In human societies, just as the ownership and display of collections of worldly possessions have long been regarded as a symbol of progress, so too the ownership of wild animals has often signified man’s power over other individuals, as much as his domination over wild creatures (Hancocks, 2001:7). Initially, wild animals were kept simply as proof that they existed. As hostages from a conquered world, these creatures were seen as survivors of a universe which was heading along the path to extinction. Throughout history, collections of wild animals in private zoos and menageries have been regarded as important symbols of power, prestige and distinction. Today, the animals in the zoo represent more than just a shadow of our ancestral past – they have become the last remaining ambassadors of a world which has rapidly become less natural.
The history of keeping animals is a long one, dating from the Neolithic period when people first kept animals, mostly ungulates, for hunting and food (Delort, 1993:13). In the ancient civilisations of Greece and Egypt, collections of rare and unusual animals were exhibited simply for the gratification of those fortunate enough to be able to observe them. Their existence was justified with a numeric aim of possessing as many species as possible. These assemblages showed little, if any, concern regarding the care and welfare of the captive animals and certainly did not consider the educational experiences of visitors. When any of the animals died they were simply replaced from what was regarded as an infinite supply from the vast surrounding world of nature.

Zoos first appeared in Egypt and China. Stephen Bostock (1993:7) noted that the first formalised animal collections kept in ancient Egypt were owned by wealthy kings and monarchs who maintained assortments which were the source of much pride, particularly since these collections numbered thousands of animals. Animals regarded as sacred were kept in or near temples, while captured ungulates like antelopes and gazelles browsed in enclosed spaces. Around 2500 BC hieroglyphic records indicate that the Egyptians kept cranes, baboons, falcons, oryx and antelopes (Mallinson, 1997). Probably the earliest known illustrations of animal-keeping line the tomb of the wealthy nobleman Ti, in Saqqara, from the time of the 5th Dynasty (2495-2345 BC) (Lauer, 1976:50). The earliest known illustrations of a zoo were found in the tomb of Mereruka, the son-in-law of the Pharoah Teti of the 6th Dynasty (2345-2181 BC) (Lauer, 1976:57). The earliest collection holding large carnivores such as lions and tigers was probably in Sumer and belonged to King Shulgi (2094-2047 BC) of the 3rd Dynasty of Ur (Whitehouse, 1975:70). Early historical records confirm that zoological gardens flourished in Saqqara. Rameses II had an enviable collection which included several giraffes as well as a tamed lion that fought in battle alongside his master (Bostock, 1993:8). In ancient times it was common for animals to be exchanged as gestures of friendship or international relations. Rameses IX sent the gift of a hippopotamus to Tiglath-Pilaser I, the king of Assyria, who had a large pond specifically built to house this royal gift (Strouhal, 1992). In these ancient civilisations the keeping of animals served two functions: firstly as a demonstration of wealth and secondly for religious purposes. It is possible that animals were involved in the customs and traditions of ancient Egypt more than in other ancient civilisations. With the passage of time, collections evolved independently in all cultures across the globe. One of the earliest of these assortments was that maintained by Queen Hatshepsut of Egypt who, in the 15th century BC, financed special expeditions to gather specimens for her royal collection (Alexander, 1979:110). Ashurnasirpal II, King of
Assyria from 883-859 BC, brought large numbers of different animals to his zoo in Kalach to be ‘displayed to all the people of my land’ (Grayson, 1976:148). The Bible records that King Solomon had a keen interest in exotic animals and maintained a palace menagerie which included lions, apes, horses, dromedaries and peacocks (I Kings 4:26-28; I Kings 10:19-22; II Chronicles 9:18-25). As various kingdoms established across Asia, botanical gardens and zoos became the repositories of knowledge of the then known world. Nebuchadnezzar, who ruled as king of Babylonia from 604-562 BC and was responsible for the construction of the famed Hanging Gardens of Babylon, one of the seven wonders of the ancient world, also specialised in the keeping of lions.

The ancient Greeks collected various assortments of animals and plants, mainly for study and enlightenment. George Jennison (1937) recorded that in the 5th century BC the Greeks managed outstanding collections, which proved so popular that visitors who came to see the animals even paid for the privilege; the first recorded instance of an entry fee to a menagerie. Aristotle established his own private menagerie, stocked with animals sent back from military exploits by one of his pupils, Alexander the Great. Subsequently, he compiled the first zoological encyclopaedia, The history of animals, which remained for many years the only objective text on natural history. The famous zoo in the city of Alexandria, which was founded by Ptolemy Philadelphus, was continued and enlarged by Ptolemy II. Although little information is available, an indication of its vast size can be gained, when on the Feast of Dionysus, a procession of animals took all day to pass the stadium in Alexandria. Loisel documented that this parade included ninety-six elephants, three hundred exotic sheep, sixty goats drawing decorated chariots and eight pairs of ostriches in glittering harness, as well as hundreds of domestic animals (Durrell, 1973:248). Heralded by festal horns and drums, the grand finale to this magnificent parade comprised a selection of the big cats: twenty-four lions, fourteen leopards and sixteen cheetahs.

With the development and spread of Roman civilisation, private animal collections abounded throughout the Empire. The Romans were fascinated by wild animals and they took great pleasure in looking at them, seeing them perform in the bustling city streets, or being hunted and killed (Renaghan, 1998). Anyone rich enough could own lions in the Roman period and it was common for lions to follow their masters into temples and houses, caressing anyone who had occasion to approach (Loisel, 1912:22). Nero was just one of the emperors who liked to keep lions in his palace. Caracalla slept and ate with one of his favourites, Scimitar (Hancocks, 2001:9). However, in contrast to other cultures, the Romans developed
an approach to the keeping of animals which resulted in a detrimental position relating to animal welfare. Jocelyn Toynbee (1973) recorded that one of the first shows in Rome in 186 BC involved the slaughter of several lions and leopards in a simulated hunt. During the time of Roman civilisation, not only were vast tracts of land cleared for pastoral economies, but wildlife populations were devastated as a result of the gladiatorial games. The Romans were noted for displays of extreme brutality and cruelty at the Colosseum and in their circuses. It is regrettable that ingenious Roman architects used great intelligence, skill and creativity to construct structures as magnificent as the Colosseum, only for it to be used for displays of excessive cruelties and savagery. Large enough to house 50,000 spectators, the Colosseum featured an elaborate system of staircases which allowed evacuation in a few minutes, as well as an intricate method of flooding the entire arena. Paradoxically, this technically brilliant stadium provided aesthetic harmony for the purpose of massacre and depravity. The Romans engineered details for spectacular shows with great technical skill solely for the purposes of decadence, immorality and massacre. Historical records show that Pompey financed a display which featured the killing of twenty elephants, six hundred lions, four hundred leopards, along with a rhinoceros and several apes. Cicero seems to have been one of the very few to have complained about such depravity when he asked, ‘What pleasure can a cultivated man find in seeing a noble beast run through by a hunting spear?’ The slaughter of twenty elephants in 55 BC by Pompey revolted not only Cicero but ordinary citizens as well (Pliny). Each Roman emperor maintained a menagerie for triumphal processions and official celebrations and, as Suetonius recorded, the horrendous level of animal butchery continued well into the first century. At the birth of the Christian era, the Emperor Octavius Augustus (29 BC- 14 AD) had more than 3,500 animals killed in twenty six celebrations (Hoage & Deiss, 1996:11), whilst Trajan (98-117 AD) was responsible for one of the worst carnages ever recorded, when 11,000 animals were killed to celebrate one of his military triumphs (Hancocks, 2001:10). The Romans considered that animals were weak beings and as such were undeserving of any moral consideration.

After the extravagance and waste of the Roman Empire with the savagery of its spiteful displays, the history of zoos moved through the gloomy, unproductive and uncreative eras of the Dark and Middle Ages, before once again expanding in Renaissance times with the development of magnificent imperial collections. In medieval Europe, large beasts were often exchanged as gifts from one monarch to another, such as the elephant Aboul-Abas which was presented to the French king Charlemagne by the caliph of Baghdad in 797 (Loisel, 1912:162). In 1135, the Holy Roman Emperor Frederick II, a diligent student of the natural
sciences, established a menagerie at his court in Palmero (Hancocks, 2001:13). He gave a number of animals to his brother-in-law, King Henry III (1216-1272), who in 1252 set up a royal menagerie in miserable confines inside the Tower of London. The size of this collection varied with the enthusiasm of the reigning monarch, but generally it was to remain in extremely poor circumstances for nearly 600 years. Few people showed any care or concern towards animals during these times. Although some exceptional individuals, like St. Francis of Assisi, promoted the need to care for animals, most treated animals with absolute contempt.

In the 13th century, Marco Polo described the royal menagerie of Kublai Khan, the Mongol Emperor of China. He wrote of the huge marble and stone palace, ‘the largest that was ever seen’, surrounded by parklands which contained ‘many other beautiful animals’ and ponds with ‘a great variety of fish’. Kublai maintained a vast number of elephants which would all be paraded at the New Year, as well as large numbers of leopards, lions, tigers and flocks of falcons which were used for hunting. The sumptuous parks provided another method for keeping wild animals, as they were allowed to roam freely, yet apparently they were so tame that the sound of a bell or trumpet would be sufficient to call them in to be fed (Loisel, 1912: I, 40).

A most significant development for the history of zoos in modern times occurred with the great discoveries of the 15th and 16th centuries and the subsequent expansion of trade which brought about an influx of exotic animals. The term *exotique* first appeared in French literature, when it was used by Rabelais in 1552 to describe the markets from distant Medamothi. These centres exhibited ‘various paintings, various tapestries, various animals, fish, birds and other exotic and well-travelled merchandise’ (Rabelais, 1998:145). Collecting became a sign of prestige, where the higher one’s position, the more impressive the number and quality of elements were required to be. Some, like Rudolf II, the Holy Roman Emperor from 1576 to 1612, took to collecting with a passionate enthusiasm. Others practised it out of some form of obligation and emulation of their peers (Baratay & Hardouin-Fugier, 2002:30). In 1665, Louis XIV established a magnificent menagerie of animals at Versailles which at its peak included up to 222 species. This outstanding collection has been considered as the first ‘zoological garden’ (Loisel, 1912:104), and combined animals and plants together in its exhibits. Unfortunately Louis XV was not interested in the menagerie and the collection fell into decline.
As interest in naturally occurring things developed, so too did the desire to collect anything from the world of nature. Collections became more ordered and their arrangements in small cabinets, cases and drawers, often in specifically designated rooms set aside for their display, saw the development of the first “musaeum”. These ‘Cabinets of Curiosity’ quickly established and their spread occurred not only amongst the aristocracy, but also among scholars such as Leonardo da Vinci. The initiatives of scholars were supported by monarchs such as the Grand Duke of Tuscany, Cosimo I de’ Medici (the first of the dynasty to possess a cabinet of curiosity), at Pisa. When these royal collections were made available to the public, they represented the power of the king; most were exclusively for the better educated or the rich and the elite (Glaser & Zeneton, 1996:11). Some had their own gardens and whilst they may not have been on a par with the seraglios (Moser & Teyssot, 1991:77-78), it was these botanical gardens that were to inspire the development of menageries of animal curiosities.

Between 1500 and 1800, the different animal collections in Europe belonged mainly to royalty or aristocratic families. The menagerie which had been founded by Louis XIV at Versailles was unique in that it was open both to scientists and to the public. This outstanding assortment was to play a major part in the development of the science of anatomy, with the Academy of Sciences regularly dissecting animals that had died in the menagerie, one of the more famous being that an elephant in 1681 (Loisel, 1912:229).

By the second half of the 17th century, collections of animals had become known as menageries. Derived from the French word ménages, an expression which originally had been used in the 13th century to represent housekeeping, initially a ménagerie indicated the administration of farms. In his Dictionaire francais Pierre Richelet (1680) recorded that in a menagerie ‘one finds, in the maintenance of all kinds and species of animals, everything to make country life diverting and agreeable’. Unfortunately the animals in these early collections were frequently mistreated, and since they were invariably confined to small enclosures their activities and movements were extremely restricted.

The close of the 18th century was notable for revolutionary changes. This was the age of rights, with a vengeance. Despite all the problems associated with the French Revolution, it was against this background of upheaval and insurrection that the opening of public zoos subsequently occurred, beginning their transition from princely menageries to establishments where rare species could be seen and studied by those interested. After the Jacobin sympathisers marched upon the royal menagerie at Versailles in 1792 a number of animals
were liberated, with the last being sent to the Jardin du Roi in Paris, which became the Jardin des Plantes and formed part of the Muséum d’Histoire Naturelle under the directorship of the zoologist Cuvier (Loisel, 1912:161). The initial collection started with six animals salvaged from the large assemblage at Versailles. These animals were a quagga (a now extinct form of zebra), a hartebeest, a crested pigeon, an Indian rhinoceros, together with a lion and a dog which had become inseparable companions (Hancocks, 2001:35). With its main function being that of education and scientific research, this national zoo was the first to be open to the general public and has always remained an establishment that allows free entry to the public (Strahan, 1991:1). Its development coincided with the establishment of the Louvre, which has generally been recognised as the first free public museum. Opened by Napoleon in 1792 as a democratic ideal for all citizens of the republic, the Louvre was a visible manifestation of the Empire (Hooper-Greenhill, 1994:258). Since there were no admission fees it could be visited by the lower classes and, like the Jardin des Plantes, it became not only an instrument for public education but also a place where people could meet friends and enjoy displays (Bostock, 1993:26).

By the early 1800s the conditions under which the collection was held in the Tower of London had altered little since it had first been established. Buildings were dilapidated and deaths were common, particularly since the animals were kept in extremely cramped quarters (Scherren, 1906:44). Sir Stamford Raffles, primarily famous as a colonial administrator in the East Indies and the founder of Singapore, was also a distinguished naturalist who owned a substantial menagerie of his own. So inspired was he by the zoo in Paris that he conceived the idea of a zoological society displaying animals in a similar manner to that in which botanic gardens displayed plants. In 1826 Raffles, in collaboration with Sir Humphrey Davy and Sir Joseph Banks, established The Zoological Society of London. These influential people were instrumental in developing ‘a collection of living animals such as never yet existed in ancient or modern times’ (Cherfas, 1984:35) with animals gathered ‘from every part of the globe to be applied either to some useful purpose of scientific research, not of vulgar admiration’ (Mullan & Marvin, 1999:109). Using animals from the Tower’s Royal Menagerie they commenced a zoo in Regent’s Park, London, in 1826. Originally, London Zoo was intended for zoological purposes only, and so for the first 20 years entry was restricted to bona fide scientists, such as Charles Darwin. Since these scientists were concerned solely with scientific, anatomical and taxonomic studies, it was considered that the only matter of importance was simply to observe the animals; consequently this was where any concern for the animals ended, with little if any thought given to their welfare. In 1846 the London Zoo officially opened its gates to the
public and almost immediately newspaper reports expressed concern about the poor housing conditions and the very short life expectancy of several animals, in particular the big cats. Thirty years passed before the inadequate housing conditions were replaced with more naturalistic ones, which ultimately saw an increase in the life expectancy of the animals (Bostock, 1993:30). For nearly a century, the primary role of the zoo was to provide visitors with recreational opportunities of seeing fascinating and remarkable animals which had been collected from various continents around the world. Animals were typically organised in park settings, which gave rise to the term “zoological gardens”, although as already noted, this expression was quickly contracted to the word “zoo”. Today, the 15 hectare zoo exhibits thousands of specimens and has had outstanding success with breeding animals such as the Père David’s deer, pygmy hippopotamus, musk ox and polar bear (Barrington-Johnson, 2005).

During the first half of the 19th century, zoos developed slowly both as recreational institutions and as centres for public education. Apart from London, only six other major zoos were established in the first half of the 19th century, these being at Dublin (1831), Manchester (1836), Amsterdam (1839), Stuttgart (1842), Antwerp (1843) and Berlin (1844). If it had not been for an unfortunate clash of personalities, the next might well have been founded in Sydney (Strahan, 1991:5). The earliest zoo in the USA was the Philadelphia Zoo, which because of the Civil War was not officially opened until July 1, 1874, when more than 3,000 people visited on the opening day. Whether financed by public funding or private zoological societies (as in London), these parks combined scientific research with public amusement as they became the source of considerable civic pride.

In discussing the concept of visiting the public zoo of the Victorian era, Hancocks (1995:31) considered that the combination of an emerging middle class of society and the novelty of leisure time entertainment provided a centre of tremendous popularity for visitors to the zoo in the 19th century. Visitors gave little apparent thought to the appropriate care and welfare of the animal and merely satisfied their curiosity about wild and exotic creatures. Animals were displayed in barren cages which reflected little appreciation of the concept of behavioural or psychological needs. During these Victorian times, the zoological garden sought to display animals as beautiful, interesting or unusual objects or, as May and Lyles (1987:643) phrased it, ‘living Latin binomials’. Individual collectors strove for the artistic (Rybczynski, 1992) at a time when zoo husbandry was best likened to the maintenance of a greenhouse plant. Zoological gardens simply fulfilled two purposes. Firstly, they permitted a
close examination of the animals and secondly, they provided what was thought to be an edifying and amusing spectacle of the ‘wonders of Creation’. Animals were kept solely for the amusement of the viewing public, with little thought being given to understanding the animals’ needs and well being (Plate 2.4).

The German zoologist, Heini Hediger, pointed out that the modern zoo was not only a place for amusement and entertainment, but also represented an institution closely linked with scientific enquiry. He noted how the biology of zoological gardens opened up a complex field of study, ranging from zoology to human psychology, from ecology to pathology, and concluded that the various links should be part of an ongoing investigatory process (Hediger, 1964). Modern zoological gardens are no longer simple collections or menageries, but have become important centres of conservation, education and research (Mallinson, 1997). Zoos now display their animals in naturalistic settings (Plate 2.5), which have been designed and landscaped with an aim to create an interesting environment for the animals to live in and for visitors to view. Their conservation potential has been highlighted in the World Zoo Conservation Strategy (IUDZG/CBSG, 1993). The change from menageries to centres of conservation has been gradual, but the role they have played in human societies has been striking, which is only to be expected for any institution which has spanned a period of more than four millennia. The Persian paradaisos and the modern centre for conservation may both display animals in natural settings, but significant differences exist between the purposes of the imperialistic ‘Gardens of Eden’ and the modern multi-functional institutions which combine recreation, education and scientific studies. The recent reassessment by zoos in a changing world of their philosophies, goals and strategies has resulted in significant advances being made in the care and welfare of animals, which are discussed in the following section.
Plate 2.4: The lion enclosure at Taronga in 1917. These early exhibits had moats that separated visitors from the animals, which was considered progressive and innovative at that time.

Plate 2.5: The lion enclosure at Taronga in 2006. Following substantial changes in the 1970s and again in the 1990s, the enclosures were developed to be more in keeping with natural habits. One of the most important of these changes was that visitors viewed these animals from below the general level of the enclosure, rather than from above the animal.
2.3 Animal care and concern – change in attitudes

Although attempts to keep animals in captivity are nearly as old as human society itself, the care and concern shown for these wild creatures has changed throughout history. The main purpose of maintaining the menageries from the ancient societies of Egypt and Greece was to flaunt the wealth and power of the owners, with little if any thought or consideration given to the welfare of the animals. From the Aristotelian viewpoint of the Greeks, humans were at the top of the natural hierarchy and animals of less reasoning existed for the sake of humans with higher reasoning. With the spread of Roman civilisation, this gap between animals and humans widened further as the Romans showed negligible concern for those considered to be weaker or less than themselves.

Following the fall of the Roman Empire, animals were treated with a mixture of pity or contempt. As mentioned previously, occasionally some individuals, such as Saint Francis of Assisi (1182-1226), promoted the need for care of animals. St. Francis, who showed a great love of all God’s creatures, was recorded as having even addressed birds and flowers in his public sermons. Despite the work of such individuals, animals continued to be treated with disdain and disregard, even though they were subjected to the same laws as humans. In 1457, in Falaise, Normandy, a sow accused of killing a five-year-old child was tried, found guilty and sentenced to death by hanging on the scaffold, an event which was represented in a fresco on the west wall of the Church of the Holy Trinity (Hancocks, 2001:19). During medieval times, although animal collections were well established amongst royalty and nobility, most creatures were kept simply as an attempt to display the superiority of man over the natural world (Kisling, 2001:21).

In England, cruelty to animals was an accepted practice at all levels of society until the mid-18th century (Kean, 1998). One of the first to speak out against such practices was the Bishop of Shiplake. However when the Bishop preached a sermon against the cruelty of animals in 1772, the outrage generated was such that the vicar was considered quite insane (Hancocks, 2001:20). John Wesley (1703-1791), the founder of Methodism, tried to encourage recognition of the close relationship between people and their natural surroundings. Wesley, along with his Methodist lay preachers, had been banned from using church buildings, forcing them to deliver their messages in the open market squares of towns and villages throughout Britain. These open spaces were the areas where animals lived and worked, and consequently where they were abused and harassed. In his sermons, Wesley
specifically instructed his congregations to show mercy to animals (Wesley, 1770: I, 285). He instructed all his itinerant preachers not to seek food and rest for themselves until their horses had been properly cared for and bedded for the night (Bready, 1938:407). Wesley stressed the creation of specific moral and religious characters for his followers and developed the practice of Methodism as a social religion which required positive actions (Wesley, 1766). The ideas that developed from this new religion which swept Britain and America also proved significant in the development of a new approach towards animals and their welfare (Kean, 1998).

In France, the Revolution was just three years old when the Jacobin sympathisers marched on the royal menagerie in Versailles, intent on liberating animals ‘intended by their Creator for freedom’ (Bostock, 1993:1). Declining to release dangerous animals, such as the tiger, the director offered the revolutionaries the keys to free the animals themselves, which resulted in activist passion and dedication quickly being tempered by reflection and consideration. Some of the liberated animals included a number of Java rats, whose descendents were to wreak havoc on the chateau, while a number of birds and deer were to acclimatise in the neighbouring woods. Although the Revolution may well have been a critical catalyst for the change of zoos from private to public organizations, the uprisings unfortunately had little influence on developing or improving conditions within various menageries, particularly in terms of display. It was the French monarch’s architectural style which influenced developments, as was seen when the central rotunda, designed to replicate the Napoleonic Legion of Honour, made its own strong architectural statement in the centre of the Jardin des Plantes (Hancocks, 2001:36).

During the 19th century, animal collections continued to constitute a general accumulation of creatures from all places, aimed at providing a site for contemplation and observation. While zoological gardens quickly established themselves as among the favoured leisure sites, different collections accrued without clear direction and often without any form of documentation. Associated with this trend there developed a justification for keeping captive wild animals confined within small enclosures. Despite the fact that administrators declared that their institutions existed for reasons of science and education, the detrimental effects of inadequate housing became more noticeable, with the result that these problems could no longer be ignored by the visiting public. This apparent lack of care was highlighted when it was observed that the big cats in the London Zoo lived on average only about two years. By the 1880s over half a million people annually were visiting the London Zoo to look
intently at animals that had been gathered from all corners of the Victorian empire. Such visits to the zoo were regarded as a standard ingredient of social and educational life (Sclater, 1901). On 4 January, 1880, the *Daily Telegraph* made an interesting and tacit comparison, when it declared ‘We all go to the British Museum for instruction’s sake; but we visit the zoological gardens for amusement as well as for instruction’ (cited by Vevers, 1976:59).

Towards the end of the 19th century the spread and development of zoological gardens in major cities was rapid and extensive, the rate being increased by the added political dimension of competition between nations (Baratay & Hardouin-Fugier, 2002:83). These assemblages still possessed the nature of a menagerie, particularly since too often they had been created simply to maintain the status of the city (Chaumelin, 1935:45). In an effort to be comprehensive, the main aim of these menageries had been to possess as many animals as possible in the collections. As zoos began to proliferate amongst Western societies and an influx of visitors occurred, a change in attitudes towards the care of animals took place, with the result that genuine concerns slowly developed for the issues of animal welfare. With this change, administrators and designers were forced to examine different reasons to justify the existence of zoological gardens, particularly in terms of conservation, research and education. Considerations for the welfare of animals intensified, particularly in England, resulting in the development of organisations such as the Royal Society for the Prevention of Cruelty to Animals founded in 1824 (Bostock, 1993:36), followed by the formulation of legislation such as the *Prevention of Cruelty Act* (1849) and the *Wild Animals in Captivity Protection Act* (1900).

During the early years of the 20th century, dioramic displays were created in the natural history museums of Sweden and America (Bitgood & Patterson, 1987:4), an approach which was quickly adapted by zoos. The main thought underlying these dioramic displays was that some important message could be communicated more effectively by placing the subject in context (Murray, 1998:53). By displaying animals in their ‘natural’ context, with three-dimensional realistic paintings as backdrops (Bitgood & Patterson, 1987), it appeared that some attempt was being made to communicate to viewers a message relating to the animal’s habitat. Although this visual impact may have appeared authentic to viewers, the remaining exhibits were almost entirely non-functional, often resulting in the development of patterns of stereotypic behaviour in many of the animals. Donald Griffin (1992) indicated that it was not until the idea of animal mentality was studied in the early 20th century, by scientists
such as George Romanes, that the acceptability of these types of animal enclosures was questioned.

Study of the literature indicates that animal welfare has been considered under two criteria – the physical (such as freedom from disease and prolonged life) and the psychological (showing species-typical behaviour). One of the first to propose that the use of different occupational activities could improve animal welfare was Robert Garner who, in 1896, worked with primates (Maple & Finlay, 1989). Although the concern for captive animals has had a long history, it was not until the early 1960s that it became a topic of major public concern. The first welfare-friendly enclosures for zoo animals were developed by Hagenbeck when he constructed his ‘Tierpark’ (Tudge, 1991). By the end of the 1970s most of the larger zoos in developed countries had constructed ‘naturalistic’ moated exhibits similar to Hagenbeck’s original concept, although in many older or smaller zoos this had not been observed. Mazur (2001:25) pointed out that while designers were striving for more realism by effectively placing the visitor into the animal’s environment, they were also attempting to enhance the overall welfare of the species in their care.

Although the concern shown for captive animals has had a long history, it was not really until 1964, when Ruth Harrison wrote Animal Machines, that such issues became a major topic. Published in seven countries, Harrison’s work was the inspiration for the European Convention for the Protection of Animals Kept for Farming Purposes, and it lit the fuse for greater animal advocacy. Although the purpose of this book was to increase public awareness about the poor conditions under which animals were kept on factory farms, it was instrumental in drawing attention to all captive animals, particularly those kept in zoos. Now over the last two decades, the public’s concern for the welfare of animals has possibly constituted the most important problem facing zoo management. Behavioural scientists like Mary Midgley (1983:155) have considered the importance of natural behaviour, on the premise that since humans have various needs it can be assumed that certain animals have a diverse variety of needs also. John Wuichert and Bryan Norton (1995:238) noted that ‘according to the welfare criterion, the treatment of captive animals must achieve a level of well-being comparable to, or better than, the life they could be expected to live in a wild context’. Young (1998:17) recorded that with increased public awareness of animal behaviour there was increased pressure on zoos to improve animal welfare, which they have attempted to do with the use of enrichments.
Perhaps the most significant way in which zoos have responded to the concerns about animals that have arisen during the last two decades has been in a strengthening of the resolve to be conservation oriented. Presenting exotic animals simply for the sake of show and display is no longer regarded as satisfactory justification for the zoo’s existence. Instead, the provision of quality conservation and education programmes is now regarded as essential for any ‘good’ zoo. An excellent example of the change that has taken place in the care of captive animals within a zoo can be observed with the chimpanzee group at Taronga Zoo (Plate 2.6). Fifi, Bessie and Lulu, three aging matriarchs in the chimpanzee family, first came to Taronga in the late 1940s – early 1950s. At that time, the accepted practice was for animal traders to capture young chimpanzees from the wild to sell to zoos and circuses around the world. These three chimps, having begun their lives in the forests of Africa, were to experience several different homes before eventually arriving at Taronga. During their lifetime they have seen a myriad of changes as the zoo has moved from bars to branches and as small cramped concrete enclosures have been replaced by the open expanse of grass and trees that grow naturally in the new Chimpanzee Park overlooking Sydney Harbour. Now in their twilight years, these chimps have been central in the development of one of the largest and most naturally cohesive groups of captive chimpanzees anywhere in the world (Clements, 2003) and they epitomise the many changes in animal care and welfare that have taken place just in their lifetime.

Plate 2.6: Members of the chimpanzee family relaxing peacefully in Chimpanzee Park at Taronga Zoo.
Animals have unwittingly become part of political, cultural and social life (Kean, 1998:213). The announcement in July, 2005, by the Federal Minister for Environment and Heritage, Senator Ian Campbell, approving the importation of five Asian elephants for Taronga Zoo, was hotly debated, with welfare groups such as the IFAW (International Fund for Animal Welfare), HIS (Humane Society International) and RSPCA Australia arguing that placing these animals in zoos would cause them further suffering. These groups opposed the introduction on the grounds that there were no conservational benefits, that it was potentially detrimental to the survival of the species and that the zoo could not meet the biological and behavioural needs of the animals (IFAW, 2006). After an unsuccessful application to the Administrative Appeals Tribunal of the High Court of Australia, the elephants finally arrived at Taronga in November, 2006, whereupon they immediately settled into their new enclosure (Plate 2.7). Only time will provide the final judgement in this example of animal welfare, although it is possible that both sides would agree with the words of Rev. Dr. Kenneth Greet, who wrote *The Methodist Recorder*, ‘heaven would surely be a bit bare without the presence in some form of our feathered and furry friends’ (Greet, 1996:3).

Plate 2.7: Elephants playing in their new enclosure at Taronga Zoo in 2007.
2.4 Exhibits and enclosures – change in ‘animal homes’

The term ‘exhibit’ has been taken from the museum context, where it has been used to specify either an individual object with a single focus, or a group of objects that have been linked and displayed together following a particular theme (Pearce, 1992). The word can be used either in the singular sense or in the plural, as well as a collective noun. Within the zoo an ‘exhibit’ has generally been accepted as one in which animal specimens form the focal point of attention of visitors (Tunnicliffe, 1995a:34).

When exhibits in zoos and museums are compared it is apparent that a number of major differences exist. Whereas a dilapidated exhibit in a museum may not create any positive harm, the ramshackle zoo exhibit will not only involve discomfort, but the possibility exists that it may also harbour disease and lead to the untimely death of its occupants. Once completed, a museum display can be left for long periods of time, with little more than occasional dusting and security supervision required. In comparison, the zoo exhibit must be cleaned thoroughly and the animal provided with a supply of fresh provisions on a regular daily basis. The museum collection can be stacked on shelves or stored in cellars or spirit houses and left unattended for long periods of time, but every acquisition to the zoo necessitates individual protection and refuge. Since the animals are alive, unpredictable problems of injury, disease and behaviour can frequently arise. Whereas museum exhibits have usually been arranged to attract the attention of viewers to a static display, zoo exhibits are dynamic: they change constantly throughout the day, although at times the occupant may not even be visible to the viewing public.

From the earliest times, menageries, such as those of Louis XIV at Versailles and the imperial menagerie at Schonbrunn in 1752, were designed for the benefit of visitors and not for the animals (Mullan & Marvin, 1999:48). As animal collections developed worldwide throughout the 20th century, it was common for animals to be confined in small barren caged enclosures that provided only the minimum of requirements. Since these enclosures were generally designed for easy cleaning, they consisted of bare concrete surfaces with a heavy barred front through which the animals could be observed by inquisitive visitors. The only care or concern shown for these animals was that they be kept alive and sufficiently healthy so that they could be on display to the visiting public. Many enclosures in today’s zoos are the legacies of this design (Young, 1998:16) and are commonly referred to as ‘hard architecture’. However, during the last twenty years, ideas of displaying animals have changed and more
naturalistic looking displays have been developed. The use of natural objects has frequently provided more interest for the visitor than artificial substitutes, particularly since items such as tree branches provided bark surfaces that could be stripped away to provide a tasty meal of insects. However, it must be accepted that the provision of permanent vegetation in all enclosures for captive animals can be difficult, simply because of the constant damage caused by the animals.

With the development of Hagenbeck’s new ‘Tierpark’ at Stellingen, animals were presented in ways which at the time were considered unique. Hagenbeck attempted to create some semblance of animals’ normal environments by removing the barriers that separated them from the viewers, organising the exhibits in such a way that it appeared to the viewing public that carnivores and herbivores shared the same space. Obscured moats, artificial rockeries and numerous ponds concealed service areas and created scenes that appeared as large expanding panoramic vistas. Visitors could see animals in large, open-air, naturalistic looking enclosures, where metal bars had been replaced with grassy ditches or water-filled moats. The purpose of these designs was not to improve animal welfare, but to create a more attractive looking zoo (Young, 1998:15). Unfortunately, thirty-six years after its foundation, this zoo was destroyed during the night of 25 July 1943 by ‘a hail of inflammable phosphorus bombs’ (Hagenbeck, 1956:217), although it was rebuilt after the war. In his autobiography, Hagenbeck wrote

I desired, above all other things, to give the animals the maximum of liberty. I wished to exhibit them not as captives, confined within narrow spaces and looked at between iron bars, but as free to wander from place to place within as large a limit as possible, and with no bars to obstruct the view and serve as a reminder of captivity (cited in Hancocks, 2001:64).

Zoo exhibit design and philosophy changed markedly during the second half of the 20th century. In earlier years, most zoos had been interested in having a small number of as many species as possible. During the 1970s zoos began to exhibit fewer species, but with more individuals, in naturalistic settings. Barred enclosures began to be eliminated. Visually appealing surroundings were developed using realistic artificial ‘mock rock’. Less emphasis was placed on exhibiting animals as objects and more prominence was given to displaying animals in naturalistic environments which engaged them in natural forms of behaviour (Seidensticker & Forthman, 1998). Special consideration was given to animals which were listed as in immediate danger of extinction.
Jon Coe and Terry Maple (1984) described the trend towards the naturalistic approach in zoo exhibits, where the main visual features were open exposure to air and sunshine, soft ground cover (rather than concrete), trees for climbing, water pools for swimming or drinking and rocks for resting or hiding. More subtle variations, not so visually obvious, included items such as heated stones (‘hot rocks’), concealed water outlets, the use of scents, hiding food, and variation in the time of feeding, in an effort to simulate natural conditions. Some critics, such as Charles Siebert (1991:49), argued that naturalistic exhibits were designed to make the viewing public happier about the keeping of captive animals, and considered that ‘the animals aren’t any happier in the new natural habitats’. Many researchers (e.g. Clarke et al., 1982; Maple et al., 1995; Tannenbaum, 1991 et al.) have tended to disagree, since the use of such naturalistic enclosures has permitted the stimulation of natural behaviours and has been shown to improve animals’ welfare, as well as enhancing both the visual and the educational value of exhibits. Recent developments in Adelaide Zoo and Taronga have reflected this naturalistic approach. In particular, The Creatures of the Wollemi enclosure (Plate 2.8) has provided visitors the opportunity of wandering through a natural bushland setting where more than 200 animals can be observed moving and interacting freely.

Plate 2.8: The Creatures of the Wollemi enclosure at Taronga, a naturalistic enclosure, where in 2003 twin platypus were born for the first time in captivity.
Coe (1985) pointed out that while zoos attempted to display animals in a manner that provided easy observation by the visiting public, at the same time they were faced with the additional challenge of providing functional exhibits for the animals, ones in which the animals could not only survive, but hopefully successfully reproduce. For the visiting public to accept any zoo exhibit as successful, not only must the biological needs of the animal appear to have been met, the exhibit must also be aesthetically acceptable in the minds of viewers and communicate some form of message to them.

Throughout the centuries marked changes have taken place in zoos. Where once menageries considered animal numbers of prime importance, zoos now concentrate upon displays in which animals are more carefully presented in enclosures resembling their natural environment (Plates 2.9, 2.10). Not only have zoos developed into places where people can see and admire rare animals at close range, they now provide living laboratories where the understanding of different animal behaviours can be examined and developed. More importantly, zoos have developed into a refuge for species which have become endangered as a result of the activities of man.

While these conceptual changes occurred, the functionality of different zoo enclosures was also questioned (Forthman Quick, 1984:65). This has resulted in the formulation of an ever-increasing range of programmes which have been integrated into zoos worldwide, in a specific effort to enhance the lives of captive animals. Samantha Stephens (2003:179) concluded that enclosures did not always fully cater for animals’ behaviour. She expressed concern that exhibits which tended to concentrate solely upon naturalistic appearance did not necessarily provide the various challenges which animals would meet in the natural situation. Behaviour is as much part of displaying a species in captivity as the portrayal of its habitat. To provide animals with the opportunity to develop their behaviours, enrichment programmes have been developed, some of which are discussed in the following section.
Plate 2.9: King Kong, a silverback gorilla, in Taronga’s ‘Gorilla Villa’, a concrete enclosure which featured a double-barred viewing area, photographed in 1960. King Kong was nothing like the beast in the movie after whom he was named and quickly became a favourite with Taronga visitors.

Plate 2.10: Kibabu, a silverback gorilla, feeding on enrichment browse in the open naturalistic enclosure at Taronga in 2006. As part of an international breeding programme three gorillas have been born in this enclosure since 2005
2.5 Enrichments – a change in approach

Although humans have been keeping collections of animals since the time of the early Egyptians, the idea of using naturalistic enclosures developed only in the last century, and it was not really until after World War II that concern for animal welfare became a major public interest. A number of researchers (Hare & Worley, 1998; Kleiman et al., 1996; Shepherdson et al., 1998) have shown that the simple housing, maintenance and feeding of animals is now no longer considered adequate. During the last two decades, zoos worldwide have strived to develop naturalistic settings which have been associated with a central aim of providing the animals with various items that may encourage natural behaviours. These items, whether natural or artificial, have been termed ‘enrichment’. Enrichment programmes have been purposefully considered for use in zoos worldwide (Martin, 1999). Young (1998:16) explained that although animals in zoos had been kept under inadequate conditions in the past, it should be stressed that this was not the result of uncaring attitudes, but simply because detailed information relating to animal needs and welfare was only a recent phenomenon.

Hagenbeck and Robert Yerkes have been recognised as the two founding fathers of environmental enrichment (Tudge, 1991). In developing his Tierpark which featured large naturalistic enclosures, Hagenbeck created animal-friendly enclosures. In suggesting the use of enrichment devices, the American primatologist Yerkes (1925:3) wrote, ‘the greatest possibility for improvement in our provision for captive primates lies in the invention and installation of apparatus that can be used for play or work’. Since Yerkes, a number of authors have agreed that managing the environment of captive animals can give them the opportunity to optimise their activity time and display behaviours they would normally show in nature (Segonds Pichon, 1994). An awareness of the physiological and behavioural requirements of captive animals escalated with the publication of *Wild Animals in Captivity: An Outline of the Biology of Zoological Gardens* by Hediger (1964). His endeavours laid the foundations for the science of ethology to be developed in zoo programmes. Historically, zoo keepers had provided some form of enrichments for animals in their care, but it was not until Hediger identified the importance of environments that the significance of their usage was fully appreciated. By examining the importance of using natural materials to overcome any stereotypic behaviour that had developed in captive animals, he made it obvious that quality of space, not quantity, was the critical factor in meeting the needs and requirements of captive animals, as he argued the case for a biological approach to zoo design.
As a result of Hediger’s work, environmental enrichment began to develop as a science in the 1970s, when Hal Markowitz adopted a systematic, empirical approach to improving zoo animal environments, based on scientific concepts. Markowitz stressed the necessity of providing animals with choices, and the devices he developed provided invaluable insights into the learning abilities of different animals. Two different schools of thought have arisen: the behavioural engineering approach, which developed from the work of Yerkes, and the naturalistic approach developed by Hagenbeck. Although these two approaches clearly overlap and complement each other, there has been considerable debate over their advantages and uses (Forthman Quick, 1984). The behavioural approach of Markowitz (1982) was based on operant conditioning, a pattern in which behaviour is learned as the result of the animal being rewarded. The naturalistic approach was best typified by the work of Michael Hutchins (Hutchins et al., 1984), who was interested mainly in making the enclosures look as natural as possible. This approach emphasised the use of natural substrates and plants within the enclosure, with the underlying principle of providing the animal with as many natural stimuli as possible to develop and improve its life in captivity. Hutchins and colleagues pointed out that the use of enrichment devices has been criticised in some circles on the grounds that they merely stimulate abnormal behaviours (Hutchins et al., 1984). However, the enrichment approach has been defended by Markowitz who argued that, just as humans use exercise bikes to counteract the effects of limited exercise, captive animals should be given the chance to receive some form of stimulation (Markowitz, 1982). The most generally accepted definition of environmental enrichment is that formulated by David Shepherdson (1998:1), who defined enrichment as ‘an animal husbandry principle that seeks to improve the quality of care for captive animals by identifying and providing the environmental stimuli necessary for optimal psychological and physiological well-being’.

Initially, the idea of enrichment use was derived from psychologists studying behavioural problems caused by experimentally induced problems (Chamove & Anderson, 1989). As public awareness of animal behaviour developed, mainly because of television documentaries, increased pressure was placed upon zoos to improve the welfare of their animals. Still very much in its infancy, this concept of enrichment embodies different methods by which an environment can be modified for the benefit of the animals (Shepherdson, 1994). Designed to provide animals with some degree of complexity, the main aim of enrichment has been to provide the animal with the opportunity to explore its habitat and investigate any changes that have taken place, so that more stable levels of behaviour are achieved (Shepherdson & Hare, 2003). As enrichment programmes have increasingly become
important tools in helping to create more stimulating environments for different animals, they have also encouraged the development of ‘acceptable’ behaviours in zoo animals, particularly in overcoming stress-related factors. Enrichment programmes are now considered essential for the health and well-being of captive animals, both physically and psychologically.

In 1993, the first international conference on environmental enrichment held at the Metro Washington Park Zoo in Portland, Oregon, identified a theoretical framework for enrichment, resulting in the publication of Second Nature: Environmental Enrichment for Captive Animals (Shepherdson et al., 1998). In the introduction to this text, Maple (1998: xiv) described this ‘new’ science of environmental enrichment as:

a grass-roots revolution, driven by the creativity of smaller zoos and advocated by enthusiastic keepers, curators, volunteers, and students. Fuelled by good science and fresh ideas, the field of environmental enrichment should continue to stimulate some of the most creative thinking in all of zoo biology.

Since 1993, international enrichment conferences have continued to be held every two years, and although several new ideas relating to the use and development of different enrichments have been proposed, there remains a paucity of research relating to its appreciation by zoo visitors.

Since its introduction in a number of zoos, the use of enrichment has quickly become an integral part of the daily routine care and management of many zoo animals (Shepherdson & Hare, 2003:153), although it has not always been easily accepted by zoo management. This lack of enthusiasm has been particularly evident among those who received their training prior to the development of these new concepts – or perhaps among those who simply resist change. In recent years a variety of programmes have been developed to enrich the lives of animals in zoos and aquaria (Mellen & Ellis, 1996). Shepherdson (1989:35) noted that enrichment has been achieved through the addition of various devices that modify the animal’s environment and result in the stimulation of natural activities and behaviours that closely resemble those of an animal in the wild. The use of various enrichment items has been intended to encourage behaviours appropriate for the species, improving animal welfare by satisfying physical and psychological needs (Litchfield, 1998) (Plates 2.11, 2.12).

Not only have enrichments been employed effectively in exercising the animals’ minds, they have also been used to reduce the performance of abnormal behaviours, such as stereotypes. An excellent example of this was observed with the supply of an assortment of devices to the Malayan sun bears at Taronga Zoo in Sydney. Initially, these bears had been
kept under extreme conditions in small cages in Cambodian restaurants, where they were destined to become bear paw soup, a delicacy for rich patrons. When the bears first arrived at Taronga in 1997 they showed considerable behavioural problems as a result of this stress. By the provision of different enrichment items, gradually the observed stereotypic behaviours were reduced, and in some cases, behaviours such as paw-sucking even disappeared (Small, 2003:233).

Numerous reasons exist for zoo administrators to justify the inclusion of an enrichment programme for captive animals and to provide various enrichments, particularly since ‘one incentive for zoo enrichment is increased public interest’ (Morgan et al., 1998:153). During the last decade a number of workers, such as Nikolaj Percenko et al. (1998) and Wood (1998), have suggested that the use of various environmental enrichments can lead to an increased appreciation and understanding by zoo visitors, which could result in improved opportunities for education. Significantly, this understanding may result in an improvement in public perception and associated revenue (Loomis et al., 1993), which in turn may provide the opportunity to further improve physical conditions for the animals (Bitgood et al., 1988).

Tofield et al. (2003:32) expressed concern relating to the limited amount of visitor research that has been carried out in zoos. They noted ‘there has been little research to address visitors’ reactions to enrichment, or their beliefs about the educational role of zoos’. One of the few published pieces of visitor research is by Stephen Kellert and Julie Dunlap (1989), who measured visitor attitudes before and after visiting zoos. They found that a positive impact was generated in zoos with an educational focus and where animals were displayed in authentic environments. Marty McPhee and colleagues noted, ‘little has been done to address visitors’ reactions to enrichments’ (McPhee et al., 1998:526). The lack of quantitative data led McPhee and colleagues to pose a number of questions, such as ‘what is the public’s general perception of enrichment?’ and ‘how does enrichment affect either the exhibits perceived naturalism or educational message?’ (McPhee et al., 1997:22). In an attempt to answer such questions, McPhee et al. measured visitor reaction to enrichments at Brookfield Zoo in Illinois, using different exhibit types. The found that in the majority of cases the presence of enrichment did not influence visitor perception (McPhee et al., 1998:532), but cautioned that ‘future research at other institutions is needed’. Earlier research at Taronga (Frede, 2003) suggested the opposite effect, in that enrichment items had a marked influence on extending visitors’ viewing times.
Plate 2.11: Enrichment prepared for gorillas at Adelaide Zoo, a colourful combination of food and sensory material.

Plate 2.12: Young gorilla manipulating an enrichment device at Taronga.
2.6 Visitors’ thoughts and perceptions – change in appreciation

In discussing museums, Tony Bennett (1995:4) noted that too often, general observers considered that they were dusty and disorganized storehouses of antiquities which housed collections and appeared to bring some order out of chaos. Critics have varied in their perceptions of museums. In March 2001, under the heading ‘Museum battles to show it’s no fossil’, journalist Kelly Burke, describing The Australian Museum in Sydney, wrote

... in the dark Victorian corridors of its imposing sandstone building, the museum languishes with the image of a warehouse of dusty specimens, dank rooms and dreary school excursions (Burke, 2001:1).

Just four days later, in describing the opening of the National Museum in Canberra, the director, Dawn Casey, wrote

A museum is not a text but a lived experience; impressionistic rather than chronological. We accept that people experience a museum in many ways, not reading from start to finish, but browsing or window shopping along the route of most appeal (Casey, 2001:13).

These ideas confirm that, individual interpretations and impressions within the museum sector varied greatly, particularly since they were based upon the individuals’ understanding of what was being observed. Consequently, the possibility existed that misinterpretations could have arisen as the result of a lack of knowledge, understanding or awareness.

Within the zoo environment, different people also perceive the world of nature in different ways. The hippopotamus (Plate 2.13) is beautifully described in Book of Job (Job 40:19), which reads ‘he is the first of the works of God’. On seeing the first hippopotamus arrive at London zoo in 1850, author Thomas Babington Macaulay commented ‘I can assure you that, asleep or awake, he is the ugliest of the works of God’ (Blunt, 1976:111). English writer and explorer Mary Kingsley could not determine whether the hippo was Nature’s first bungled attempt at creation or a last exhausted fling of the Creator when she wrote, ‘Here just put these other viscera into big bags – I can’t be bothered any more’ (cited in Blunt, 1976).

No matter which description was applicable, the new hippopotamus, named Obaysch (after the island in the Nile where it was captured), resulted in attendance more than doubling in its first year in the zoo, which simply confirmed that different people perceived the same animal differently, their thoughts dependent upon their individual points of view. As Kaplan and Kaplan (1989) indicated, people interpret their environment in terms of their own needs and preferences.
Although some research has been reported on the way in which zoo administrators think the public perceive the zoo (Murray, 1998:53), little research has been reported regarding the way in which the public actually perceive the zoo, the animals or the enclosures. Since an exhibit should afford an understanding of the way in which animals live and behave naturally (Burton & Ford, 1991:12), the visual message received by visitors should be considered of prime importance. A search of the literature suggested that there has been little if any investigation into zoo visitor awareness of enrichment and its effects, or of the perceived naturalism of an exhibit. Likewise, little research has been carried out relating to the educational message of the enclosure and learning within the zoo environment. At the same time, although a number of assumptions have been made, there has been little research into the way in which visitors have utilised and learned from exhibit signs and labels in the zoo.

A search of the literature indicates that the variables that influence visitor perception can be divided into three major groupings: the characteristics of the animals exhibited; the architectural characteristics of the exhibit; and the characteristics of the visitor. Animal characteristics include features such as activity, animal size, novelty, and any tendency to interact with the visitor. Architectural qualities include visibility, proximity to viewer, position in relation to other exhibits, and glare from glass. Visitor attributes include special interests, physical fatigue, perceived quality (e.g. tame/dangerous), and the behaviour of the visitors.
Becca Hanson (Hanson & Roberts, 1997:1) referred to humans as ‘incurable aesthetics’, in that they had developed social meanings and cultural and aesthetic preferences based upon the way in which certain elements of nature have enhanced their survival. She stressed that aesthetic considerations were important in allowing people to understand and appreciate the different messages that could be gained from a zoo exhibit, and that these same aesthetics gave access to human perceptions that could create emotional connections, which in turn could capture the imagination.

The comfort of visitors is an important aspect which can be regarded as an essential for learning in the zoo, particularly since most visitors spend several hours viewing different exhibits. Comfort covers a wide assortment of factors, ranging from simple physical comforts to psychological conditions. Simple physical comforts include places to rest, convenient facilities, and ease of walking between the different exhibits. Psychological factors included crowding, noise, visitor traffic flow, wall colours and textures. All these factors influence visitor perceptions and consequently visitor comfort. During a visit to the zoo, visitor comfort makes learning possible. Visitor comfort is considered in this thesis under the heading of ‘zoo fatigue’ (Chapter 5).

Bitgood and his colleagues (Bitgood et al., 1986:9, 10) from Jacksonville State University examined the behaviour of visitors to zoos and determined ten factors that influenced visitor viewing. They constructed measures of ‘attracting power’ and ‘holding power’ which were developed from recording the amount of time people spent reading the various labels. Although the authors indicated that their findings at that time were preliminary and that further research was needed, these early results indicated the effectiveness of animal activity in attracting visitor attention. Bitgood et al. also found that the key factors influencing viewing patterns were animal activity, larger animals, and the presence of children. In their discussion of welfare issues surrounding the keeping of captive animals, Joy Mench and Michael Kreger (1996) investigated similar characteristics that attracted visitor attention.

The feeding habits and behaviours of different animals are easily observable in zoo exhibits. For example, the way in which a squirrel monkey or a meerkat extracts meal worms from small bamboo tubes (Plate 2.14) never fails to attract viewer attention. As Bitgood et al. (1986:2) indicated, an active animal invariably attracts more attention than an inactive one, so that once the visitor’s attention is gained, it is highly likely that the visitor will note what is actually being eaten, along with any unusual behaviours that the animal might show. Visitor
attention is held longest by exhibits which contain the most action. An excellent example of this was established in earlier research (Frede, 2003) when visitors became intrigued with the activities of the sun bears as they demolished palm logs that had been stuffed with fruit and honeycomb. Forthman et al. (1992:187) assessed that captive bears were ‘significantly more active, less passive, and engaged in fewer abnormal behaviours’ when they engaged in manipulating an enriched environment.

Plate 2.14: A young meerkat at Adelaide Zoo extracts meal worms from a bamboo enrichment tube.

There is a need for the viewing public to be made aware that enrichment devices are considered important for the welfare and needs of the captive animal, and it is imperative that viewers know that enrichment can be utilised to control certain behavioural patterns. Attempting to replicate the natural environment of an animal may have educational value, but the enclosure can only be considered perfectly natural if it contains the relevant biological stimuli. The value of using artificial devices and human-made objects to represent these environmental stimuli (often lacking in captivity) has been recognised (Brigham, 1997; Shepherdson et al., 1993). However as Kreger et al. (1993) found, many enrichment devices which may be beneficial to the animal are considered by the viewing public to be aesthetically unacceptable in many modern exhibits. Unfortunately, as Reade and Waran (1996a) pointed out, there is a lack of research that describes the way in which the general public perceive zoo animals, and even less about the understanding of visitors, particularly in relation to the needs of animals.
Several explanations have been suggested by zoo management to justify the inclusion of an enrichment programme for captive animals in zoos; both from the point of view of animal welfare and from the viewing public. Such a programme can be related to the mission statements of zoos, most of which revolve around themes of conservation, research, recreation and education (Appendix C). However, little research has been reported in the field of visitor perception, particularly in relation to the understanding of enrichment usage. Visitors’ impressions are clearly influenced by the way in which animals are exhibited (Maple et al., 1995). Considering the amount of time and work that goes into the planning and preparations of different animal enrichments, the assessment of the visitor reaction to enrichment should make a useful contribution to organisational planning within the zoo.

If it is important to consider the different ways in which the viewing public perceive different enrichments, it is also important to understand their perception of various human-made toys that have been provided for the wellbeing of the animals (e.g. Plate 2.12, 2.15). Should the visitor judge the standards of a zoo on the cleanliness of an enclosure, then it is possible that the use of human-made enrichments may give the false impression that the enclosure is dirty and the animals are not sufficiently cared for by their keepers. This potential problem was described by Cronin et al. (1998), who noted the negative reactions of viewers to pieces of torn newspaper used in the chimpanzee enclosure in Edinburgh zoo.

Plate 2.15: A young Sumatran tiger cub playing with a human-made enrichment device at Taronga.
With the gradual change of zoos from menageries to centres of conservation, learning and education have become increasingly important within the structure of the zoo mission (IUDZG/CBSG (IUCN/SSC), 1993). Along with museums and science centres, zoos provide opportunities to embody the principle that education is a lifelong process (Corrigan, 2001). As a gathering place, the zoo is a museum which has the potential for visitors to receive more from the exhibit than simply the information provided on accompanying signage or mentioned in some descriptive guide book or brochure. Since people see things according to what they know and understand, it is possible for them to discover new ideas and so expand their understanding and knowledge while looking at animals in the zoo. Since their interests and backgrounds vary widely, visitors can develop different meanings according to what they perceive. The zoo has the unique opportunity to educate these visitors, not only about the animals themselves, but also about habits, habitats and behaviour.

Zoos provide an ideal learning situation. They compete with other leisure activities in which visitors can engage in rich experiences covering a wide range of contexts, in what Pines and Gilmore (1999:45) termed ‘the experience economy’. On occasions, objections have been raised concerning the value of learning in the zoo. Mostly, these have been based upon the fact that the animals are kept in artificial conditions which provide misleading evidence about the natural surroundings of their real environments. Against this thought, however, it can be argued that zoos at least display living animals, or as Grove and Newell (1957: vii) noted in the introduction to their standard zoology text, ‘We cannot too strongly urge that for true appreciation, a living animal is preferable to a dead one, and a dead one is better than a drawing’.

The nature of learning is difficult to measure, and since there is a lack of direct theory it is difficult to describe accurately. The question arises, ‘How can a zoo, as a museum, best serve its miscellaneous audience?’ One immediate answer lies in the provision of education, but any such education will, of necessity, be in the form of ‘free-choice learning’. Genetically humans are programmed to learn. Most human learning is self-motivated, emotionally satisfying and personally rewarding (Falk & Dierking, 1992:18). Most of what humans know is learned outside the schooling system (Albjerg Graham, 1998). Researchers have shown that humans are highly motivated to learn when they are in an appropriate environment (Deci, 1992) and when they are engaged in meaningful activities (Maher, 1984; McCombs, 1991). Determining what and how zoo visitors learn, if in fact they actually do, is a difficult task, but one indicator of visitor learning is visitor behaviour (Falk, 1983). Learning can be accidental,
and since it permeates every moment of daily existence, all aspects of the visitor’s experience in the zoo environment can lead to learning.

As zoos have developed naturalistic facilities, their designers have faced a vast number of conflicts, particularly since the goals and demands of modern decision-makers have varied greatly and have often been incompatible. Typically, the objectives have included conservation, education, research and recreation. Within the zoo there is the potential for visitors to develop an increased affinity with their natural heritage while gaining greater insight into conservation and animal welfare issues. Visitors can develop new knowledge and understanding as they interpret different events experienced during their visit. Little investigation of visitor reaction has been carried out in the Australian context, and it seems possible that the current research can make an important contribution.

This chapter establishes that animal collections are not a modern innovation, but have been in existence for thousands of years. Initially, menageries merely reflected the power and importance of their owners. Until Victorian times, little had changed and basically zoos fulfilled just two functions, in that while they allowed a closer study of animals they also provided what was generally considered as an amusing spectacle, so that zoos became places of amusement first, with scientific achievement second. As this research indicates, even today some people still visit the zoo with this same spirit, although interest in animal welfare and behaviour is increasing. While still providing a place of entertainment for their audiences, zoos now provide a source of education for their visitors; they carry out research into the behaviour of animals and they act as a sanctuary for many species that are highly endangered (Plates 2.16, 2.17).
Plate 2.16: A young golden tamarin born at Adelaide Zoo. Also known as the golden marmoset, this animal is one of the rarest animals in the world, with an estimated population in the wild now numbering less than one thousand.

Plate 2.17: A young cheetah relaxing in its enclosure. The fastest of all land animals, the cheetah can reach speeds of up to 105 kilometres per hour. Now included on the vulnerable species list, historically cheetahs have often been associated with royalty because of their elegance, having been kept by rulers such as Genghis Khan and Charlemagne.

‘We share this planet with many species. It is our responsibility to protect them, both for their sakes and our own’

(Pamela Mason, Dean, Stanford University, California)