Cologne's Elephant Park

Gunther Nogge*

Abstract
Cologne's elephant park has a total area of 20.000 m², of which 5000 m² are indoors in the elephant barn. The indoor enclosures for males and females are 2250 m² and all outdoor enclosures are 8570 m² large in total. The elephants are kept under protected contact. For training there are several separating dens and two squeeze cages located in the exits. In this framework of the EEP Asian elephants it was possible to build up a patchwork family group of elephants of presently 5.9 animals, both by births and by imports from other zoos, including institutions in countries of origin.

Key words
New elephant facility, herd management, protected contact, behavioral enrichment, forming a new herd, birth in the group.

Building Description
Cologne's elephant park, opened in 2004, has a total area of 20.000 m², of which 5000 m² lie indoors (Fig.1). Visitors approaching the entrance of the new elephant house, see only 50% of its height, because it is embedded halfway into a hill (Fig.2). The external wall of 200 m length consists of 57 concrete elements, the surface of which imitates the skin of an elephant. Visitors get the impression of the back of a recumbent elephant. Entering the house they reach the central of three visitor platforms, above them the wooden ceiling of 3000 m² size (Fig.3). The ceiling is supported by seven to 12 metres high columns, which imitate trees. Each column consists of a bundle of slim concrete elements, which at their upper end are spread around light domes, each 8 metres in diameter. These together with the vertical windows alongside the walls of the building bring so much daylight into the hall that artificial light is needed only at nighttime. Heating pipes are incorporated in the bundle of concrete elements, which blow warm air into the hall from their ends. In addition there is floor heating, primarily to help dry the floor after cleaning with water.

At the front rim of the platform visitors stand 2,25 metres above water level of the elephants' bathing basin. The indoor enclosure for female elephants has a total area of almost 1500 m². Separated by a wall formed of artificial rocks there is a smaller one for the bulls, sized 750 m². The surface of the indoor enclosures is made of mastic asphalt, colored light brown

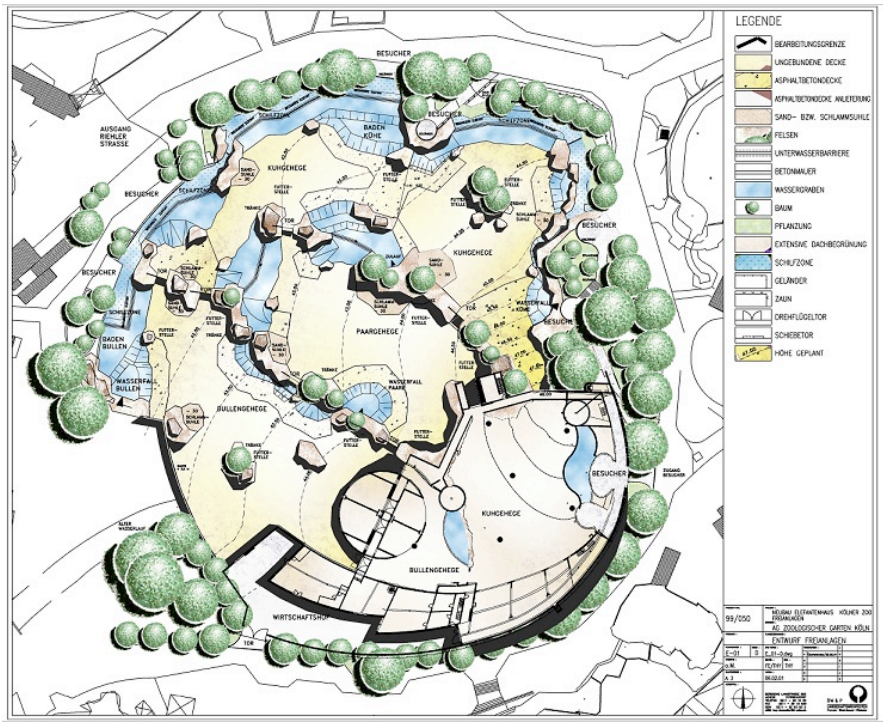

Fig.1: Ground plan of Cologne's elephant park

Fig.2: Front and visitor entrance of the elephant house © G. Nogge

corresponding to the color of the wooden ceiling.

There are altogether nine dens, sized 38–58 m² to enable the separation of elephants from one another. For training purpose the animals have to go their den once a day (Fig.4). Visitors can just see the sliding doors in front of these dens. All doors are moved by help of electric motors under direct sight control of the keepers, in most cases by help of video monitors. For remote controlled movements there are three cameras installed for every door, one of which is movable (Fig.5). In the end all enclosures can be inspected at any time by remote controlled cameras. The indoor enclosures can be observed also at night from the control room thanks to infrared spotlights.

Fig.3: Indoor enclosure for elephant cows © S. Schilling

Fig.4: One of the indoor separating dens © G. Nogge

Fig.5: Control room from where all sliding doors are moved © G. Nogge

The separating dens are equipped with automatic water drinkers, UV – lamps for tanning of the animals as well as the usual flight doors for the keepers. In the case of a sick elephant having to be lifted there is an I-beam under the ceiling for a crane runway, which can carry 6 tons.

Also the indoor enclosure for bulls has a bathing basin with warmed water (18^0) as well as four separating dens, two of which, sized 71 m² are indoors, and the other two, sized 90 m², outdoors. Bulls, in particular during musth can be moved without contact with the keepers from inside to outside and back.

Both for the bulls and the cows there are squeeze cages (Fig.6). They are located in the exits, which the animals have to pass every day. In the floor there are scales installed for weight control. The sidewalls of the cages have numerous openings, so that in the end each body part of an elephant is accessible for eventual medical investigations or treatments. The animals are trained regularly to stay in the squeeze cages, to accustom them in case of emergency.

Along the outer wall of the building is a service path, 200 meters long and 2 meters wide, which can be used also by vehicles. From here all enclosures and dens both inside and outside can be reached. Storerooms for hay and other food as well as rooms for staff and technique are in an adjacent building. For the benefit of behavioral enrichment automatic feeding machines have been developed. Elephants find holes in various spots of the walls, which they may explore with their trunks. Food, however, is supplied at irregular times so the animals are continuously occupied and stimulated to move around.

The three visitor platforms are located on different levels (Fig.7). From the highest one visitors can observe the elephants both indoors and outdoors. Plants and decoration of the visitors' area reflect the natural habitat of Asian elephants. Information such as on the elephants' biology, phylogeny, endangered status in the wild as well as their close relations to humans is displayed.

The outdoor enclosures

There are three outdoor enclosures, one measuring 3300 m² for the cow elephants, another one 2900 m² large for the bulls, and a third one 2370 m², where both sexes can meet for pairing (Fig.8). Between the enclosures there are walls of artificial rock, about 4 meters high and up to 7 meters broad. These dimensions allow the integration

of plants, which may not be reached by the elephants. There are altogether six gates between the enclosures, which may be closed by sliding doors. Most of the time, however, they are kept open, so that the animals can use the whole space of 8570 m², but also hide from each other, if they like. The ground consists of sand with a high percentage of mud, as it is used for horse riding ranges. All enclosures have mud wallows and places with fine sand for the comfort of the elephants. Together with numerous fallen tree branches they offer a richly structured environment (Fig.9).

Visitors can walk around the whole elephant park and observe the animals from ever changing angles. Water moats of varying size between elephants and visitors provide safety. The water volume of totally 5000 m³ is turned over within every three days and cleaned by a sedimentation device. The elephants can use the moats to take a bath. For their convenience there are ramps to enter and to leave the moats as well as zones of shallow water, 1,50 meters deep, to lie in the water. There are also shallow water zones for water plants placed where visitors easily can see them, but a 3,60 meters high barrier to prevent elephants from entering these zones.

Composition of elephant herds

When the elephant park was built, there was only one Asian elephant remaining at the zoo, which was too old to be moved to the new facility (Nogge 2004). In the framework of the European Endangered Species Breeding Program (EEP) for Asian elephants, no single offspring is permitted to be moved from one zoo to another. Instead, there is an attempt to simulate the natural processes of group dynamics. When a herd of elephants in the wild has reached a certain size, it will divide itself. That is exactly what zoos must emulate (Dorresteyn 2001).

After the herd of elephants belonging to Emmen Zoo, Netherlands had grown by births to fifteen animals, a group of four was separated to start a new herd at Cologne Zoo. These were *Thi Ha Phyu* (24 years old) with her son *Aung Si* (4 years) and *Khaing Lwin Htoo* (23 years) with her son *Aung Bo (3 years).* A 35 year old bull (Bindu, a proven breeder) came from Howletts Wild Animal Park (Bekesbourne, England) and finally a 6 years old bull, *Sang Raja*, born at Singapore Zoo. So the elephant park was opened with six elephants. The sex ratio of 4.2, was

Fig.6: Side view of the bull's squeeze cage © G. Nogge

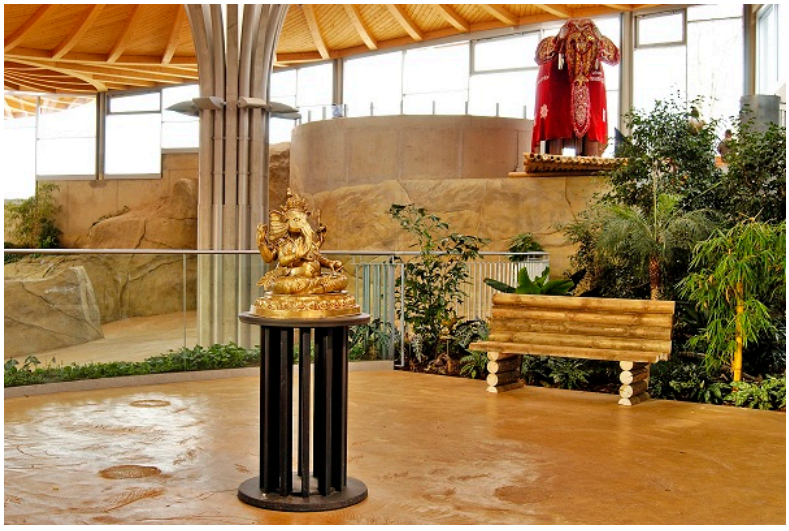

Fig.7: Look from the central to the upper visitors' platform © G. Nogge

Fig.8: Aerial view of the elephant park © V. Dennebier

Fig.9: Part of the outside enclosure for female elephants © H. Feller

Ten elephants of Cologne Zoo in summer 2006 © H. Feller

unfavorable, but *Khaing Lwin* was pregnant when she arrived at Cologne; she delivered Marlar, a female, on March, 30th, 2006. To achieve a better sex ratio at first two females were obtained in 2005 from the zoo in Yangon/Myanmar, *Shu Thu Zar (11 years)*, and *Aye Shan May (10 years)*. In 2006 the Ayutthaya Royal Palace and Elephant Kraal in the old capital of Thailand provided five more females (Nogge, 2006). In the end of 2006, when *Aung Si* and *Aung Bo* had left the Zoo to join a bachelor group in Sevilla, Spain, the herd consisted of 12 elephants, double their number two years before, and with a sex ratio of 2.10 up from 4.2. Meanwhile two elephants have died, *Khaing Lwin Htoo* after a urinary bladder prolapse (Retroflexio vesicae) and *Chumpol* after exceptional heavy injuries she obtained in struggles within the hierarchy. Four more elephants have been born, three males, *Min Jung,* born 2/16/07, *Kin Yadanar Min*, born 7/27/09 and *Rajendra*, born 4/8/11 and another female, *Maha Kumari*, born 5/9/07. Presently there is a total of 14 (5.9) elephants (Table 1).

Discussion

Two hundred years ago Buffon, the famous French zoologist said: "Elephants are the most prominent beings on earth besides men". At the end of the 18th century not much was known in Europe about elephants. If zoos today want to provide their animals the best possible living conditions according to the most recent knowledge on their lives in nature, they have access to an amazing store of knowledge of the biology of elephants. (Kurt, 2001, 2006). Veasey (2006) has discussed intensively the well-being of elephants in zoos and concludes that "their management should be based around the

Table 1: Development of Cologne' s elephant herd 2004 - 2012

Name	Sex	Birthdate	Birth place	Date in	Date out
BINDU	1.0	1968	Sri Lanka	10.09.2004	
SANG RAJA	1.0	24.03.1999	Singapore	28.09.2004	
THI HA PHYU	0.1	May 1980	Myanmar	05.08.2004	
AUNG SI	1.0	04.03.2002	Emmen	05.08.2004	20.04.2007 (Sevilla)
MAHA KUMARI	0.1	09.05.2007	Cologne		
KHAING LWIN HTOO	0.1	22.07.1981	Myanmar	05.08.2004	12.12.2006 (Death)
AUNG BO	1.0	16.07.2001	Emmen	05.08.2004	20.04.2007 (Sevilla)
MARLAR	0.1	30.03.2006	Cologne		
SHU THU ZAR	0.1	03.06.1994	Myanmar	27.09.2005	
AYE SHAN MAY	0.1	13.08.1995	Myanmar	27.09.2005	
KHIN YADANAR MIN	1.0	27.07.2009	Cologne		
CHUMPOL	0.1	02.04.1983	Thailand	16.09.2006	02.05.2012 (Death)
KLEEBLAMDUAN	0.1	1983	Thailand	16.09.2006	
THONG KHUN	0.1	1988	Thailand		
MIN JUNG	1.0	16.04.2007	Cologne		
RAJENDRA	1.0	08.04.2011	Cologne		
MAE JARUAD	0.1	1989	Thailand	16.09.2006	
LAONG DAAV	0.1	1990	Thailand	16.09.2006	

requirements of the animals themselves, taking into account an understanding of their biology and behavioral ecology." Also Garai and Kurt (2006) emphasize the importance of elephants in captivity must live in social groups as similar to their wild habit as possible. An excellent compilation on the husbandry of elephants was submitted recently by Chowta (2010).

The idea behind Cologne's elephant park was to allow Asian elephants to keep a natural, species specific life in a group of natural size. The herd should be managed as a whole. Contacts to the keepers should be reduced to a minimum and allowed only in a protected manner. To this end the animals from Emmen, which formed the nucleus of the new herd, were just the right for the park. They were accustomed to protected contact and they knew and supported one another, so the new environment was no problem for them at all. Shortly after their arrival *Bindu* and *Sang Raja* were integrated into the group. *Bindu*, known to be aggressive and dangerous to men, was absolutely peaceful to his unknown conspecifics. Even during musth it was not necessary to separate him from the group. If he wanted to be alone, he went his own way. More difficult was the integration of *Sang Raja*, who had been raised by bottle, more or less isolated from other elephants which resulted in deficits in his social behavior. Foolishly, he approached the only slightly younger bulls *Aung Bo* and *Aung Si*, and was warned on by *Thi Ha Phyu*. In August 2005 the group was enlarged for the first time by the acquisition of two females *Shu Thu Zar* and *Aye Shan May*. Since the age distance between the two newly arrived and the older cows was 13–15 years, the hierarchy was not in question. The two younger ones, however, held together and mostly stood aside of others. The process of forming the new group was continuously and carefully observed by students (Knillmann, 2005, Müller,2005).

The herd management had its practical test when the first elephant calf was born. Regarding parturition there are presently two schools in Europe. One wants to have everything under control, and isolates the pregnant elephant, binding her legs so that keepers and veterinarians have easy access at any time. The other one prefers parturition in the group, as it is known today that experienced females in the group may support the female in labor particularly if it is her first birth. No doubt, young mothers need the presence of experienced group members. Isolation in this situation is unnatural and means additional and unnecessary stress as well as danger for mother and offspring.

Pairing of elephants cannot be overlooked. However, if it happens at night, nobody sees it. This was the case with *Khaing Lwin Htoo* at Emmen where the elephants, including the bull, are allowed to stay together around the clock. *Khaing Lwin Htoo* was sired at night so when she arrived, it was said that she was pregnant but nobody knew when she was going to deliver. Once she seemed to be having pangs of childbirth. As there was a webcam, the elephants including *Khaing Lwin Htoo* were observed day and night by elephant-wise people from all parts of the world, hundreds of whom contacted the zoo with good advice. Despite several suggestions to the contrary, parturition was not induced by the veterinarian … with good result as the birth pangs stopped, and it was another three months before birth took place. In the evening of March 29th 2006 the amniotic sac ruptured but the calf had not delivered by morning. Khaing Lwin Htoo was given an injection of birth-stimulating drugs, and within a few moments *Marlar* was born in good health. Marla was first born in 140 years of keeping elephants at Cologne Zoo. The door was opened immediately, so that the herd had access to welcome their new member.

When *Marlar* was six months old, the five elephants from Thailand arrived. Now two social groups had to be melded. In contrast to the suggestion of many elephant experts the new elephants were not introduced into the herd one by one. Instead, after they had made acquaintance with each other through the bars, the two groups were allowed to meet. The main question was, which of the two group leaders would lead the united group. Within a couple of days the question was answered as might be expected from elephants, e.g., the oldest and most experienced female, *Thi Ha Phyu,* took over. After some time, however, she gave up the leadership and the second in command, *Kleeblamduan*, the highest ranking Thai elephant replaced her. This process was very exciting to follow. The group was not a natural family group but a "patchwork" family brought together from different origins and with unnatural age distribution that now had to grow together. In spite of everything the experiment turned out to be very successful. Today, seven years after opening the elephant park, we can state that the concept of herd management works. It was new and unused for the keepers, and they had much to learn, but the longer they practice it, the more they support it. The elephants can keep their own life as other animals at the zoo do. Just as methods of keeping great apes have changed over the last few decades, the methods of keeping elephants at zoos have to change in the same way. The writer is convinced that the concept of herd management in the long run will prevail.

The traditional, "hands on" way of keeping elephants is not condemned, at all. The question is, however, would we be able to stick to it in the long run. In the past elephants in Europe were imported from the countries of origin, already tamed and trained. Nowadays each year a dozen or more elephants are born in Europe. Taming an elephant is a difficult process, and there is hardly anybody in Europe who really knows it. However, improperly tamed and trained elephants are dangerous and a source of accidents. Therefore, protected contact is the only method of keeping elephants in the future.

Literature cited

Chowta, P. (2010). Elephant Code Book - Bangalore, India,126 pp.
Dorresteijn, A. (2001). Forward planning and EEP management for elephants in EAZA institutions. In: **Schwammer, H. & S. De Vries (Eds.).** Beiträge zur Elefantenhaltung in Europa 13 – 16. Münster
Garai, M & F. Kurt (2006). The importance of socialization to the wellbeing of elephants. - Z. Kölner Zoo 49, 97 – 102.
Knillmann, B. (2005). Gehegenutzung und Aktivität der Asiatischen Elefanten (*Elephas maximus*) im Zoologischen Garten Köln. – Thesis, University of Cologne, 224 pp.
Kurt, F & M. Garai (2007). The Asian Elephant in Captivity.- Cambridge University Press India, 352 pp.
Kurt, F. (2006). History of management in captive elephants. - Z. Kölner Zoo 49, 75 – 81.
Müller, T. (2005). Sozialverhalten und Kommunikation bei den Asiatischen Elefanten (*Elephas maximus*) im Zoologischen Garten Köln. - Thesis University of Cologne, 147 pp.
Nogge, G. (2004). Elefanten in Köln. – Z. Kölner Zoo 47, 95 – 108.
Nogge, G. (2006). Elephant connection. - Thailand - Rdsch. 19, 66 – 71.
Vasey, J. (2006). Concepts in the care and welfare of captive elephants. – Int. Zoo Yearb. 40, 63 – 79.